

The matter

Limiting the number of licences within a frequency space under Chapter 3, Section 7 of the Electronic Communications Act (2003:389) and issuing an open invitation to apply

Determination of the Swedish Post and Telecom Agency

The Swedish Post and Telecom Agency (PTS) limits the number of licences in the 790-862 MHz frequency space (the 800 MHz band) as follows:

National licence for Frequency Division Duplex with assignment of 791-796 MHz and 832-837 MHz (FDD1); see [Appendix 1](#).

National licence for Frequency Division Duplex with assignment of 796-801 MHz and 837-842 MHz (FDD2); see [Appendix 1](#).

National licence for Frequency Division Duplex with assignment of 801-806 MHz and 842-847 MHz (FDD3); see [Appendix 1](#).

National licence for Frequency Division Duplex with assignment of 806-811 MHz and 847-852 MHz (FDD4); see [Appendix 1](#).

National licence for Frequency Division Duplex with assignment of 811-816 MHz and 852-857 MHz (FDD5); see [Appendix 1](#).

National licence for Frequency Division Duplex with assignment of 816-821 MHz and 857-862 MHz (FDD6); see [Appendix 1](#).

Licences shall otherwise be subject to conditions, including a requirement on coverage and rollout for FDD6, according to an open invitation to apply; see section entitled 'Licences and licence conditions' in Appendix 1.

Licences for FDD1 to FDD5 shall be assigned through a selection procedure where the price (bid) that the applicant is willing to pay for the licence is decisive.

PTS decides to issue an open invitation to apply and thereby on the arrangement of the procedure, such as the application and other requirements for participation, the spectrum cap and provisions on related parties and rules on the procedure; see Appendix 1.

Background

The Riksdag (Swedish Parliament) decided in 1997 that digital terrestrial television would be introduced in Sweden.¹ The switch-off of analogue terrestrial television broadcasting in the 47-68 MHz, 174-230 MHz and 470-862 MHz frequency bands was implemented between 2005 and 2007. Since the switch-off, only the 470-862 MHz frequency space has been used for digital terrestrial television broadcasting in the five DVB-T networks that are operating.²

On 19 December 2007, the Swedish Government came to a decision about the broadcasting space for digital terrestrial television.³ This decision means that digital terrestrial television relies on the 174–230 MHz and 470–790 MHz frequency bands and that it should be possible for the 790–862 MHz frequency band (the 800 MHz band) to be allocated for other purposes according to LEK. The Government also assigned PTS to plan the 174–230 MHz and 470–790 MHz bands so that the frequency space could be used in accordance with the decision on broadcasting space.

International developments and developments within the European Union have also moved towards using the 800 MHz band for electronic communications services other than television. This trend contributed to the Swedish decisions.

On a global level, it was decided at the last World Radiotelecommunication Conference held by the International Telecommunication Union (ITU) in 2007 that the 800 MHz band in Region 1 (to which Sweden belongs) shall be primarily allocated to mobile services.

¹ Government Bill 1996/97:67, Report 1996/97:KU17, Riksdag Communication 1996/97:178

² See Riksdag Decision of May 2003, Government Bill 2002/03:72, Report 2002/03:KU33, Riksdag Communication 2002/03:196

³ *Sändningsutrymme för tv-sändningar* [Broadcasting space for television broadcasting] (Ku2007/455/ME and others)

Within the European Union, work on the 'Digital Dividend' has been underway since 2003. The European Commission has focussed on the possibility of making the 800 MHz band accessible for electronic communications services other than terrestrial television in a harmonised way within the European Union. The Commission therefore decided on 6 May 2010 on harmonised technical conditions for use of the 800 MHz band that apply to terrestrial systems that can provide electronic communications services within the European Union.⁴

The 800 MHz band is currently available for use and for this reason PTS intends to assign licences for the use of radio transmitters in this frequency space.

Reasons

According to Chapter 3, Section 7 of LEK, the number of licences granted within one frequency space may be limited, providing this is necessary to ensure the efficient use of radio frequencies.

According to Chapter 3, Section 8 of LEK, when the number of licences has been limited under Chapter 3, Section 7 of LEK, licences shall be considered after an open invitation to apply. Consideration shall take place according to a comparative selection procedure, following a tender procedure where the price that the applicant is willing to pay for a licence shall be decisive or following a combination of these procedures.

In the Agency Regulations (PTS Code of Statutes - PTSFS 2008:1) on spectrum auctions, PTS has generically prescribed a selection procedure and licensing for spectrum auctions. According to the Regulations, PTS may decide on supplementary rules for a specific spectrum auction through a decision to limit the number of licences according to Chapter 3, Section 7 of LEK and by issuing an open invitation to apply.

