



European Radiocommunications Committee (ERC)  
within the European Conference of Postal and Telecommunications Administrations (CEPT)

**LICENCE FEES FOR SATELLITE SERVICES,  
NETWORKS AND TERMINALS IN THE CEPT**

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## EXECUTIVE SUMMARY

### *Purpose of the study*

A number of studies and investigations have shown that fees that have to be paid in the satellite area are very different in the administrations in the CEPT. The amounts differ considerably and more importantly the basis on which the fees are calculated appear to be quite different.

Because of this, the ERC decided to study the satellite fees in more detail, especially the back ground of the fee policy and the basis on which the fees are calculated and to develop conclusions and proposals in this area.

The aim of the Report is to analyse the current fees for satellite systems and services and to develop proposals for improvement where appropriate.

### *What is studied*

The ERC Report studies in principle all licence fees applicable in the satellite sector, Mobile Satellite Services (MSS), Broadcasting Satellite Services (BSS) and Fixed Satellite Services (FSS), but the emphasis lies on the fees for the FSS. For this service five hypothetical, but realistic examples of satellite ground station installations have been developed and administrations were asked to calculate their fees for these earth stations. Thus it was possible to compare the different fees.

### *Outcome*

The outcome of this comparison illustrates that fees are very diverse and very difficult to compare and that there do not seem to be administrations where the fees for all the systems are low or high (with a few exceptions of countries where the fees overall are very reasonable), neither is there one of the five examples for which the fees are high or low in all administrations. Fees for large VSAT networks are the most expensive in absolute terms, but not in all administrations or not even in a majority of CEPT administrations.

When studying the elements which enter into the calculation of the fees, there are many different factors that are taken into account, which may include technical elements, elements related to the type of service, administrative elements and elements related to the size of the system. Furthermore there are one-off fees, yearly or monthly fees charged for administration, spectrum, control and enforcement and, in some cases, for electromagnetic compatibility.

### *Opinion of the satellite industry*

The satellite industry is of the opinion that licensing fees remain too high in most markets. Fees should not exceed the average resource hours required to process an application. In all instances where no licence is required - such as blanket licences - no fee should be imposed. Extremely high fees tend to be prohibitive and make satellite services non-competitive.

## *Conclusions and proposals*

### *Conclusions*

#### **Fees**

A spectrum-related fee is charged in all CEPT administrations using different principles. Some administrations charge an annual fee, which is the same every year while others charge an additional initial administrative fee for issuing of the licence. A number of administrations charge a telecom service licence fee.

#### **Fee calculation**

Administrative fees within CEPT are currently calculated on many different bases.

In addition there are administrations where the administrative fee is not separated from the spectrum-related fee. A number of technical elements – relating to the efficient use of spectrum - are used for the calculation of spectrum related-fees. A few administrations make a distinction between the type of provision, In some isolated cases the type of signals transmitted and therefore the type of service provided, have a bearing on the fee calculation. Furthermore some administrations take into account the size of the undertaking in terms of revenues. Some CEPT members charge in proportion to the coverage. Generally spectrum-related fees are charged annually.

#### **Transparency**

The regulatory regimes applicable to satellite systems within CEPT administrations seem to be lacking in transparency and are complex in nature. The difficulties perceived by operators arise from the variety of licensing regimes and principles, which in turn are reflected in the differences in fee level and of fee calculation across CEPT administrations. The accounting criteria for the fee calculation are so diverse that it would be difficult to find a clear explanation for the varied fees applying to a same system.

### **Fees and market**

The question can be asked whether the fees for the satellite area are of such a high level that they prevent the market from developing. It is of course obvious that the investment costs for launching a satellite system are enormous and that also the costs of the ground infrastructure are relatively high. It can be argued that in the light of these infrastructure costs, the cost of a licence seem to be insignificant in most administrations, although that does not remove the obligation for the fees to be fair and comparable to those of other services. Although it can be argued that for larger stations costs are acceptable at the moment, the trend is towards using smaller terminals for which fees may be too high compared to the investment costs.

### **Effect of fee studies**

Information received from administrations in the course of developing this ERC Report indicates that a number of administrations have started internal investigations on their fees and the criteria for calculation. Resulting from the internal investigations, some administrations have put new procedures in place which have had an impact on the licence fees, thus making more transparent.

### **Proposals**

#### **Transparency**

CEPT member states should be encouraged to take a common approach to satellite fees, which apply to systems that are pan-European by nature.

In order to try and reduce the complexity of fees applying to the satellite area, CEPT should in a first step try to harmonise the type of fees charged. There are currently nearly as many different types of fees charged as administrations across CEPT. It should be possible to charge one fee covering all spectrum elements and one administrative fee at most. A separate registration/service licence fee for the provision of services might be appropriate. It is therefore recommended to reduce the number of fees applying to a system by administrations and to charge fees based on common and transparent principles.

The high degree of complexity related to charging fees results in a certain lack of transparency as to how fees are being determined. Therefore as a second step, CEPT should try to simplify and harmonise the methods used for spectrum-related fee calculation and agree on some common criteria and methods to be used. This should of course be put into perspective with the different methods used to finance the administration and the work done for the licence fee charged.

#### **Justification of fees**

Many administrations may have taken over the fees and tariffs as laid down and applied in the times of monopoly of the national PTT. These administrations should be encouraged to review these fees and tariffs in the light of the national legal principles applying to fees of the administration in general - insofar this has not been done yet. Indeed, some administrations which undertook such reviews, noticed that some of the overtaken fees, charges and tariffs were not in conformity with the national legal principles. It is thus recommended to correct them before challenges in court of these fees and tariffs force the administrations to make these changes.

#### **Price benchmarking**

For administrative cost-based pricing as well as for spectrum incentive pricing, price benchmarking could be a helpful tool. It is useful both to compare prices of comparable services or between administrations. In the case of spectrum pricing benchmarking can be used to help set reference points for unit price factors for different services. In deriving spectrum pricing values, the normal method is to use a least cost alternative to work out what spectrum is worth. The only obvious example alternatives for satellite links are either terrestrial links or international cables. The value of benchmarking is that it can help shortcut this process by using benchmarking to compare between administrations which have been through the processes and to compare between services such as fixed terrestrial links. It also enables administrations to see how their prices compare and to ensure there are no significant distortions.

#### **Fee calculation models**

Taking into account various charging methods and considering the need for transparency, cost-based charging with differentiation or incentive pricing both seem to be a suitable options.

It seems reasonable that in the case of both charging systems those users that use the most spectrum pay in principle the highest fees. Although in case of incentive pricing other criteria might play a role, such as congestion in certain areas or certain frequency bands, which might level this principle out.

When comparing the different calculation models used in the administrations and the principles they are based on, it should be possible to arrive at certain conclusions with regard to the most efficient and transparent method of licensing of for instance VSATs, Permanent Earth Stations or SNGs. For instance that a licence based on a network is more efficient than a licence per

terminal or that calculating the licence fee on the bandwidth used is more efficient than a fee based on the transmitter power. Also recommendations could be made on the number of elements that are taken into account to set a fee. The same (although this is more complicated) could be done in the case of incentive pricing systems.

This ERC Report is just a first step and these issues have not been looked at in great detail, but there seems to be an apparent unfairness with regard to the transparency, but this is not exclusively the case for satellite services. Therefore at a later stage a study could be made of the elements to be contained in a fee, generically and per service.

**Restoration services**

Satellite facilities are in some cases used as a back-up service for terrestrial services. In this case the satellite services, when providing restoration services, operate on frequencies, which are on a day-to-day basis in use for other licensed operations. The satellite operators argue that since licences are already issued once for the use of the frequencies, be it for other services, it is therefore reasonable that the licences for the restoration services could be issued free of costs or at administrative costs. This topic is not solely a matter of fees but further study is needed on how these other operations are licensed and to whom the licences are issued. It is therefore proposed that these issues are resolved first, before the appropriate fees are looked at.

## LICENCE FEES FOR SATELLITE SERVICES, NETWORKS AND TERMINALS IN THE CEPT (WAYS AND BACKGROUND FOR CALCULATION)

### 1 INTRODUCTION

A number of studies and investigations have shown that fees that have to be paid in the satellite area are very different in the administrations in the CEPT<sup>1</sup>. The amounts differ considerably and more importantly the basis on which the fees are calculated appear to be quite different. Each administration has its own method and procedures of calculating licence fees and charges. No detailed analysis of licence fees and charges in view of comparison has yet been undertaken by CEPT administrations. In addition to these issues, the satellite operators argue that the basis on which fees and charges are calculated is not easily understood in some administrations and thus not transparent and therefore not user friendly. Also the level of the fees is considered by the satellite operators to be disproportionately high in some administrations which might hinder the development of new services. The operators have suggested that these issues should be studied further and that attempts to come to some form of a common approach should be undertaken.

Because of the outcome of the above mentioned studies and comments, the ERC decided to study the satellite fees in more detail, especially the back ground of the fee policy and the basis on which the fees are calculated and to develop conclusions and proposals in this area.

Inevitably this Report will address licensing matters in respect of CEPT member countries, some of whom also fall within the jurisdiction of the EU.

Within the EU, Licensing Directive (97/13/EC) currently regulates the overall framework for licensing and charging of telecommunication networks, including satellite and frequency based services. The Committee established on the basis of this Directive (Licensing Committee) has discussed the differences in licensing procedures and fees and charges in the EU Member States and has concluded that it is worthwhile to collect further information and promote a common approach in these areas. This does not only concern licences in the satellite area but applies to licensing and charging of telecommunications in general. With regard to fees and administrative costs the 1999 Communications Review of the European Commission<sup>2</sup> and the draft Directives based on this review as published in July 2000,<sup>3</sup> concluded that the national fee levels are not transparent and proposed among other things to develop guidelines or recommendations on fee levels and administrative procedures.

The aim of the Report is to analyse the current fees for satellite systems and services and to develop proposals for improvement where appropriate.

### 2 SCOPE OF THE ERC REPORT

The ERC Report will in principle study all licence fees applicable in the satellite sector, Mobile Satellite Services (MSS), Broadcasting Satellite Services (BSS) and Fixed Satellite Services (FSS), but the emphasis will lie on the fees for the FSS. For this service five hypothetical, but realistic examples of satellite ground station installations have been developed and administrations were asked to calculate their fees for these earth stations. Thus it was possible to compare the different fees.

### 3 EU DEVELOPMENTS: REQUIREMENTS OF THE LICENSING DIRECTIVE AND THE DRAFT NEW DIRECTIVES

The Licensing Directive provides that fees imposed, as part of the authorisation procedure (general authorisation or individual licence), must only seek to cover the administrative costs incurred in the issue, management, control and enforcement of the authorisation or licence<sup>4</sup>.

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<sup>1</sup> October 1999 - Report on "Market access for satellite communications within the European Union" by Satellite Action Plan (SAP) Regulatory Working Group (RWG), ERO: VSAT and SNG August 1995. ETO: The licensing of satellite networks and services February 1998.

<sup>2</sup> Towards a new framework for Electronic Communications infrastructure and associated services COM (1999)539.

<sup>3</sup> In particular the Proposal for a directive of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services and the Proposal for a directive of the European Parliament and of the Council on the authorisation of electronic communications networks and services.

