

Spectrum Markets Department

Impact assessment for PTS's proposed regulations concerning a combined selection procedure for licences to use radio transmitters in the FDD6 block in the 800 MHz band

1 Introduction and background

The Swedish Post and Telecom Agency (PTS) intends to decide on regulations concerning a combined selection procedure for a national licence to use radio transmitters in a frequency block in the 790-862 MHz band (the 800 MHz band). This frequency block encompasses the following frequency space: 816-821/857-862 MHz (FDD6). PTS may decide on such regulations under Chapter 3, Section 8 of the Electronic Communications Act (2003:389 – LEK) and Section 19 of the Electronic Communications Ordinance (2003:396).

At a global level, frequency bands are planned through decisions approved at the World Radiocommunication Conferences held by the International Telecommunication Union (ITU). At the World Radiocommunication Conferences, proposals from ITU member countries are dealt with and agreements reached on revisions to the ITU's Radio Regulations (ITU-RR) to make it possible to expand radio use.

It was decided at the World Radiocommunication Conference in 2007 that part of TV Band V (790–862 MHz) in Region 1 (to which Sweden belongs), which was primarily allocated to radio broadcasting, should also be primarily allocated to mobile services.

For Europe, use of TV Bands I (47-68 MHz), III (174-230 MHz), IV (470-606 MHz) and V (606-862 MHz) for analogue television and the coordination of radio transmitters for analogue television was previously regulated from 1961 up until 2006 by a regional agreement within the ITU, known as 'Stockholm 61'

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or 'ST61', as it was concluded in Stockholm in 1961. A decision regarding the current channel plan was made at the Regional Planning Conference held within the ITU in 2006. At the conference it was thus decided to replace the application of the ST61 Agreement with a new agreement – 'Genève 06' or 'GE06' – for digital radio and television in Bands III to V.

The Government's decision of 19 December 2007 regarding broadcasting space for digital terrestrial television¹ means that digital terrestrial television must use Bands III and IV as well as part of Band V. This will release the remaining part of Band V (790–862 MHz) and make it available for other terrestrial systems. This latter frequency band is known as the '*800 MHz band*'.

In 2011, PTS intends to assign national licences for use of radio transmitters in the 800 MHz band. The Agency has drawn up a proposal limiting the number of licences in the band under Chapter 3, Section 7 of LEK. According to the draft decision, this band should be divided into six frequency blocks, each of 2x5 MHz.

This frequency arrangement is based on the FDD Band Plan² drawn up for the 800 MHz band at the Conférence Européenne des Administrations des Postes et des Télécommunications (CEPT)³ that was adopted in the European Commission's decision on technical implementation measures for the 800 MHz band.⁴ The frequency arrangement thus comprises 60 MHz for the terrestrial system, frequency separation of 1 MHz for the 782-790 MHz band and a 'midgap' of 11 MHz (821-832 MHz).

Parties affected are afforded an opportunity to submit views on the above-mentioned proposal to limit the number of licences in the 800 MHz band through a consultation procedure that will run in parallel with the currently proposed regulations being circulated for comment.

In accordance with the Ordinance on Impact Assessments when Making Regulations (2007:1244), the following consequences were reported regarding

¹ *Sändningsutrymme för tv-sändningar* [Broadcasting space for television broadcasting] (Ku2007/455/ME and others)

² FDD: Frequency Division Duplex, base station-to-terminal communication (downlink) and terminal-to-base station communication (uplink) takes place in separate frequency channels

³ CEPT Report 31; Report from CEPT to the European Commission in response to the Mandate 'Frequency (channelling) arrangements for the 790-862 MHz band'

(Task 2 of the 2nd Mandate to CEPT on the digital dividend)

⁴ Commission Decision of 6 May 2010 on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union

the proposed regulations for a licence to use radio transmitters in the FDD6 frequency block in the 800 MHz band.

2 Why are these regulations necessary?

2.1 Interest in the 800 MHz band

In October 2009, PTS conducted a survey of the interest shown in licences to use radio transmitters in the 800 MHz frequency band.⁵ One precondition for the stakeholder survey was that the band would be planned for FDD use of in total 2×30 MHz. The findings showed that there was great interest in the band. In total 2×125 MHz was being requested.