PTS Code of Statutes – PTSFS 2008:1 only regulates auctions of radio spectrum. PTS Regulations (PTS Code of Statutes – PTSFS 2010:xx) concerning a combined selection procedure for a licence to use radio transmitters in the 816-821/857-862 MHz frequency block (FDD6 in the 800 MHz band) therefore regulates the combined selection procedure that will be implemented to assign the FDD6 frequency block. According to these regulations, PTS may decide on supplementary rules for the combined selection

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, 2010/267/ EU

procedure through a decision to limit the number of licences according to Chapter 3, Section 7 of LEK and to issue an open invitation to apply.

PTS makes the following assessment:

Limitation of the number of licences

The 800 MHz band is an extremely valuable resource for the Swedish electronic communications market, as the frequency band has very good propagation characteristics and very good preconditions for high speed services. The quantity of radio spectrum available is 2×30 MHz. In October 2009, PTS conducted a survey of the interest shown in licences to use radio transmitters in the frequency band and the findings demonstrated that there was great interest; in total 2×125 MHz was being requested.⁵ Demand for spectrum in the 800 MHz band consequently far exceeds the access to spectrum in this frequency band. As there is a lack of frequency, the number of licences will be limited and licensing shall take place after an open invitation to apply has been issued and after a selection procedure.

The 800 MHz band is limited to six national licences to use radio transmitters in a particular frequency space, where each licence covers a block of 2x5 MHz. Frequency blocks encompass paired blocks for FDD (Frequency Division Duplex) with reverse duplex direction, i.e. the uplink (the connection between the terminal and the base station) is located in the upper part of the band in contrast to what is usual when planning FDD spectrum.

The frequency arrangement described above corresponds with the European Commission's decision of 6 May 2010.

Efficient frequency use

The Commission's decision states that the frequency blocks assigned shall be 2x5 MHz or multiples thereof, i.e. 2x10 MHz, 2x15 MHz, etc. PTS considers that a frequency block of 2x5 MHz creates good potential to use the wireless systems and technologies that are currently appropriate for use in the 800 MHz band. This block size also provides flexibility in the assignment procedure, as bidders can combine licences for larger units of 2x10 MHz. Some electronic communications services are likely to require more frequency space than 2x5 MHz, but with licences of this scope it is possible for bidders to choose how much radio spectrum they wish to acquire. It is also likely that it will be possible to combine frequency blocks of 2x5 MHz with other frequency bands in the

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)

future to boost transmission capacity. Taken overall, efficient frequency use of the 800 MHz band with frequency blocks of 2x5 MHz is possible.

The fact that the frequency arrangement in the 800 MHz band corresponds with the European harmonisation of the 800 MHz band results in efficient frequency use. This makes access to equipment for licence holders, manufacturers and consumers within the European Union easier.

Selection procedures

According to PTS's Spectrum Policy⁶, a tender procedure shall first be applied when a selection procedure is used, where the price (bid) that the applicant is willing to pay for a licence is decisive (auction). PTS has not found any reason to deviate from this policy in the forthcoming auction relating to licences for FDD1, FDD2, FDD3, FDD4 and FDD5. The auction should be conducted in the manner described in the open invitation; Appendix 1.

As the licence for FDD6 will be subject to a condition on coverage and rollout, the selection procedure shall be formulated as a combination of a comparative selection procedure and an auction. Section 5 of PTS Code of Statutes – PTSFS 2010:xx prescribes that the assignment of a licence for FDD6 is to be implemented through a combined selection procedure. The combined selection procedure shall be implemented in the manner described in an open invitation; Appendix 1.

Issuing an open invitation to apply and regarding the procedure for the auction and the combined selection procedure

The open invitation to apply, issued by PTS, describes the procedure for the auction relating to the licences for FDD1-FDD5 and the combined selection procedure relating to the licence for FDD6.

Certain requirements must be satisfied in order to participate in the auction and the combined selection procedure. The application includes among other things an undertaking to work together and remedy interference to terrestrial television in the 470-790 MHz frequency band. The auction and the combined selection procedures also mean that a spectrum cap is laid down limiting how much spectrum may be combined with a licence for one and the same bidder under these selection procedures. The open invitation to apply also describes the conditions to be stipulated in the licences to use radio transmitters in the 800 MHz band, including a requirement on coverage and rollout in the licence for FDD6.