<sup>4</sup> Art. 6 and Art. 11(1) of the Licensing Directive.

Where scarce resources are used, such as satellite networks that use spectrum, Member States may impose charges “which reflect the need to ensure the optimal use of these resources”<sup>5</sup>. Those charges shall not be discriminatory and may also take into account the need to foster the development of innovative services and competition.

The Directive further imposes that fees should be published in an appropriate and sufficiently detailed manner, so as to be readily accessible.

The 1999 Communications Review<sup>6</sup> addresses the intention to review the Directive and to limit the possibilities for the issuing of individual licences. With regard to fees the review document mentions the current wide variation of fees and that the fact that fees should reflect administrative costs has reduced the transparency of national fee levels, because of the generality of this principle. It is therefore proposed to restrict the principle to justified and relevant administrative costs only, with scope for guidelines and or recommendations on fee levels and administrative procedures based on best practice and the encouragement of benchmarking.

The Directives, based on the Review, the Electronic Communications Directives, including the Framework and Authorisation Directives, continue to permit pricing for use of spectrum on the same lines as the current Licensing Directive, but will require more transparency and objective fairness to be demonstrated.

A key principle proposed to EU Member States is that a general authorisation for a type of service should apply wherever possible, and this could cover many satellite terminals operating on harmonised spectrum. General authorisations should have a particular relevance to many of the satellite services covered by the SPCS initiative. Member States may charge an overall administration fee. This may be limited to larger undertakings (proportionate to turnover) to help cover costs, but it is expected that small companies (turnover of less than EUR 10 million is suggested) would be exempt from any fee. Where radio spectrum is in demand, the draft Directive proposes that the services should have a specific authorisation .

Where a specific spectrum authorisation is still needed, Member States would be free to authorise it by auction award, or other comparative selection procedure and may charge by spectrum administrative pricing for specific authorisations to reflect the need to ensure the optimal use of these resources, provided such fees are transparent, objective and proportionate. They may also be used to develop innovation and competition.

The Telecommunications Council in April and June 2001 reached common political agreement on these aspects of the Directives which now have completed their Parliamentary stages. It is likely they will come into effect in 2003. They will apply immediately to all new applications and within a short period to existing authorisations.

#### **4 EARLIER STUDIES ON SATELLITE FEES IN EUROPE**

The ERO VSAT/SNG study from 1995<sup>7</sup> contains an overview of how the VSAT and SNG services and networks are licensed in the CEPT administrations and an overview of the fees that have to be paid. The study concludes that the licence regimes differ to a large extent in the different administrations and that the same applies to the fees.

The ETO study of 1998<sup>8</sup> takes the matters further by calculating fees for 5 theoretical VSAT systems in 9 administrations. The conclusions were that the variations between the fees asked in different administrations were too large. When comparing only initial fees and comparing those for simple and complicated systems, there turned out to be in some administrations very little difference in fee between simple and complicated systems, which led to the conclusion that the initial fees are not based on administrative costs and do not take the diversity of systems into account. The annual fees differ also greatly between administrations but not so much between systems and are only in a few cases based on frequency band width. It is questionable whether the fees are in all cases compliant with the Licensing Directive.

The final conclusion with regard to fees and charges of the study is that further work has to be done in this area.

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<sup>5</sup> Art. 11(2) of the Licensing Directive.

<sup>6</sup> Towards a new framework for Electronic Communications infrastructure and associated services COM(1999)539.

<sup>7</sup> Study by ERO performed under contract for the EC, “VSAT and SNG”, August 1995.

<sup>8</sup> Study by ETO performed under contract for the EC, “The Licensing of Satellite Networks and Services”, work order 48315, February 1998.

The report on Market Access for satellite communications within the EU from the SAP RWG<sup>9</sup>, also concludes that a greater degree of harmonisation of the fees is necessary. The report advocates that fees should be non-discriminatory and that also in the case of use of frequencies cost based fees should be asked. Further a plea is made for more transparency and non-discrimination with other services.

## 5 REGULATORY SITUATION WITH REGARD TO THE SATELLITE SERVICES

Even though satellite services are provided in all CEPT countries and their market share has grown over the last decade, market access for satellite service providers is still being impeded by the regulatory diversity applying to satellite services, from the various types of authorisations required to the level of fees levied in different administrations.

Satellite operators depend greatly on harmonised spectrum allocations, as their services are generally being provided on a pan-European basis. Authorisations and spectrum allocations in each country in the area covered are therefore a prerequisite for the provision of satellite services. Regulatory regimes for satellite services should preferably be harmonised to a certain level and fees need to be at fair and reasonable levels if CEPT members want to encourage the development of the satellite sector.

The regulatory situation for satellite operators may vary considerably depending on the type of satellite services provided in each country. This chapter gives an overview of the regulatory situation and its development, for the various types of services, i.e. mobile, broadcast and fixed satellite services.

### 5.1 Mobile Satellite Services

In the offering of MSS services different entities are involved and therefore different licence procedures and fees can be distinguished. In Europe no licences are issued to the space segment operator. The Satellite Network Operators, the Service Provider and the Subscriber with his terminal might be subject to a licensing regime.

The Satellite Network Operator will need an individual licence in every country where he operates a gateway station. This is necessary because the frequencies used by such large earth stations need frequency co-ordination and protection.

In administrations where the Satellite Network Operator does not operate a gateway station the situation is different. Some administrations will ask a licence for the use of the frequencies and/or the provision of services, others do not require licences and fees for this or have simple declaration procedures. The situation with regard to Service Providers, not having own infrastructure is similar to that of Satellite Network Operators. Some administrations require licences and fees, others do not.

Changes anticipated under the draft EU Authorisation Directive are that individual licences for providing services (as far as introduced now) could disappear if Member States consider a general authorisation under the new package of Directives to be appropriate. This does not imply however that for a general licence or a registration system no fee could be asked. Alternatively, if Member States can demonstrate that for spectrum management reasons this is necessary (e.g. to prevent harmful interference or if spectrum is scarce) licences can continue to be issued, but they must be fairly, transparently and proportionately applied. This will at least imply that an authorisation solely for the provision of services will disappear.

Mobile satellite terminals operate under the control of a network and therefore do not require any frequency co-ordination on an individual basis by the administrations. EU Member States may restrict putting new networks or terminals into service only for reasons related to the effective and appropriate use of the radio spectrum, avoidance of harmful interference or matters relating to public health<sup>10</sup>. In the case of MSS terminals there seems to be no reason to invoke these provisions, since the fact that the terminals work under the control of a network means that the risk of interference is very limited and that measures can easily be taken in a seldom case of problems.

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<sup>9</sup> Report on "Market access for satellite communications within the European Union" by Satellite Action Plan (SAP) Regulatory Working Group (RWG), October 1999.

[<sup>10</sup> See Article 7 of the R&TTE directive 99/5].

Besides this, ERC/REC 01-07 states that equipment should be free of licence if conforming to the following principles:

- a) the radio equipment fulfils the technical requirements of the CEPT administration in question;
- b) the radio equipment is exactly defined;
- c) individual frequency assignment is not needed;
- d) there is a high degree of certainty that the frequency(ies) in question will remain fixed for a long period;
- e) there is no need to establish individual provisions for each user;
- f) there is no need for the administration to register individual users and or radio equipment;
- g) there is little risk of harmful interference being caused."

Based on this Recommendation the ERC has developed a number of ERC Decisions where the exemption of an individual licence is laid down for certain satellite terminals. When administrations have implemented these, together with the complementary free circulation Decisions, terminals should be able to be used everywhere in the CEPT without paying fees.

Another factor is that some administrations require custom duties to be paid when a satellite terminal is entering the country. In some cases these fees are paid back when the terminal leaves the country again, but in other cases this is not done. Those administrations that are parties to the Istanbul Convention, the "Convention on temporary admission", done at Istanbul, 26 June 1990, have agreed to consider terminals as personal effects<sup>11</sup> and will therefore not require such duties.

Some administrations are of the opinion that in the case of the MSS sector costs are incurred by administrations (for instance, carrying out coordination procedures and attending international meetings), but often no income may be recovered via licence fees. This was considered inequitable in relation to other users. This situation occurs in administrations, which do not require a licence from satellite operators who do not operate a gateway station in the country concerned.

This is balanced by general views that keeping the MSS frequencies free without charge or at reasonable cost leads to global social and economic benefits.

## **5.2 Broadcasting Satellite Service**

Broadcasting satellite services are planned at international level through the ITU.

ITU Radio Regulations include down-link and feeder-link plans for the broadcasting satellite services in the 12.14 and 17 GHz bands. These plans were established with a view to facilitating equitable access to the geo-stationary satellite orbit (GSO) for all administrations. Regulatory procedures associated with these plans refer to plan implementation and modification as well as to sharing with respect to terrestrial and other space services in the planned frequency bands. Several technical annexes exist containing sharing criteria, calculation methods and technical data related to the plans.

The so-called "old" Plan, which was replaced in 2000, has not been successfully implemented in the past and operators have often been operating in the FSS bands in order to avoid the heavy and lengthy co-ordination procedures attached to the BSS Plan.

The re-planning of the BSS Plan became a major achievement of the WRC-2000. This new BSS Plan gives the possibility for multinational assignments by grouping relevant administrations together at the same orbital position. Furthermore it gives each country ten broadcasting channels instead of previously five. Future additional BSS use will be made possible as a result of the adoption of relaxed sharing criteria, the relaxation of the orbital limitations and more flexible procedures. This means that both existing and new broadcasting systems will have access to spectrum, which is an EU policy objective. The Plan also enables administrations having the same language to pool resources, because they have been assigned the same orbital position.

The overall community objective of ensuring a fair and efficient distribution of resources (orbital positions and frequency channels) needed for satellite broadcasting, including cross-border systems within Europe has been met in principle. Nevertheless it can be argued that freezing spectrum for a given country who may never use it is anything but efficient. It remains to be seen if the new Plan will be implemented successfully.

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<sup>11</sup> All articles, new or used, which a traveler may reasonably require for his or her personal use during the journey, taking into account all the circumstances of the journey, but excluding any goods imported for commercial purposes.

At national level BSS may be licensed like other types of satellite networks (see under “MSS”) but broadcasting content may require separate licensing procedures with –in some cases– a different regulatory authority. In general receive only terminals have been licence free in most administrations<sup>12</sup>.

There are plans for introducing S-DAB services in CEPT administrations within the frequency band 1467-1492 MHz. The provisions of ITU RR S5.345<sup>13</sup> apply to the use of these bands by the BSS(S) ; such use is only in the Space-to-Earth direction i.e. downlink only. BSS(S) terminals range from fixed, semi-fixed, portable, vehicular and hand-held. BSS(S) terminal operation in the band 1467-1492 MHz are inherently receive-only i.e. for receiving digital radio programming. There is no associated transmissions in this band. The digital radio programmes transmitted by the BSS(S) satellites at 1.4 GHz will in general be uplinked from one or more BSS feederlink uplink stations operating in bands above 3 GHz and located in one or more administrations.