2.2 Decision to limit the number of licences

The number of licences granted within a frequency space may be limited under Chapter 3, Section 7 of LEK, provided this is necessary to ensure the efficient use of radio frequencies. The proposal for such a decision should be published for consultation with the parties affected under Chapter 8, Section 10 of LEK.

When the number of licences within a frequency space is limited under Chapter 3, Section 7 of LEK, consideration must take place after an open invitation has been issued in accordance with Chapter 3, Section 8 of LEK, provided special reasons do not give cause to do otherwise. Such a consideration may take place after

- a comparative selection procedure,
- a tender procedure where the price the applicants are willing to pay for the licence is decisive, or
- a combination of these procedures.

PTS considered that the number of licences in the 800 MHz band had to be limited in order to achieve the most efficient frequency use possible. In parallel with circulating the currently proposed regulations for comment, PTS is implementing, as mentioned in Section 1.1, a consultation on the proposal to limit the number of licences in the 800 MHz band.

2.3 Open invitation

With reference to the above, the preconditions apply to issue an open invitation to apply for a licence to use radio transmitters in the 800 MHz band. PTS shall therefore decide on the content of such an invitation and on the procedure.

⁵ *Undersökning av intresse för tillstånd att använda radiosändare i frekvensbandet (790–862 MHz) 800 MHz-bandet* [Survey of interest in licences to use radio transmitters in the 800 MHz frequency band (790-862 MHz)] (28 September 2009, file ref. 09-9529)

Through Regulations (PTS Code of Statutes – PTSFS 2008:1) on spectrum auctions, PTS has generically regulated the procedure for licensing according to an open invitation to apply where the price that the applicants are willing to pay for the licence is decisive. Five of the six paired blocks shall be assigned through an auction on the basis of these regulations and the decision to limit the number of licences in the band and issue an open invitation to apply.

Unlike other licences in the 800 MHz band, a licence will be subject to conditions on coverage and rollout, which means that the licence holder must provide broadband coverage to the permanent homes and fixed places of business (i.e. households and businesses) without such coverage that have been identified by PTS. The point of departure for PTS is that the selection procedure should be designed in a way that provides coverage and rollout, and at the same time allows bidding on the scope of the coverage. The block in question (FDD6) is located high up in the band (816-821/857-862 MHz).

PTS will create incentives to achieve coverage and has chosen a selection format that is a combination of a comparative selection procedure ('beauty contest') and a tender procedure (auction). According to the proposed regulations, the lowest coverage bid (minimum bid) to be allowed to participate in the auction shall be determined as well as the highest amount (ceiling amount). The amount of the minimum bid and the ceiling amount can be found in the decision to limit the number of licences under Chapter 3, Section 7 of LEK in the 800 MHz band and to issue an open invitation.

The proposal means that all bids up to and including the ceiling amount are binding promises of coverage. So far the procedure constitutes a 'beauty contest'. Bids exceeding the ceiling amount will constitute bids in an auction and should thus be paid to the central government.

The proposed design of the procedure means that the operator granted the licence in the FDD6 block must use his bid up to and including the ceiling amount to cover those who do not have broadband. The licence holder must thus use the funds pledged in bidding to roll out infrastructure in the 800 MHz band to those permanent homes and fixed places of business identified by PTS.

PTS's generic regulations on spectrum auctions only regulate tender procedures and for this reason cannot be applied to a combined procedure. The regulations in question shall thus make it possible to allocate the FDD6 frequency block in the 800 MHz band through a combined selection procedure.

3 Alternative solutions and the effects of non-regulation

3.1 Alternative solutions

There are alternative methods of allocating the FDD6 frequency block, e.g. through an auction in the same way as other frequency blocks in the 800 MHz band. However, PTS considers that the selection procedure currently proposed is the best way of achieving appropriate coverage in places where rollout is not commercially justifiable. According to the proposal, the licence holder must roll out coverage using the funds promised.