⁶ PTS-VR-2006:2

Undertaking to work together and remedy interference in terrestrial television

According to Chapter 3, Section 6, first paragraph, item 4 of LEK, in order to be able to grant an application for a licence to use radio transmitters it may be assumed that the radio use will not impede such radio communications as are particularly important having regard to the free moulding of opinion. The aim of this provision is to protect such radio use that is of special interest as regards freedom of expression and information in the case of frequency assignments, principally radio or television broadcasts. The provision is of relevance to the assignment of the 800 MHz band as this radio use may interfere with the reception of terrestrial television in the 470-790 MHz frequency band and may need to be considered more deeply.

The European Commission's decision of 6 May 2010 includes harmonised technical conditions. However, this decision appears to require that a Member State that makes the 800 MHz band accessible for radio use other than broadcasting should take national measures and ensure that adjacent frequency bands enjoy 'appropriate protection' against interference. This may be interpreted as there being an obligation to protect the 470-790 MHz frequency band, but that it is up to the Member State to decide on what protection is needed.

It is stated in Chapter 1, Section 7 of LEK that harmful interference constitutes a major impact (seriously impedes, prevents or repeatedly interrupts) on existing and planned services in a frequency space. Such interference is not permitted under Chapter 3, Section 13 of LEK. Considering the prioritised position of radio and television broadcasting, and in order to ensure efficient frequency use in accordance with Chapter 3, Section 11, item 12 of LEK, a licence in the 800 MHz band is subject to a requirement not to cause interference to television reception in the 470-790 MHz frequency band, and a definition is also provided as to what is deemed to constitute interference to television reception (television interference).

In order to determine whether a permanent home is vulnerable to television interference, signal strength is measured using a reference antenna, ten metres above the ground in case it affects the household's television. The measurement is made in the direction where the required television signal is strongest.

Technical conditions alone will not resolve the problem of a risk of television interference. Very stringent technical conditions generally mean that protection against interference is overdimensioned, which may result in inefficient radio use and may also entail unnecessary restrictions on the infrastructure, as the

requirement must be satisfied even when the need for protection is minimal or completely unnecessary.

Radio communications that are particularly important for the free moulding of opinion may not be prevented. A high level of protection would entail very strict technical conditions in the licences for the 800 MHz band. A mandatory undertaking has been imposed in the auction and the combined selection procedure to offer licence holders reasonable flexibility; i.e. technical conditions that enable the efficient use of spectrum, yet without detracting from the protection justified for those receiving terrestrial television. This means that those applying for licences in the 800 MHz band undertake to work together and to remedy television interference. It follows from Chapter 3, Section 11, item 11 of LEK that undertakings made in conjunction with the grant of a licence under Chapter 3, Section 8 of LEK are binding. Licences in the 800 MHz band will therefore be subject to licence conditions that correspond with this undertaking.

The undertaking involves a requirement for licence holders in the 800 MHz band to establish and maintain cooperation to remedy television interference that may arise when using the 800 MHz band (refer to Appendix 1 for a more complete description). PTS considers that a joint organisation established by the licence holders is the most appropriate approach for dealing with television interference quickly and efficiently. As there will be several licence holders in the band, one of the first measures may be to identify the source of the interference; i.e. the location and broadcasting operator. It is also the licence holders that are best placed to be aware of where and how the band will be rolled out and thus have the best potential not only to prevent, but also to remedy television interference. By working together and remedying television interference, the licence holders can guarantee good and adequate protection for those receiving television broadcasts.

Spectrum cap and circle of closely related parties

A wide range of affordable services for consumers presumes long-term and sustainable competition. This means that none of the stakeholders should be able to acquire too great a proportion of either the low or high frequency bands used to provide consumers with mobile telephony and mobile broadband.

A spectrum cap is the largest quantity of spectrum that can be combined with a licence for one and the same bidder in the auction and the combined selection procedure. A spectrum cap thus makes it possible for PTS to ensure that frequency space is assigned to several different stakeholders. According to Section 8 of PTS Code of Statutes – PTSFS 2008:1, a spectrum cap may be set

if it is considered necessary to promote fair competition in the market or to promote efficient use of spectrum, and according to Section 6 of PTS Code of Statutes – PTSFS 2010:xx a spectrum cap must be set.

PTS considers that a spectrum cap of 2×10 MHz should be laid down for the auction and the combined selection procedure. As stated above, the 800 MHz band comprises 2x30 MHz. The spectrum cap that has been chosen ensures that the frequency band will be assigned to at least three different licence holders who are not closely related to each other and that no one individual stakeholder will be able to acquire a dominant share of the 800 MHz band.