FSS / BSS terminals receiving TV etc programmes in the Ku-band in Europe (e.g. Ku-band BSS TVROs) are exempt from licensing fees and licence fees are usually only applied to the uplink FSS or BSS feederlink (also in FSS bands) earth stations.

**ERC/DEC(99)26** on Exemption from Individual Licensing of Receive Only Earth Stations (ROES) is only applicable to receivers operating in certain specific frequency bands and therefore BSS(S) terminals in the 1.5 GHz band are not covered by this Decision. There seems good reason to develop a similar licence exemption Decision as ERC/DEC(99)26, covering BSS(S) receivers.

### 5.3 Fixed Satellite Services

As far as Fixed Satellite Services are concerned, the provision of the service itself, the network and/or the earth stations may be subject to distinct licensing procedures.

In some administrations FSS are subject to the same service licensing regime as similar services provided over a terrestrial network. For example satellite services fall within a class licence covering all telecommunications services in **Denmark**, while in **The Netherlands**, all telecommunications services including satellite services are subject to registration. In both cases, the use of frequencies makes it necessary to apply for separate frequency licences. In the **UK**, a specific satellite class licence covers a number of satellite services and in those cases only the use of frequencies for transmission requires regulatory action.

In other administrations the provision of a network may be the criterion on which the type of licence needed will be determined. **France** is one illustration where a distinction is being made between the provision of public and private networks. Therefore the set-up and operation of a satellite network for providing services to the public is subject to an individual licence like a terrestrial network would be. If the satellite network is for use by a closed user group, then a lighter procedure applies. In **Germany** on the other hand, a specific licence category (Licence Class 2) exists for satellite networks provision. In both cases the network licence does not preclude the need to apply for frequencies.

The above distinctions as to how FSS is being categorised and licensed may have consequences on the fees to be paid.

In addition to services and/or network licences, the spectrum needed for operating earth stations is subject to an individual licence across most CEPT administrations, except for terminals that have been exempted following the implementation of the relevant ERC Decisions (e.g. **ERC/DEC(00)03, 04 and 05** on exemption of SITs<sup>14</sup>, SUTs<sup>15</sup> and VSATs<sup>16</sup> respectively, within certain bands and operating below certain power levels, or **ERC/DEC(99)26** on exemption of ROES<sup>17</sup>). Different approaches exist. In some administrations, an individual licence is required for each earth station and in others a network licence includes the earth stations.

Most EU Member States do not charge a specific fee for down-links of two-way earth stations, even though these are licensed and protected. For the down-link side, since no signal is being emitted from where the terminal is based, fees are zero or at the utmost limited to administrative charges for necessary co-ordination in BSS/FSS bands. A fee has to be paid in the country from where the received signals are being transmitted.

<sup>12</sup> **ERC/DEC(99)26** on Exemption from Individual Licensing of Receive Only Earth Stations (ROES). Date: Oslo 1999

<sup>13</sup> ITU RR S5.345: Use of the band 1 452 – 1 525 MHz by the broadcasting-satellite service and by the broadcasting service, is limited to digital audio broadcasting and is subject to the provisions of Resolution 528 (WARC-92).

<sup>14</sup> SIT: Satellite Interactive Terminal.

<sup>15</sup> SUT: Satellite User Terminal.

<sup>16</sup> VSAT: Very Small Aperture Terminal.

<sup>17</sup> ROES: Receive Only Earth Station.

#### **5.4 CEPT measures**

At CEPT level a number of measures have been introduced, in an effort to reach more harmonisation and ease market access for satellite operators:

- ERC Decisions on the designation or the use of certain frequency bands
- ERC Decisions on harmonisation of licensing
- ERC Decisions on free circulation and use
- ECTRA Decision on the reduced set of licensing conditions in the area of S-PCS.

These measures can only be fully effective and truly enable market access when fees have also become more transparent and proportionate.

In fact the new EU regulatory package is entirely consistent with these measures. It should lead to the widespread use of general authorisations for service provision and individual licensing should only be used when strictly necessary at proportionate cost.

#### **5.5 Restoration services**

Satellite facilities are in some cases used as a back-up service for terrestrial services. In this case the satellite services, when providing restoration services, operate on frequencies, which are on a day-to-day basis in use for other licensed operations. The satellite operators argue that since licences are already issued once for the use of the frequencies, be it for other services it is therefore reasonable that the licences for the restoration services could be issued free of costs or at administrative costs.

### **6 FEES IN RELATION TO MARKET DEMAND**

An element to take into account when investigating the relation between fees and market demand could be a comparison between the investment costs in earth stations and the licence fees. The investment costs of a 3.7 metre earth station are about 10.000 €, those of a 7 metre earth station are approximately 550.000 € while those of a 9 metre earth station are around 1.2 million €.

It would be interesting to investigate whether the licence fees are a barrier for the introduction and development of satellite services. As far as known no studies have been undertaken so far to measure the penetration of satellite services in relation to the level of the fees in a particular country. However in most cases such an investigation does not seem to be very useful for satellite services since the systems are world-wide or regional and overall costs are very high. One could imagine though that in case of the placing of a hub station in a given country, placing in another country could be considered if licensing procedures are too cumbersome and fees too high. The same would apply to the use of an SNG MES in a certain country.

### **7 OPTIONS FOR PRICING AND THE POSSIBLE IMPACT ON SATELLITE FEES**

Different methods that can be used for setting fees and financing the administration have been described in two previous ERC Reports<sup>18</sup>. For the purpose of this report the five most notable methods are presented here:

- no balancing of costs/income
- cost based pricing without differentiation (simple fee)
- cost based pricing with differentiation
- administrative incentive pricing (spectrum pricing) and
- auctioning.

It has to be noted though that the last mentioned method (auctions) is a method to assign spectrum to an entity for a specified duration and not a fee calculation method.

In this chapter these five options will be looked at in relation to the satellite services.

What are the consequences and possibilities for satellite when using these different options?

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<sup>18</sup> ERC Report 53: on the introduction of economic criteria in spectrum management and the principles of fees and charges in the CEPT and ERC Report 76: the role of spectrum pricing as a means of supporting spectrum management.

**No balancing of costs/income**

In this system a portion of the state's annual budget is allocated to finance spectrum management and fees are charged to the licensee, which do not necessarily have to cover the costs of the frequency management organisation. The level of funding provided will depend on the priorities of the national government and its total tax resources.

In those countries the taxpayers partly pay for spectrum management, even if they get no benefit from the use of radio. This is considered unfair since radio users are then being subsidised and are not paying appropriately for the costs of administering the spectrum they use. Although the system of not charging cost based might be administratively simple, it is fairer to charge radio users on a cost based basis for the issue of a licence.

How such a system of non-balancing of costs and income works out for the satellite industry is difficult to say. It can be argued that such a system, since fees are subsidised, leads to relatively low fees.

**Cost based pricing without differentiation (simple fee)**

In a pure cost based pricing system, it is necessary to exactly balance costs with fees for every type of licence. This could mean (although maybe a bit theoretical) that the fee for a very big system using a lot of frequency spectrum is the same as for a small user using little spectrum. The parameters that are taken into account are the costs made for the issuing of the licence (the direct costs) and in certain administrations also a part of the overhead (the indirect costs), as well as the yearly costs for management, monitoring, control and enforcement.

In the case of for instance a VSAT network licence, pure cost based pricing will mean that there will not be a difference made between small and large systems as such. An average fee, based on an average workload, will be asked for all networks. As the ETO study: "The licensing of Satellite networks and services"<sup>19</sup> concluded, it seems that in many European countries the diversity of systems is not taken into account in the FSS area when setting fees, which puts a burden on the smaller user and effectively gives the bigger users a discount.

**Cost based pricing with differentiation**

To overcome the unfairness of a pure cost based system administrations have adopted some degree of differential pricing. This allows higher fees for more use of frequencies or more services rendered. This is usually regarded by users to be fairer for more sophisticated types of licences. However in the case of VSAT networks, the costs per terminal are higher for small systems in most administrations and in other administrations there is the same fee per terminal up to a certain maximum number, after which further terminals are free of charge. This gives differentiation, but in the opposite way than usual, since this leads to a fee reduction for larger systems.

**Administrative incentive pricing/ Spectrum pricing**

Administrative incentive pricing provides a means by which licences can be priced to reflect the value of the spectrum used as well as the amount of spectrum used. Where spectrum is in heavy demand, prices may be set higher. This will deter hoarding and encourage efficient usage. Where spectrum is under-utilised, prices may be lowered to encourage more use. Prices may also be reduced to encourage efficiency or raised to reflect inefficient use.

The approach taken in most administrations around the world which have considered administrative incentive pricing, is to define a marginal or least cost alternatives values to determine the value of spectrum as a starting point towards formulating some sort of spectrum building block (e.g. a spectrum tariff unit). The building block then needs to be applied to each relevant spectrum product. Such a spectrum tariff unit could for instance be an amount per MHz per defined geographical area (for instance square kilometre or a cell in a grid). Further the congestion of the band in which the operation takes place will be taken into account as a factor which indicates whether the spectrum is in high demand.

The UK has introduced administrative incentive pricing for Permanent Earth Stations from October 2001. In this regime the licence fees of the Stations will initially reflect the value of the spectrum accessed by their transmissions and will later also include an element attributed to the receive side of the satellite earth stations that need to be taken into account when planning these bands. This new regime will in general lead to lower prices than under the present pricing regime which was cost based. This reflects that the spectrum tariff used for satellite is derived from the same basis as terrestrial fixed links, which in some cases share the same bands. As the spectrum denied to a fixed link by an earth station can be quite small (and in many cases much less than a fixed link denies a satellite) the fee can become proportionately lower. It also effectively combines all the transmissions from a single site such that additional earth

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<sup>19</sup> Study finalised on the 2<sup>nd</sup> of February 1998 by ETO on behalf of ECTRA for the Commission of the European Union.

stations on the same site are charged proportionately less than the same earth station at different sites. This reflects that less spectrum is used overall.

### **Auctioning**

This instrument for allocating spectrum is generally used when a frequency band becomes available for a certain service at one specific moment in time. Another condition for holding an auction is that there are more applicants than licences to be given out. In the case of most satellite services in Europe the number of licences is relatively large and they are granted on an ad-hoc basis. This results in the fact that auctions are currently not a suitable instrument for the issuing of satellite licences and the traditional method of first come first served is the most suitable. However, the situation in future could change, and the use of auctions could well be appropriate for future new systems.

Auctions may also be difficult to implement for services which are global or regional in nature, since it could lead to different frequency assignments in different administrations

In other parts of the world, where a footprint of a satellite covers only one country, such as for instance in the US, auctions are a possibility and have taken place. In 1996, for instance, auctions were held for Direct Broadcasting Satellite (DBS) licences.

## **8 SATELLITE FEES IN CEPT ADMINISTRATIONS**

An overview of satellite fees is given for some typical examples to facilitate the analysis of comparable data, as it would be very difficult to compare national fee levels and systems only on the basis of regulation and calculation methods.

In the administrations presented below, the fees have therefore been computed for 5 distinct examples as follows: (full details are available in *Annex II -Questionnaire*).