3.2 Effects of non-regulation

PTS has been tasked with promoting access to secure and efficient electronic communications, which includes ensuring that universal services are available, and with promoting access to a wide range of electronic communications services (Section 4 of the Ordinance with Instructions for the Swedish Post and Telecom Agency (2007:951)).

The Government has also given PTS a special assignment to propose how to ensure access to broadband in all parts of Sweden by means of frequency assignment. The aim of such a proposal is to promote the achievement of the objective that all households and businesses should have good opportunities to use electronic public services and other services via broadband.

According to the Government Assignment, PTS shall focus on increased accessibility in areas without access to broadband or areas that have broadband of a low capacity and quality. PTS observed in one report that out of the frequency ranges available for assignment, the 800 MHz band is particularly appropriate for coverage.⁶

The 800 MHz band is thus very well suited for the development of future electronic communications systems. Frequencies of less than 1 GHz have propagation characteristics that make them well suited for area coverage and indoor coverage. The band's location in the radio spectrum also makes it attractive for producing, among other things, terminals ('mobiles'). Internationally, within both the International Telecommunication Union⁷ and the European Union⁸, the band has primarily been singled out for mobile

⁶ PTS's report of 28 May 2010, *Ökad tillgång till bredband genom frekvenstilldelning* [Increased access to broadband by means of frequency assignment], PTS-ER-2010:14

⁷ At the last World Radiocommunication Conference, WRC 2007 it was decided that the 790-862 MHz frequency band in Region 1 (to which Sweden belongs) shall be primarily allocated to mobile services. More information about allocation can be found in footnotes 5.316, 5.316A and 5.316B.

⁸ Commission Decision of 6 May 2010 on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union (2010/267/EU)

services. This creates favourable conditions for manufacturing equipment for the band in high volumes and thus at low cost.

The effects of non-regulation are that the FDD6 frequency block could not be assigned through a selection procedure with the format presented under Section 2.3 and with the advantages described above in Section 3.1.

4 Who is affected by the regulation?

Radio spectrum is a key input good for operations with the telecommunications sector. The proposed regulation thus affects those stakeholders in the Swedish and international telecommunications markets that are interested in accessing frequency space in the 800 MHz band in Sweden. The proposal is formulated so that both existing and new stakeholders are afforded access opportunities.

Access to broadband is important for both private individuals and businesses. Private individuals, businesses and other organisations are increasingly dependent on access to the Internet in order to participate in society in a satisfactory and effective way. This is why the proposal includes requirements on coverage. Consequently, this proposal is of particular relevance to people in permanent homes and fixed places of business that do not have broadband.

The frequency band directly under the 800 MHz band is used for television and this band has a prioritised position under LEK. In general, assigning the 800 MHz band means that interested parties, in order to be able to participate in the auction and the combined selection procedure, must provide an undertaking to work together and remedy any interference that television viewers may experience when the band is put into use. Television viewers are thus affected by the proposed rules, even if the licence for the top block (FDD6) in the 800 MHz band paves guarantees very little impact.

5 Other consequences of regulation, including cost

5.1 The value of radio spectrum

Radio spectrum is a natural resource that has a value and can thus also be valued. This is necessary as an input good for the production of wireless services for data communications, mobile telephony and radio and television broadcasts. A general point of departure is that the social benefit of spectrum use is greatest if spectrum is used for services where the willingness to pay is greatest.

In a properly functioning market, the price is a function of supply and demand, where the price corresponds to the commercial value of the goods. As regards frequencies, an auction is thus a common way of determining the market price.

Although the outcome of the auction is affected by external factors, such as the business cycle and competition as well as the conditions and design of the auction, it provides a picture of how the market, at the time of the auction, estimates the value of using a particular frequency band. Numerous factors are taken into account when market stakeholders assess the price they are prepared to pay for a certain frequency band.

Key factors when assessing the value include the potential use of the frequency band in question and the revenue that may conceivably be generated, the extent of the frequency space, international harmonisation, whether the band can be used in a technology and service-neutral way, the amount of any charges, number of licences, technical conditions, coverage requirements, business cycle, whether equipment is available and the risk of interference.