To ensure that the spectrum cap achieves the desired effect, the legal persons that are considered to be closely related to each other must be determined. Only one of the undertakings in a circle of closely related parties may participate in the auction and the combined selection procedure. A provision on closely related parties thus prevents circumvention of the spectrum cap laid down by not allowing two or more undertakings controlled by the same interest to participate as bidders.

In light of this aim and the size of the spectrum cap, all undertakings that form part of the same group under Chapter 1, Section 4 of the Annual Accounts Act (1995:1554) are deemed to be closely related. If an undertaking or a group holds at least half of the votes for all shares in another undertaking, such undertaking (and any of its subsidiaries) are considered to be closely related to the owning undertaking and similarly to all undertakings in the owning group. The provision on closely related parties thus comprises both of these parts.

Regulating the circle of closely related parties in this way ensures among other things that jointly owned network undertakings in the mobile telephony and mobile broadband markets are deemed to be closely related to their owners.

Requirements on coverage and rollout

There is currently good broadband coverage in Sweden, but there are households and businesses that do not have access to broadband, as they are located in areas where rollout cannot be achieved on commercial grounds. Viewed over time, the proportion of those who do not have access to broadband will change, but it is unlikely that all households and businesses will have access to broadband within a few years via commercial initiatives.

One of the targets set by the Government in its 'Broadband Strategy for Sweden'⁷ is that all households and businesses should have good opportunities to use electronic public services and other services via broadband. 'Public services and other services' mean, among other things, official information and contacts at public authorities, applying for work and study places, Internet banking, etc. These services are currently largely provided via the Internet and for this reason private individuals and undertakings need access to broadband. As a step towards achieving the objectives of the Broadband Strategy, the Government has directed PTS to propose how to ensure access to broadband in all parts of Sweden by means of frequency assignment.

PTS reported on the assignment in a document entitled *Ökad tillgång till bredband genom frekvenstilldelning* [Increased access to broadband by means of frequency assignment]⁸ and proposes in the report that the 800 MHz band be used to, within rather short timeframes, create access to broadband for those that do not have it. Owing to its good propagation characteristics the 800 MHz band is suitable for covering large areas and is also an attractive band for rolling out high quality mobile broadband. The report proposes that assignment in the 800 MHz band is subject to a requirement on coverage and rollout (coverage requirement).

According to Chapter 3, Section 11, item 3 of LEK, a licence to use radio transmitters may be subject to a condition on coverage and rollout within Sweden. With a view to contributing to the achievement of the Government's objectives in the Broadband Strategy and to minimise the number of households and businesses that do not have access to broadband, PTS has decided to subject the licence for FDD6 to a coverage requirement.

In short, the coverage requirement means the following (refer to Appendix 1 for a more complete description): The licence holder shall cover the permanent homes and fixed places of business that lack broadband and which have been identified by PTS. PTS will only identify households and businesses that have stated that they would like to have coverage. 'Coverage' means firstly access to data communications services at a bit rate of 1 Mbps, or a higher applicable level for functional access to the Internet, secondly that the licence holder's rollout costs are appropriate and cost-effective. The requirement to provide cover is basically limited to a rollout cost corresponding to the licence holder's coverage bid in the combined selection procedure. The lowest coverage bid that can be made is SEK 150m. The maximum coverage bid that a bidder can offer

⁷ Offices, Article no.: N2009/8317/ITP

⁸ PTS-ER-2010:14

is SEK 300m (ceiling amount). The licence holder will thus use at least SEK 150m and at most SEK 300m, plus an adjustment for inflation, to provide coverage through rollout, depending on the size of the bid. The promised coverage shall be provided within certain time frames, and households and businesses will consequently gain access rather quickly to data communications services with the above-mentioned bit rates.

By formulating the coverage requirement in this way, PTS achieves a condition that is changeable over time. The group of homes and places of business that are to receive coverage may be changed in response to society's need for broadband. In addition, the permanent homes and fixed places of business gain access to data communications services where the bit rate complies with the data rate set by the Government for 'functional access to the Internet'.

Information on appeals

An appeal can only be made against this decision in conjunction with an appeal being made against a decision relating to a licence to use radio transmitters.

Göran Marby
Director-General

Beslutet har fattats av generaldirektören Göran Marby / stf generaldirektören Katarina Kämpe. I ärendets slutliga handläggning har även XX och XX deltagit. XX and XX also participated in the final processing of the matter.