System A: Permanent Earth Station – 19.2 kHz bandwidth (voice/ low data rate)

System B: Permanent Earth Station – 20 MHz bandwidth (transatlantic traffic)

System C: Permanent Earth Station – variable bandwidth, 9 to 34 MHz (broadcasting, e.g. BskyB, Astra)

System D: Transportable Earth Station – 64 kHz bandwidth (SNG)

System E: VSAT – 150 kHz bandwidth with 100 stations.

An overview of the fee system in place and a summary of the results of the survey dealing with the above examples is given for a number of administrations.

### **8.1 Country overview**

#### **Austria**

In Austria three different types of fees are charged for a satellite system:

- a service licence fee (not applicable to the provision of services via satellite)
- a one-off frequency assignment fee
- a frequency utilisation fee.

The frequency assignment fee is meant to cover the administrative cost of issuing the licence. For frequency assignment and frequency utilisation in the MSS, no fees are collected since a general licence applies for MSS terminals. For FSS, a fee charged per earth-station is applicable which depends on the need for co-ordination.

A frequency utilisation fee is charged per month and per earth station whereby the transmitter output power and the number of transmitters are the basis for calculation.

For the five examples, the fees vary from **1.406 €** (Systems A and B without co-ordination) to **19.964 €** (System E with co-ordination) for the first year of operation.

### **Bulgaria**

For Satellite Operators no space segment fee is being charged. There is no monopoly for VSAT networks. Licences have been issued to different operators since 1999. The license procedures and fees are published on the NRA's website.

The State Telecommunications Commission charges an initial one-off fee which is higher for individual licences than for general authorisations, and an annual fee for the use of scarce resources - radio frequency spectrum. This fee varies depending on the bandwidth used and, for FSS networks, on the type of signals transmitted. With smaller or larger bands the fee is proportional to the band used, but can not be less than 20% of the fee for 1 MHz.

Furthermore an annual fee for monitoring and control based on a percentage of the annual turnover for the licensed activities is being charged.

Fees for the five examples range from **145 €** (System D) to **6450 €** (system C)

### **Croatia**

For Permanent Earth Stations (PESs) yearly fees are charged. If a PES is in use less than 24 hours a day the licence fee is halved.

There is no specific fee for Transportable Earth Stations (TES) and the yearly fee for VSAT applies. For SNG used only for sound transmission the fee is lower.

Fees for VSAT, charged on a yearly basis, depend on the data/bit rate and on the number of stations.

For the five examples, the fees for Croatia range from **1.040 €** (System D) to **104.000 €** (System E)

### **Czech Republic**

Fees are set in accordance with the Act on Telecommunication No. 151/2000 (Administrative Fees) and the Government Order No. 181/2000 (Spectrum Fees).

For VSATs and PES a one-off administrative fee is being charged as well as an annual fee for the use of one assigned frequency channel. The latter is based on the amount of spectrum to be used. This annual fee can be divided according to the number of months when the equipment is in use.

A fee of **90 €** is charged for short-term licences (not more than 14 days) for SNG TV transmission on one channel.

Fees for the five examples are: **390 €** (System A, D and E), **1590 €** (System B), **765 €** and **2640 €** (System C).

### **Denmark**

Satellite fees in Denmark reflect the cost of spectrum use, which in turn reflects the exclusive or shared use and bandwidth used. The fees also take account of the cost of administration and other services provided by NTA to the telecom sector. Even though some political considerations enter in the equation, as fees are approved by Parliament, fees which may increase the price of services would be inconsistent with the Danish telecommunications policy. In essence, fees are therefore calculated on a cost-based basis with differentiation based on different models for certain services.

Fees are transparent and straightforward. They consist of a yearly, low administration fee for issuing the licence, plus a low, unique spectrum fee per terminal, and a higher fee depending on the use of frequencies for a gateway.

For the five examples defined in the survey, fees in Denmark range from **26 €** (for system A) to **1508 €** (System C) while no fee is being charged for system E.

**Estonia**

Fees are charged for the use of spectrum on a yearly basis. In the first year a fee for primary technical inspection is added. A separate one-off registration fee is charged for service licences. The yearly fee for the use of spectrum for fixed earth stations is charged per station. It varies depending on the kind of frequency band the station uses. For transportable earth stations fees are **77 €**. Inmarsat A, Inmarsat B, Inmarsat C, Inmarsat M, Inmarsat M4, mini-M phone, EMS-SAT, EMS-PRODAT are exempted from licence and there is no fee if they are using frequency band 1.5/1.6 GHz. VSAT terminals are exempted from licence and there is no fee if they comply with the following: use 11/12/14 GHz frequency band, maximum transmitted power 2 W, maximum e.i.r.p 50 dBW and maximum antenna diameter 3.8 meters.

The fees depend on the frequency band the terminals use and vary from **77 € (System D)** to **38-115 € (System A)**, **460-1725 € (System B)**, **613-1725 € (System C)**;

**Finland**

In Finland fees differ depending on whether there is a need for co-ordination or not. For co-ordinated earth stations fees are higher than for uncoordinated earth stations, no matter the frequency band, the bandwidth used or the fact that it is transportable or fixed.

VSAT terminals as defined in ERC DEC(00)05 are licence exempt. For VSAT which technical characteristics do not comply with the above Decision, a fee for uncoordinated earth station is being charged, for each station.

Fees range from **66 € (System B and D)** to **6.600 €** for System E.

**France**

In France fees and charges depend on the kind of service you provide: a distinction is also made between networks open to the public and private networks.

For SNG which are considered private networks no fee for issuing the 5-year licence is being charged. Protection is being given and site clearance every time the terminal is used is not necessary.

For a VSAT network, fees for the management of frequencies are charged on a yearly basis. For bi-directional networks as opposed to unilateral networks an additional fee per station is added.

In the examples for France, fees vary from **no fee** for System B and D to **9.124 €** for System E.

**Germany**

Fees in Germany are based on six different underlying legal instruments and are calculated using the regulator's cost accounting data.

In detail, a satellite system will be charged as follows:

- one-off fee for the assigned frequency
- one-off fee and yearly frequency fee per piece of transmitting equipment, which varies depending on the band
- one-off licence fee for the service licence for operating a satellite network or a composite licence for a satellite/mobile network for public services (not including the use of spectrum)
- a fee per piece of equipment related to electromagnetic compatibility.

For the five examples mentioned early, fees in Germany vary as follows:

- 1<sup>st</sup> year fee: from **38 € (System B, no co-ordination)** to **3800 € (System E)**
- yearly fee: from **23 € (System B, no co-ordination)** to **2300 € (System E)**.

To that a one-off licence fee of either **7.669 € (satellite licence)** or **15.339 € (composite licence)** should be added.

## Hungary

In Hungary, the provision of large aperture earth stations for FSS, MSS or BSS does not require the payment of a frequency reservation fee.

For the service provision, a monthly frequency usage fee is defined per kHz, with different rates depending on the frequency band used. The per kHz fee decreases for systems in higher frequency bands (from highest for systems below 10 GHz to lowest for systems above 15.4 GHz.).

An additional frequency usage fee is levied per piece of terminal equipment. For FSS licensed for earth-to-space, a monthly fee is charged. For VSATs it is a 10<sup>th</sup> of the SNG monthly fee. For Land and Marine MSS the fee is a quarter of the VSAT fee.

For the five examples fees in Hungary range from **0.44 € (System A) to 4651 € (System E)**

## Ireland

Satellite fees in Ireland are based on bandwidth and power.

An earth station is only licensed to operate towards a single space station, for operating towards several space stations several licences will be needed and therefore several fees charged.

Temporary licences mean reduced fees.

For FSS earth stations in specific bands (12.5-12.75 GHz and 14.0-14.25 GHz) there is a fee per station for up to 10 stations which is divided by four for each additional earth station above 10.

For FSS earth stations in other bands above 3 GHz operating a single space station, a fee upon issue and on each renewal is levied. That fee is based on:

- the frequency band the station is licensed for
- the bandwidth of spectrum used
- the output power of the station.

If such station is also licensed for use as a receiving FSS earth station an additional fee is being charged. There are nine different fee ranges defined in the legislation which all depend on the spectrum and output power.

For FSS earth stations operating to a single space station, up to eleven months, the above fees are computed in proportion to the duration of the licence.

The fees for the five examples range from **100 € (System B and D) to 4.500 € (System C)**.

## Italy

In Italy the following fees apply:

- One-off communications service licence fee; this fee applies to all satellite systems with the exception of system E and is paid one-off for a duration of nine years, covering administrative expenses.
- One-off network service licence fee paid for nine years, to cover administrative expenses including international frequency co-ordination; this fee is the same for all systems.
- Control and enforcement fee charged yearly; the fee in the first year, which is clearly defined and may vary depending on the system, differs from the fee for the subsequent 8 years which is defined on a case-by-case basis, depending on the need seen by the regulator for inspection.
- Yearly fee for spectrum usage
- Yearly fee per station.

Furthermore for SNG a higher fee applies for an undetermined number of events than to single events licences.

The fees calculated in this study range from:

- 1<sup>st</sup> year: **10.000 € (System A, B & C) to 21.400 € (System E)**
- yearly: **1.000 to 15.000 € (System D and E)**.

**Latvia**

One off fees are being charged for the following elements:

- type approval
- electromagnetic compliance investigation which include frequency co-ordination, per frequency channel.
- import licence
- registration.

A yearly spectrum fee also applies per terminal. In case a large number of terminals is involved the fee may be negotiated.

The fees calculated for the five examples range from:

- first year: **1.870 €** (System **A** and **D**) to **276.931 €** (System **E**)
- thereafter yearly: **1.020 €** (System **A** and **D**) to 276.846 (System **E**).

**The Netherlands**

The following fees apply:

- one-off fee for issuing the licence
- one-off fee in case of co-ordination
- yearly frequency fee depending on the bandwidth (for variable bandwidth the highest possible bandwidth is being used).

For SNG a one-off as well as an annual fee has to be paid per station.

Earth stations complying with ERC Dec (00)03, 04 and 05 are licence exempt and therefore free of charge.

Since 15 July 2001 VSATs, SITs and SUTs are exempted from licensing if the EIRP is less than or equal to 50 dBW. However there are some restrictions concerning the frequency band, the size of the dish and the location of the station.

For the five examples calculated fees are as follows:

- 1<sup>st</sup> year: **795 €** (System **D**) to **2.341 €** (System **E**)
- yearly: **18 €** (System **A**) to **1.800 €** (System **E**).

**Norway**

Like in Denmark fees are cost-based with differentiation based on certain models for different radio services. They are meant to cover administrative costs for issuing, managing, controlling and enforcing the licence, taking account of overhead costs.

There is a standardised fee type which depend on the number of stations and frequency band/bandwidth used. Another type of fees is based on individual decision. This type is normally used for larger companies and is associated with rights and duties of such companies. These fees are like other fees cost-oriented.

Satellite systems are charged as follows:

- yearly fee independent of co-ordination issues, but dependent on the frequency band used (fee decreasing from highest for below 3 GHz, to lowest above 10 GHz).

For the five examples of this study, the fees vary from **250 €** (System **B** and **D**) to **3750 €** (system **E**).

**Poland**

A service fee as well as frequency fees are being charged in Poland.