In summary, it may be assumed that the consequences of assigning the 800 MHz band through a selection procedure, principally an auction, will yield significant revenues for the central government; as an example of the amount that may be involved, the revenue yielded by the 2.6 GHz auction in May 2008 was SEK 2.1bn. An amount corresponding to the auction revenues will thus become a cost for the interested parties in the selection procedure.

It is not possible to determine in advance any amounts relating to the FDD6 frequency block, as PTS cannot decide either who are going to participate or how participants are going to estimate the value of the various frequency blocks. A new additional factor is that the party who receives the licence for the FDD6 block is allowed to use their bid up to and including the ceiling amount to roll out their own infrastructure to achieve coverage.

The choice of assignment method for the FDD6 frequency block – a combination of a ‘beauty contest’ and an auction – means that a certain part of the price of the licence will be retained by the applicant and be used for rollout and coverage.

5.2 Coverage requirements

The ‘Broadband Strategy for Sweden’, published in 2009, presented the Government’s targets for the broadband sector to achieve ‘world-class broadband’. The Government’s wish is for *all* households and businesses to have good opportunities to use electronic public services and other services via broadband. This consequently includes those households and businesses that are located outside areas where the commercial rollout of broadband may be expected.

According to PTS's proposed regulation, the FDD6 frequency block is subject to coverage requirements. For this reason, the proposal means that the licence holder shall cover all permanent homes and places of businesses without broadband. PTS shall identify the homes and places of business that do not have access to broadband.

The cost to the licence holder shall not amount to a sum that is higher than the licence holder is willing to provide in coverage. PTS shall set the lowest and highest possible amounts for coverage. The 'coverage bid' will be retained by the licence holder and is intended to be used by him. One of the consequences of the regulation is thus that access to broadband is secured in places that otherwise lack the commercial incentives for such investments.

5.3 Requirements to be allowed to participate in the procedure

5.3.1 Set standard form

The proposed regulation contains a requirement stipulating that the application must be made on a standard form provided by PTS. A consequence of this provision is that an interested party who does not use the standard form may not participate in the procedure.

5.3.2 Undertaking

The proposed regulation states that the applicants, in conjunction with their application, must provide an undertaking to work together and remedy such interference that television viewers in the adjacent TV band (470-790 MHz) may experience when the 800 MHz band is in use. The formal requirement is the same as that proposed to apply when assigning other frequency blocks in the 800 MHz band.

The licence holder must thus establish and maintain an acceptable administration as a service for television viewers. This undertaking is a precondition for assigning the 800 MHz band as a consequence of the enhanced protection for radio broadcasting.

5.3.3 Bank guarantee

The proposed regulation contains a requirement for the applicants to provide a bank guarantee. One consequence of this provision is that the applicants must bear the responsibility for the measures required to have a bank guarantee issued. An interested party who does not provide a bank guarantee may not participate in the procedure.

5.4 Spectrum ceiling

The proposal includes a provision that the amount of spectrum that may be combined with a licence in the 800 MHz band for one and the same bidder is limited in accordance with the provisions of the decision to limit the number of licences and issue an open invitation.

The 'spectrum ceiling' means the maximum amount of radio spectrum that can be combined with a licence for one and the same applicant through the procedure. Competition between several operators represents a precondition for achieving PTS's objective of a broad range of affordable services for consumers. One precondition for long-term, sustainable competition in the market is that none of the operators receive too great a proportion of either the low or high frequency band that is used to provide consumers with mobile telephony and mobile broadband.

A consequence of regulation is that it will not be possible for individual operators to be assigned a dominant share of the accessible frequency space in the band.

6 Conformity with EU rules

The proposed regulation shall take place in accordance with the provisions of Chapter 3, Section 7 to 8 of LEK. These provisions reflect the provisions contained in the Authorisation Directive⁹ (primarily Articles 6 to 7) and the Framework Directive¹⁰ (primarily Article 8).

On 6 May 2010, the European Commission decided on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union (2010/267/EU). These conditions can be found in an appendix to the decision. The conditions that will be attached to the licence for the FDD6 frequency block as a consequence of the proposed regulation are consistent with the EU decision.