The fees vary from **1.579 €** for System **E** to **31.580 €** for System **E**, whereby the fee could not be calculated for System **A** and **C** as these systems are not applicable to Poland.

## Portugal

The following fees apply in Portugal:

- one-off licence fee per transmitter
- half yearly spectrum fee, per carrier.

Fees differ if the system is for private use or intended for the public.

The following fees are charged for LMSS:

- Administrative fee per transmitter varying depending on the band
- Spectrum fee depending on up-link or down-link.

For FSS the following applies:

- Administrative fee per transmitter varying depending on the band
- Spectrum fee for
  - FSS earth stations depending on the following criteria: permanent carriers vs. occasional carriers, bandwidth up to 3 MHz or between 6 and 36 MHz, including image transmission or not, shared TDMA carrier,
  - VSAT: depending on the bandwidth
  - SNG: permanent licensing for occasional use, or temporary licensing depending on the duration.

## Spain

In Spain a distinction is being made between self-provision, provision of services to a third party and provision to the public.

Fees are levied yearly and the calculation depends on the frequency band, the type of provision, the number of frequencies used and bandwidth

In the examples, the fees vary from **60 €** (system **A** and **D**) to **68.515 €** (System **D** for a bandwidth of 34 MHz)

## Sweden

Fees are charged per transmitter and per year and differ if protection is needed. Fees are the same for existing or new stations.

The fees calculated for the five examples vary from **60 €** (system **B** and **D**) to **1.800 €** (System **A**).

## Switzerland

The Swiss regulation distinguishes between licence fees covering exclusive rights to use or benefit from a *regalia* from the State and administrative fees covering costs incurred by the granting and monitoring of a licence.

### *Licence fees*

Telecommunications service licence fees are levied only from operators contributing to universal service funding which has not been applicable to satellite operators so far.

Spectrum fees are charged yearly for the usage of radio spectrum. They are calculated on the basis of the consumption of spectrum, in particular on the frequency assigned the frequency class, the assigned bandwidth and the geographical scope and duration of the licence.

### *Administrative fees*

The administrative fees are based on the specific administrative costs of the sector, e.g. the satellite sector.

A one-off fee based on an hourly rate and the amount of work done is charged for the delivery of the licence, and this hourly rate is different for a service licence or for a spectrum licence.

A yearly administrative fee is charged for the service licence for the surveillance of the licence. Another yearly fee linked to the radio spectrum fee is charged for the monitoring and control of the radio spectrum.

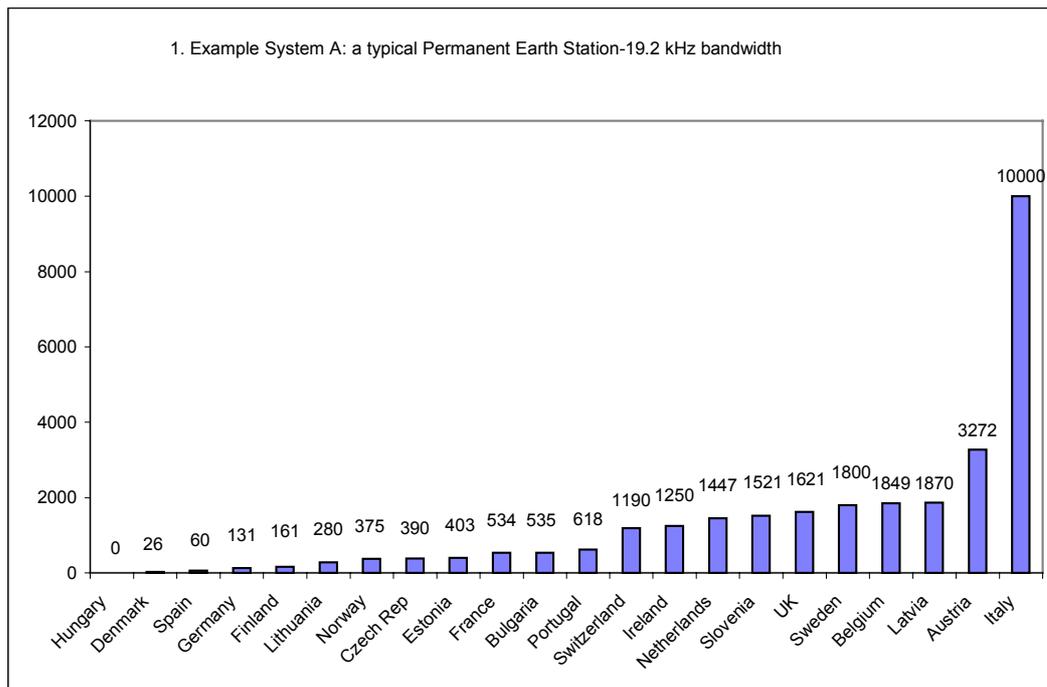
**United Kingdom**

In the UK satellite licensing is based on a two tier system: the Telecommunications Act and the Wireless Telegraphy. Currently the provision of all public services, including satellite services, is subject to licensing under the Telecommunications Act. A satellite class licence is used to provide common terms without need for individual licences or fees, for services not connected to the PSTN. In other cases a licence and issue fee is charged to cover costs. Fees to the regulator (OFTEL) for Telecommunications for supervision of public services including satellite are now based according to operator turnover to cover OFTEL direct costs.

Licence exemption for authorising use of the radio spectrum for mobile earth stations (terminals) has been implemented in the UK. The UK has moved from cost based licences to spectrum pricing of the main classes (Permanent Earth stations and Temporary Earth Stations). Fees are based on a formula to reflect the degree of use of frequencies, but work out in an overall reduction of fees paid.

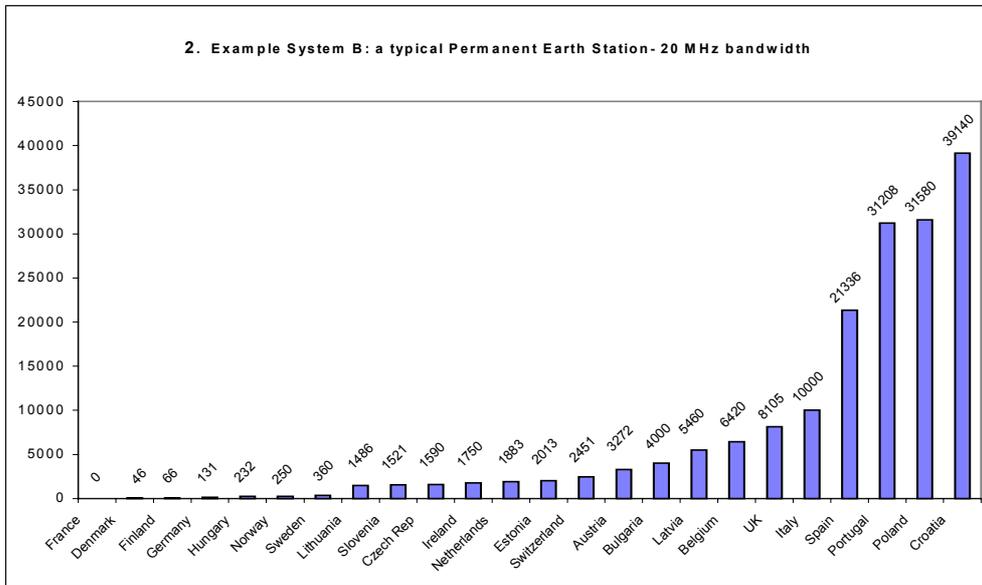
**8.2 Comparison of fee level for different systems.**

*Chart 1*



For system A, the highest fee is to be paid in Italy (10.000 €) which is followed by Austria with 3.272 € for the first year of operation of a co-ordinated earth station. As from the second year of operation, the yearly fee in Austria is 1308 €. For Italy however, it should be taken into account that at the moment no fees are envisaged for this system after the 1<sup>st</sup> year. A bulk of 8 administrations charge between 1.000 and 2.000 €, and 9 administrations charge from 100 to 1.000 €. At the other end Denmark and Spain are the only administrations where the fee is below 100 €, whereby Hungary does not charge any fee. Germany comes third with 131 €. For France, the fees are 534 € for a private network and 307 € for a public one.

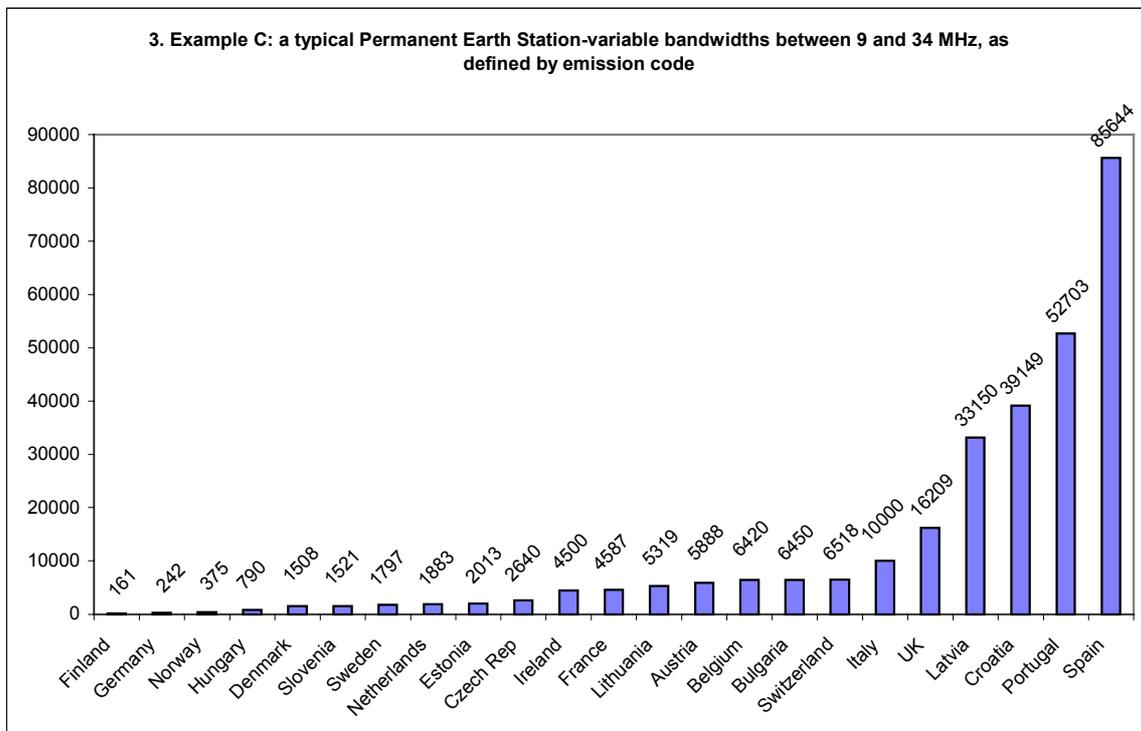
Chart 2



For System B, the highest is Croatia with 39.140€ followed by Poland, Portugal and Spain, all above 20.000€. A big gap separates these from a group of six administrations charging from 3.000 to about 10.000€.

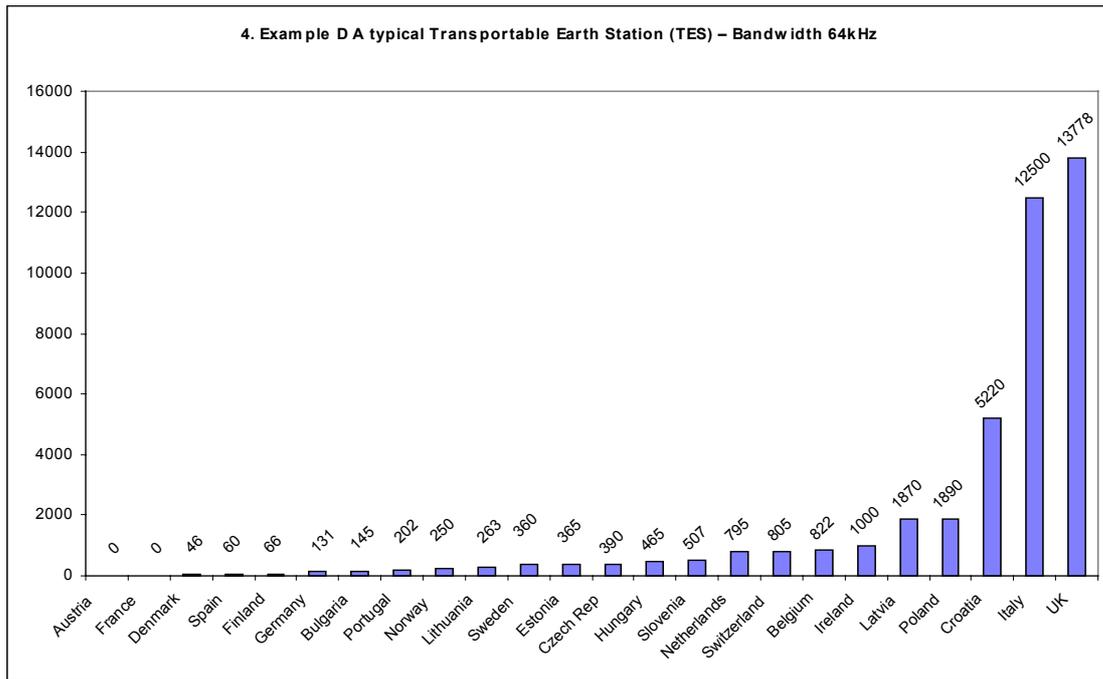
France charges 0 while Denmark still scores among the lowest together with Finland below 100 €. Four administrations charge between 100 and 1000 €. Five further administrations charge from 1000 to 2000 €.

Chart 3



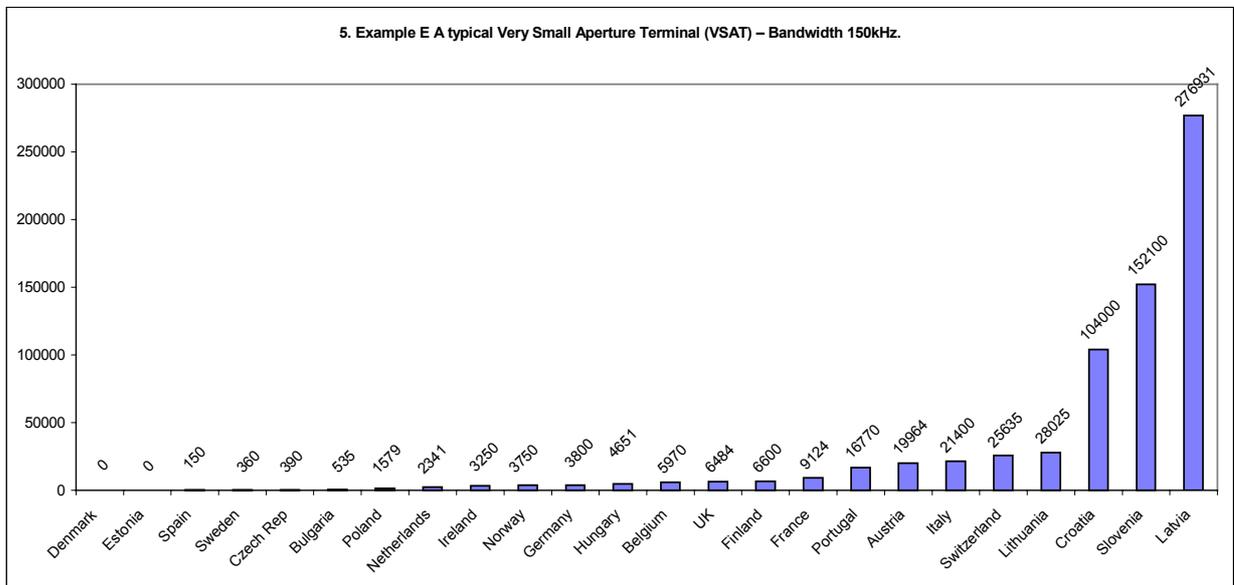
The highest fee is to be paid in Spain with 85.644€. It is followed by four administrations charging between 16.000 and 53.000 €. Eight administrations charge from 4.500 to 10.000 €. Another six charge from 1.000 to 4.000 €. The lowest are Finland with 161€ and Germany with 242 € (bearing in mind that an additional telecom fee licence needs to be paid). For France, the fees are 534 € for a private network and between 1 438 € and 4 587 € for a public one.

Chart 4



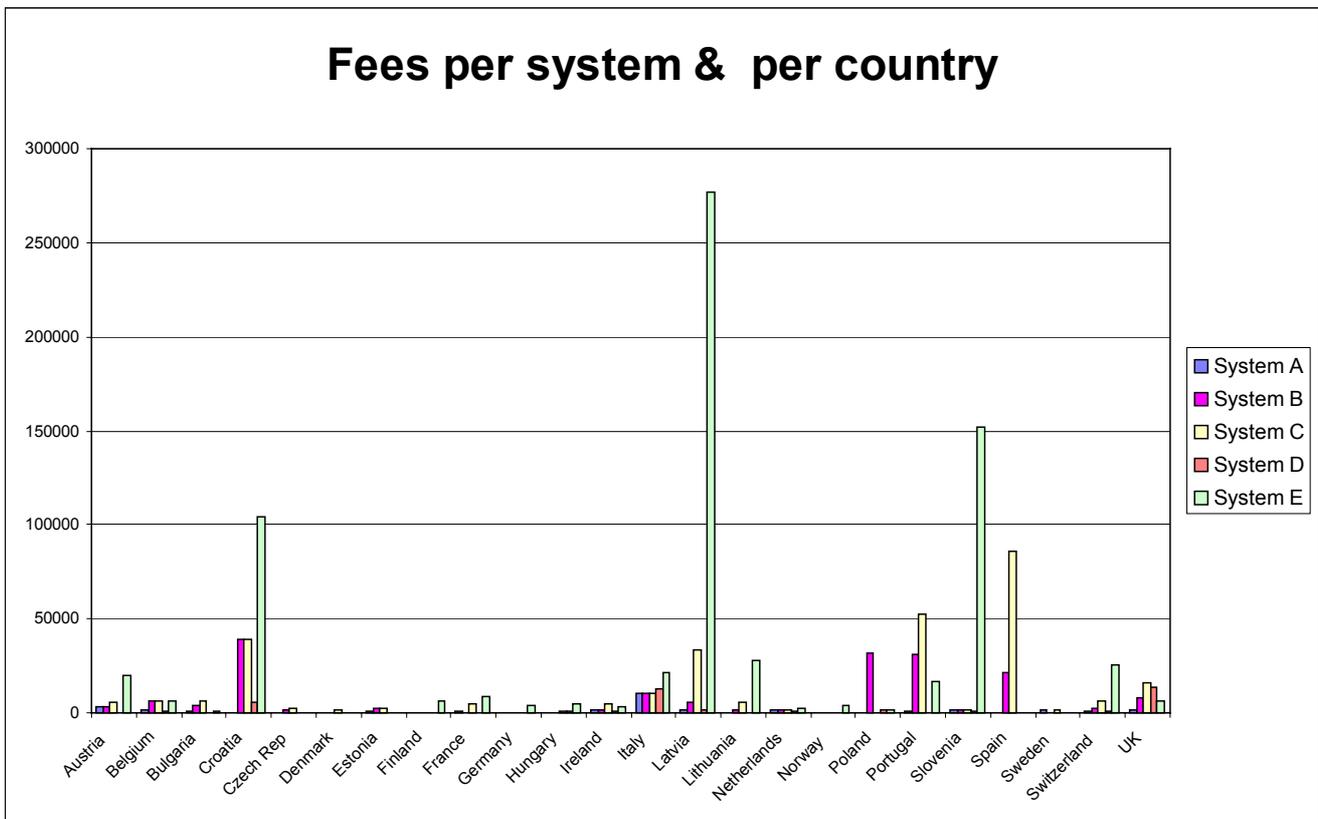
UK and Italy lead with fees over 10.000 €. Three more administrations charge between 1.000 € and 6.000 €, three between 800 and about 1000 €. Except for France and Austria charging no fee, Denmark, Spain and Finland are lowest with 46 € and 60 and 66 € respectively. Eleven further administrations oscillate between 100 and 800 €.

Chart 5



Three CEPT administrations charge between 104.000 and 277.000 €. Five further administrations charge between 10.000 and 50.000 €. Ten more charge from 1.000 to 10.000 €

Chart 6



The above chart shows the diversity of the fee level within individual administrations.

The by far highest fees are being charged for system E, which can be explained by the fact that system E refers to a large network and fees charged per terminal may account for the big difference with the other systems. These top fees are charged in Latvia, Slovenia and Croatia (above 100.000 €). In all three administrations, but more particularly in Slovenia, there is a huge difference between the extremely high fee for system E and the lower fees charged for all other four systems.

In some administrations such as Spain, Portugal and - at a relatively lower level - UK, the highest fee is to be paid for system C. This system involves the use of variable bandwidths from 9 to 34 MHz meaning that the cost may increase with the amount of frequencies used.

In further administrations such as the Netherlands or Sweden the fee level is low for all examples without any significant difference between the five systems, whereby Denmark and Estonia charge no fee for example E.

Sweden is the only country charging most for A and C, the two of the three systems with a Permanent Earth Station.

This charts illustrates the fact that there do not seem to be any administrations where the fees for all the systems are low or high (with a few exceptions of countries where the fees overall are very reasonable), neither is there an example for which the fees are high or low in all administrations. Fees for large VSAT networks are the most expensive in absolute terms, but not in all administrations or not even in a majority of CEPT administrations.

It is therefore impossible to conclude on significant fee level trends for a given system within CEPT administrations.

**8.3 Comparison of fee regimes within CEPT**

*Type of fees arising from the licensing regimes*

Before looking at the details of how fees are being calculated and defining what elements they are being based on, it is necessary to review the type of fees applicable to the satellite sector in CEPT administrations.