7 Entry into force and information activities

7.1 Entry into force

Developments in Europe have recently taken several steps forward in terms of the orientation and use of the 800 MHz band. The European Commission has made a decision on technical implementation measures (see above) and the

⁹ Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 on the authorisation of electronic communications networks and services

¹⁰ Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services

advice of the Council of the European Union has in conclusions formulated an agenda for how it would be possible to transform the 'Digital Dividend' into social advantages and financial growth.¹¹ Active work is underway within the Radio Spectrum Policy Group (which is under the control of the European Commission) to promote efficient and harmonised use of the 800 MHz band. PTS is of the view that the international harmonisation of the 800 MHz band has now reached a point where the preconditions exist to assign the 800 MHz band in Sweden.

Sweden has an interest in retaining its position as a key player within the field of wireless electronic communications. Germany has already concluded its assignment of the 800 MHz band and a decision has been made in several EU countries (Denmark, Finland, France, Spain and the United Kingdom) to use the band for electronic communications services other than terrestrial television. It is considered that one effect of this situation is that there will be a great interest on the part of manufacturers in producing equipment for this band.

PTS considers that there are strong reasons to assign a licence in the 800 MHz band as soon as possible, with regard to the time required to prepare regulation according to law. These regulations should therefore enter into force as soon as possible.

7.2 Special information activities

In order to be allowed to participate in the selection procedure, the interested parties must provide an undertaking to work together and remedy such interference that television viewers may experience when the 800 MHz band is put into use. It is important that the general public has an overall and clear picture of the help that they can get and who will provide this help. The undertaking includes licence holders establishing a common point of contact.

The need for information activities to show rights concerning interference to television receivers will affect those stakeholders whose work involves consumer issues, such as television and cable television operators, television installation engineers and the Swedish Consumer Bureau for Telecom, TV and Internet.

¹¹ Council Conclusions on Transforming the digital dividend into social benefits and economic growth 2987th, Brussels, 17 December 2009

8 Specific effects for an undertaking's working conditions, competitiveness or other conditions

8.1 The number of undertakings, sectors and size affected

The proposal affects a number of medium-sized to large national and international telecommunications companies who are interested in being allowed to use frequencies in the 800 MHz band.

The proposal also affects businesses in Sweden who will get the opportunity to receive broadband. In a report to the Government on broadband coverage, PTS estimated that 1,256 fixed places of business currently do not have access to broadband.¹²

8.2 Duration and administrative costs

The proposed provisions include, among other things, formal requirements that result in certain administrative measures that require time and charges, e.g. extracts from the companies register and costs associated with the bank guarantee. Those participating in the procedure must also count on setting aside two to ten (possibly more) working days for this.

8.3 Need for changes to the operation

PTS considers that the proposal will not have to result in major changes to the operation.

8.4 Effect on competition

Competition between several operators represents a precondition for achieving PTS's objective of a broad range of affordable services for consumers. One precondition for long-term, sustainable competition in the market is that none of the operators receive too great a proportion of either the low or high frequency bands used to provide consumers with mobile telephony and mobile broadband.

A consequence of regulation is that it will not be possible for individual operators to be assigned a dominant share of the accessible frequency space in the band.

8.5 Impact in other respects

PTS does not consider that there will be any impact in other respects that is relevant to this impact assessment.

¹² PTS's report of 28 May 2010, *Ökad tillgång till bredband genom frekvenstilldelning* [Increased access to broadband by means of frequency assignment], PTS-ER-2010:14, p. 12

8.6 Special consideration for small undertakings

The proposed regulation, including coverage requirements with a low data rate of 1 Mbps, has been specially adapted to meet the needs of small undertakings that are currently without coverage.

8.7 Any need for a notification under Directive 98/34

Section 6 of the Ordinance on Technical Rules (1994:2029) prescribes that an authority that intends to make a decision on a technical rule must notify the National Board of Trade about the proposal it has drawn up in good time. The provisions of the Ordinance correspond with Sweden's international obligations in accordance with, among other things, Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998, amended by Directive 98/48/EC of the European Parliament and of the Council, laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services.

In the assessment of PTS, the amendment of the current regulations does not constitute such technical rules as shall be notified under the said Ordinance. For this reason, the National Board of Trade does not have to be notified.