The following chart categorises fees according to their nature. It is a theoretical illustration of the situation:

Service licence		Radio licence	
Fees in relation to activities of the NRA	Fees in relation to political objectives	Fees in relation to activities of the national frequency management authority	Fees in relation to political/economic objectives <sup>20</sup>
<u>target:</u> Recovering of incurred administrative costs from the one who caused them (licensees) and thereby discharging of the “general tax-payer”	<u>target:</u> fulfilment of political objectives or necessities, for instance the subsidy of a universal service	<u>target:</u> Recovering of incurred administrative costs from the one who caused them (licensee) and thereby discharging of the “general tax-payer”	<u>target:</u> Reflecting the need to ensure the optimal use of the scarce resource “radio spectrum” <sup>21</sup> <u>Or</u> Attempting to capture the economic rent for the use of spectrum for the public
<u>Calculation base:</u> costs of the dedicated sector of public administration	<u>Calculation base:</u> for instance uncovered costs of the operator, who is obliged to offer the universal service ...?	<u>Calculation base:</u> costs of the dedicated sector of public administration	<u>Calculation base:</u> market-value of radio spectrum (frequencies), political or fiscal choices
<u>examples:</u> Covering of administrative costs incurred by issuing (or modifying) the service licence (non-recurring fees) ➤ fee for issuing the licence ➤ fee for modification of the licence ➤ fee for suspension of the licence fees for decisions concerning interconnection	<u>examples:</u> Funding a minimum level of offered services and applications (“universal service”) if the market/competition leads to other results ➤ service licence fee (Switzerland) ➤ telecom licence fee ➤ ...	<u>examples:</u> Covering of administrative costs incurred by issuing (or modifying) the radio licence (non-recurring fees) ➤ fee for issuing the licence ➤ fee for modification of the licence ➤ fee for suspension of the licence ➤ frequency assignment fee	<u>examples:</u> Attempting to capture the economic rent for the use of spectrum for the public ➤ spectrum fee ➤ radio licence fee (regalian fee) ➤ fee for frequency utilisation/use
Covering of administrative costs incurred in the regular management, control and enforcement of the radio licence (recurrent fees) ➤ yearly/monthly administrative fee ➤ fee for surveillance of the service licence ➤ ...		Covering of administrative costs incurred in the regular management, control and enforcement of the radio licence (recurrent fees) ➤ yearly/monthly administrative fee ➤ fee for technical control ➤ EMC fee ➤ “Spectrum fee” <sup>22</sup> , ➤ fee for “frequency utilisation/use” <sup>23</sup>	Setting of incentives for an efficient use of radio spectrum ➤ incentive spectrum fee ➤ etc.

<sup>20</sup> see chapter 3 “Requirements of the licensing directive ...”

<sup>21</sup> at the same place

<sup>22</sup> In this case (target → in relation to activities of the NRA) the term “spectrum fee” is not well chosen. “Spectrum” is a resource and not an activity.

<sup>23</sup> In this case (target → in relation to activities of the NRA) the term “frequency utilisation/use” is not well chosen. Not the activities wherefore the fee shall be paid is mentioned but another activity.

Service licence		Radio licence	
Fees in relation to activities of the NRA	Fees in relation to political objectives	Fees in relation to activities of the national frequency management authority	Fees in relation to political/economic objectives <sup>20</sup>
<u>Pricing methods:</u> ➤ (simple pricing → arbitrary?) ➤ cost based pricing without differentiation ➤ cost based pricing with differentiation ➤ (cost based pricing in combination with incentive pricing)	<u>pricing methods:</u> ➤ cost calculation (e.g. service licence fee = contribution to uncovered costs for universal service)	<u>pricing methods:</u> ➤ (simple pricing → arbitrary?) ➤ cost based pricing without differentiation ➤ cost based pricing with differentiation ➤ (cost based pricing in combination with incentive pricing?)	<u>pricing methods:</u> ➤ “auctioning” ➤ incentive pricing ➤ “market-value pricing in combination with incentive pricing” ➤ (simple pricing → political choices)

### *Fee calculation components*

The first impression arising from the analysis of the fee regimes and of the calculation for various systems is that fees are very diverse and very difficult to compare.

The various factors which enter into the calculation may include technical elements (e.g. transmitter output power), elements related to the type of service (e.g. continuous transmission or not), administrative elements (need for co-ordination or not) and to the size of the system (e.g. number of stations, geographical coverage) for instance. Furthermore there are one-off fees, yearly or monthly fees charged for administration, spectrum, control and enforcement and, in some cases, for electromagnetic compatibility.

In each country the fee calculation is based on a combination of some of the above criteria, which could nearly result in an infinite number of possibilities. This complexity is reflected in the level of fee and in the fact that there is no easily noticeable trend across CEPT administrations.

It is impossible to conclude that one or several criteria always enter in the fee calculation across all CEPT administrations therefore giving a basis for a common approach. Nevertheless it may be possible to determine what parameters for calculation methods and what type of fees could be recommended in order to achieve greater harmonisation within CEPT.

The matrix below illustrates the above situation, i.e. the diversity of parameters entering in the fee system in all the administrations which replied to the questionnaire.

The list of items on the left-hand side of the table contains criteria found in the fee regimes of CEPT administrations, as a result of assumptions based on the administrations’ responses to the questionnaire. The greyed areas in the matrix show the criteria used in a given country.

The list of items on the left-hand side of the table below contains criteria found in the fee regimes of CEPT administrations, as a result of assumptions based on the administrations’ responses to the questionnaire. The greyed areas in the matrix show the criteria used in a given country.

Country: Parameters used to charge fees	A	B	H	C	D	D	E	F	F	H	I	I	L	N	N	P	P	E	S	C	G
	G	R	Z		K	S	T	I	R		R	L	V	L	N	L				H	B
<b>1.a) Spectrum-related elements</b>																					
Bandwidth (or number of channels)	✓	✓				✓	✓		✓		✓	✓		✓	✓		✓	✓		✓	✓
Number of links	✓						✓				✓									✓	
Number of transmitters/stations <sup>1,2</sup>	✓	✓	✓		✓	✓	✓	✓	✓		✓	✓	✓	✓			✓		✓		✓
Frequency band					✓		✓		✓	✓	✓				✓		✓	✓		✓	
Orbit <sup>3</sup>	✓																			✓	
Transmitter output power <sup>4</sup>	✓			✓							✓										✓
Exclusive or shared band	✓					✓						✓							✓		
Uplink / Downlink																	✓				✓
Duration of licence <sup>5</sup>												✓					✓			✓	
<b>1.b)Efficiency of spectrum use (technology used)</b>																					
Type of signal transmitted (e.g. analogue/digital) <sup>6</sup>	✓	✓																			
Data bit rate			✓																		
Hub / not hub										✓		✓									
<b>Administrative performance</b>																					
Need for coordination or not	✓				✓	✓		✓			✓		✓								
Hours worked																					✓
<b>3. Financial power of the user</b>																					
Size of the company		✓														✓					



- Italy: 7.230 € annually (100 kHz, 64 Kbps, Ku-band VSAT) whereas Germany has a fee of only 18 € annually (100 kHz, 64 Kbps, Ku-band VSAT)
- France imposes 250 000 -franc licence fee for first year of operation of a two-way VSAT used for Internet backbone connection and 125 000 francs each following year, because France defines this as a public network service. Prohibitive licence fees equally apply to a Receive-Only terminal used by ISP (even though France has adopted ERC Decision (99)26 on individual licence exemption for ROES). France is also very restrictive on the definition of closed-user group licensing, which is much less expensive than what France considers public network licensing.
- Austria 6000ATS per VSAT/per year for a remote licence.
- Spain: a public network licence (C2) costs about € 500 for the use of frequencies in a 50 GHz bandwidth + 0.15% of annual turnover of the applicant undertaking

### ***Space segment mark-ups***

Some administrations only allow sale of space capacity via the incumbent operator or regulator (who is the Signatory) and thereby ask for a portion of revenue in form of a mark up of around 5 to 15%. Other administrations give preferential treatment to their national satellite system, followed by the intergovernmental satellite systems to whom they are signatory. Under an “open skies” policy satellite network operators should have unrestricted access to the space segment provider of their choice, including Eutelsat and Intelsat following their privatisation.

Examples:

- Russia
- Bulgaria
- Poland.

In administrations where operations and regulation have not yet been separated, obtaining VSAT authorisation often requires a bilateral arrangement between the service provider and the monopoly operator (PTT). The bilateral arrangement may require a “landing right fee” or tariff be paid to the PTT - even if the PTT does not participate in the service chain.

In other monopoly jurisdictions, the PTT is the only entity that may install and service VSATs. In other jurisdictions, the monopoly operator is the only entity that may own, operate and maintain VSATs.

Examples:

- Turkey: It is necessary to enter into agreement with Turk Telekom and the tariffs, even though they may have decreased, are still comparatively high.
- Bulgaria: Monopoly held by BTC. Slow implementation of privatisation process.
- Malta: Maltacom implemented but then rescinded deregulation. Bypassing Maltacom for point-to-point FSS satellite services not possible (although SNG service is possible)
- Cyprus: A monopoly is held by CYTA and there is no transparent licensing procedure. Each licence is granted on a case-by-case process.

### ***Excessive fee structures***

The type of fee structures and the amounts charged differ substantially throughout CEPT. Industry has urged that the EU seek to achieve an effective harmonisation of fees and charges in the Community, keeping fees and charges to the minimum in order to reduce the cost of service to satellite customers. Departing from reasonable and proportionate administrative costs incurred forces the cost of that service to be excessive. Also, resorting to auctions for assigning spectrum would impede pan-European services and networks.

## **10 CONCLUSIONS AND PROPOSALS**

### **10.1 Differences in charging systems in the satellite sector**

#### **10.1.1 Definitions**

In order to understand the issue of fees in CEPT administrations, one has to acknowledge that there is a great variation in terminology and it is therefore necessary to try and define terms.

For the purpose of this report the following definitions are being used.

**Administrative fees**

*Administrative fees* can be defined as fees charged independently of the type of licence (spectrum or service) for issuing of a licence. Further administrative fees are charged annually for control, monitoring, and enforcement. In some administrations the administrative fee is payable annually for the duration of the licence or initially for a specified period of a licence.

**Service licence fees**

*Service licence* fees are generally charged in connection with a Telecommunications Act licence. They are linked to the type of service offered.

**Spectrum related fees**

Fees related to the spectrum, be it the use of the spectrum, the management of the spectrum or the value of the spectrum itself, may be called spectrum usage fee, spectrum use fee, frequency assignment fee or frequency use fee in various CEPT administrations. They are charged on the basis of a Radiocommunications Act. As this type of fee is strictly related to spectrum as opposed to the above mentioned administrative or service licence fees, those fees can be called *spectrum-related fees*.

Spectrum-related fees therefore could encompass incentive elements or spectrum pricing elements in order to support effective use of the spectrum, but this is not always the case.

**10.1.2 Characteristics of satellite fees****a) Types of fees**

A spectrum-related fee is charged in all CEPT administrations using different principles. In The Netherlands, for instance, the overall fee is cost based and includes the fee for the use of the spectrum. In Switzerland the fee for the use of spectrum is a separate one, which is not cost based, but based on a Regalian<sup>25</sup> right given to use the frequencies. In the UK, under the new system, the spectrum fees are not cost based, but are based on a formula to reflect the degree of use of frequencies. Some administrations charge an annual fee which is the same every year while others charge an additional initial administrative fee for issuing of the licence.

Administrations charging no separate administrative fees include Norway, Sweden and Finland.

A number of administrations charge a telecom service licence fee while two administrations charge a separate (minimal) fee for electromagnetic compatibility purposes. Most administrations charge an annual fee for the management of the radio spectrum which may include activities such as monitoring and enforcement.

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<sup>25</sup> With respect to radiocommunications article 39 TCA lays down *inter alia* the general principle that the usage of radio spectrum is subject to a yearly spectrum fee (because radio spectrum is a regalia) and the relevant factors for the calculation of this fee. According to article 39 para. 2 TCA the amount of the radiocommunications licence fee shall be calculated on the basis of the consumption of spectrum in particular on the range of assigned frequency, the frequency class, the assigned bandwidth and the territorial and the temporal scope of the licence.

**b) Fee calculation***Administrative fee*

Administrative fees within CEPT are currently calculated on many different bases.

One approach is that of Switzerland where for the issuing of the licence, a one-off fee is charged separately from the spectrum fee. The level of the fee is based on the time worked on the licence using an hourly-rate. This charging method based on a cost accounting system, provides for a certain degree of transparency and equitable cost charging.

In other administrations the cost of processing and issuing a licence is the same for all satellite systems which may be seen as disproportionate for operators of smaller, simpler systems compared with operators of large networks.

In addition to the above there are administrations where the administrative fee is not separated from the spectrum-related fee, such as The Netherlands.

*Spectrum-related fee*

A number of technical elements – relating to the efficient use of spectrum - are used by a number of administrations for the calculation of spectrum related-fees. The frequency band and the bandwidth are most widely taken into account, while the output power of the antenna and the use of exclusive or shared bands occurs in a few cases. In addition to the above the following issues are taken into account by a couple of administrations: number of channels used and data bit rate. For VSATs the number of stations is also often taken into account.

A few administrations make a distinction between the type of provision, i.e. is the service intended for the public, or for own use or third party use. In some isolated cases the type of signals transmitted, therefore the type of service provided, has a bearing on the fee calculation. Furthermore some administrations take into account the size of the undertaking in terms of revenues. Some CEPT members charge in proportion to the coverage.

In a number of CEPT administrations the fee charged for spectrum may also cover some administrative expenses, whereby the administrative costs are just one factor among technical characteristics of the system which contributes to the overall calculation of the fee for spectrum. In some administrations operators are given the possibility to choose between co-ordinated or uncoordinated licences for earth stations.

Generally spectrum-related fees are charged annually, however in some administrations facilities exist to pay on a monthly basis. Short-term licences for SNG are available in most administrations and the fees are based on the duration of the licence.

Last but not least in some administrations the cost of licence fees for large VSAT networks may be open to negotiation with the administrations while there is a reduction in the cost of licence fees for large systems in others.

**10.2 Properties of satellite in relation to fees**

The policy agendas of the administrations acknowledge the uniqueness of the requirements of the satellite industry and the benefits it brings to the European and global economy. However the regulatory regimes applicable to satellite systems within CEPT administrations seem to be lacking in transparency and are complex in nature.

The difficulties perceived by operators arise from the variety of licensing regimes and principles, which in turn are reflected in the differences in fee level and of fee calculation across CEPT administrations.

For a same system e.g. a transportable earth station (SNG) within the 64 kHz bandwidth an operator may be charged 0 € in one CEPT country while another CEPT country charges up to 13.780 € for use of the same terminal.

The accounting criteria for the fee calculation as seen in chapter 8.3 are so diverse that it would be difficult to find a clear explanation for the varied fees applying to a same system.

The differences in fees applying to a satellite system across CEPT administrations as well as within CEPT administrations call up for some common approach. Recognising the fact that licensing and the setting of fees is a

national issue and therefore falling within the responsibility of the administrations, it would be helpful if the fees setting policies and procedures could be streamlined in order to increase transparency.

### 10.3 Level of fees

Charts 1 to 6 presented in chapter 8 show that the level of fees for the five examples varies depending on the country and on the type of licence product. As stated in the chapter there do not seem to be any administrations where the fees for all the systems are low or high (with a few exceptions of countries where the fees overall are very reasonable), neither is there an example for which the fees are high or low in all administrations. Nevertheless the fee level for some specific system in some specific administrations can be considered high, as the answers to the questionnaire show.

Furthermore the satellite industry's perception is that licensing fees remain too high in most markets, and fees are considered to be prohibitive to the end-user, thus impeding economic growth.

It is therefore important for administrations to review their fee regulation. It would also be helpful to develop some fee calculation models that could be made available to administrations in CEPT which in turn would help reduce the discrepancies that are encountered at present.

### 10.4 Fees and market

The question can be asked whether the fees for the satellite area are of such a high level that they prevent the market from developing. It is of course obvious that the investment costs for launching a satellite system are enormous and that also the costs of the ground infrastructure are relatively high. A 3.7 metre earth station costs about 10.000 €, those of a 7 metre earth station are approximately 550.000 € while those of a 9 metre earth station are around 1.2 million €. It can be argued that in the light of these infrastructure costs, the cost of a licence seem to be insignificant in most administrations, although that does not remove the obligation for the fees to be fair and comparable to those of other services. In this study the satellite fees have not been compared with fees of other services. Only the fees for satellite services between administrations have been compared, although comparing fees for different services could be an interesting undertaking for the near future.

Although it can be argued that for larger stations costs are acceptable at the moment, the trend is towards using smaller terminals for which fees may be too high compared to the investment costs.

So far no studies have been undertaken on the relation between fees and the development of the market, but it seems fair to assume that the complexity of the procedures and the time it takes to get a licence in some CEPT administrations are issues that play a larger role in the development of the market than does the level of the fees.

### 10.5 Positive effects of studies into the area of fees

Information received from administrations in the course of developing ERC Report 105<sup>26</sup> as well as this ERC Report indicates that a number of administrations have started internal investigations on their fees and the criteria for calculation. Resulting from the internal investigations some administrations have put new procedures in place which have had an impact on the licence fees, thus making them more transparent. This information was received for instance from France, The Netherlands and Switzerland.

### 10.6 Transparency

#### *Requirements for publication*

Directive 97/13/EC, the currently applicable Licensing Directive, requires licence conditions, licence procedures and fees and charges to be published by administrations. Fees and charges should be published in an appropriate and sufficiently detailed manner, so as to be readily accessible<sup>27</sup>.

The draft Authorisation Directive, based on the 1999 Telecommunications Review, recently adopted, states in its Explanatory Memorandum that, although the current Licensing Directive promotes, among other things, transparency as described above, there is still a lack of transparency to be encountered in practice (as well as high fees). The draft

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<sup>26</sup> ERC Report: Review of PMR fees, The Hague February 2001.

<sup>27</sup> Article 6 and Article 11, paragraph 1.

Directive is therefore, apart from restating the publication requirements<sup>28</sup>, taking the issues of transparency somewhat further by stating that administrations should be required to publish annual overviews of costs and charges and to adjust the level of charges in the following year if the total sum of charges collected exceeded administrative costs.

Currently the following administrations publish their licence procedures and fees on their website: **Austria, Bulgaria, Denmark, Estonia, Finland, France, Iceland, Lithuania, The Netherlands, Spain, Switzerland and UK.**

Probably a number of other administrations have information sheets with procedures and fees available that are made available on request.

Publishing the costs of the administrations is new as a requirement, although a number of administrations already publish these figures on a yearly basis in the publicly available annual report. Examples are, **Finland, The Netherlands and UK.** In The Netherlands licence fees are adapted for the next year if the outcome of the previous financial year gives arguments for that.

## **10.7 Proposals**

### **10.7.1 Transparency**

CEPT member states should be encouraged to take a common approach to satellite fees, which apply to systems that are pan-European by nature.

In order to try and reduce the complexity of fees applying to the satellite area, CEPT should in a first step try to harmonise the type of fees charged. There are currently nearly as many different types of fees charged as administrations across CEPT. It should be possible to charge one fee covering all spectrum elements and one administrative fee at most. A separate registration/service licence fee for the provision of services might be appropriate. It is therefore recommended to reduce the number of fees applying to a system by administrations and to charge fees based on common and transparent principles.

The high degree of complexity related to charging fees results in a certain lack of transparency as to how fees are being determined. Therefore as a second step, CEPT should try to simplify and harmonise the methods used for spectrum-related fee calculation and agree on some common criteria and methods to be used. This should of course be put into perspective with the different methods used to finance the administration and the work done for the licence fee charged.

### **10.7.2 Justification of fees**

Many administrations may have taken over the fees and tariffs as laid down and applied in the times of monopoly of the national PTT. These administrations should be encouraged to review these fees and tariffs in the light of the national legal principles applying to fees of the administration in general - insofar this has not been done yet. Indeed, some administrations which undertook such reviews, noticed that some of the overtaken fees, charges and tariffs were not in conformity with the national legal principles. It is thus recommended to correct them before challenges in court of these fees and tariffs force the administrations to make these changes.

Following points should be taken into account when reviewing the fees and tariffs:

- What is the structure of the administration/radio agency in question (as this point influences the cost factors);
- When there is a leeway in form of possibilities of interpretation concerning the legal principles applying to fees and tariffs, what are the political objectives the administration/radio agency is bound to, especially in the field of cost-coverage; and/or
- Are the financial principles and methods applied by the administration/radio agency for the determination of the relevant costs and the setting of the fees and tariffs understandable and/or generally accepted and transparent.

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<sup>28</sup> Article 15, paragraph 1: Member States shall ensure that all relevant information on rights, conditions, procedures, charges, fees and decisions concerning general authorisations and rights of use is published and kept up to date in an appropriate manner so as to provide easy access to that information for all interested parties.

paragraph 2: Where charges, fees, procedures and conditions concerning rights of way are determined at different levels of government, Member States shall publish and keep up to date a register of all such charges, fees, procedures and conditions in an appropriate manner so as to provide easy access to that information for all interested parties.

### 10.7.3 Price benchmarking

For administrative cost-based pricing as well as for spectrum incentive pricing, price benchmarking could be a helpful tool. It is useful both to compare prices of comparable services or between administrations. In the case of spectrum pricing benchmarking can be used to help set reference points for unit price factors for different services. In deriving spectrum pricing values, the normal method is to use a least cost alternative to work out what spectrum is worth. The only obvious example alternatives for satellite links are either terrestrial links or international cables. The value of benchmarking is that it can help shortcut this process by using benchmarking to compare between administrations which have been through the processes and to compare between services such as fixed terrestrial links. It also enables administrations to see how their prices compare and to ensure there are no significant distortions.

Therefore as already recommended by ETO in its report on fees for other types of services, when implementing cost based fees in the satellite area administrations – are encouraged to - apply price benchmarking. Bench marking could also be used in an incentive pricing system.

This would allow administrations to allocate costs in general in a more transparent and proportionate way.

In the case of fixed costs which are an **average cost per licensing category** administrations should distinguish between a limited number of categories only, taking care that :

- the administrative management for applying fees to different licensing categories does not create costs disproportionate to the fees charged
- the distinction between licensing categories does not create disparities between different technologies

In the case of a fee varying according to a parameter such as turnover or coverage there should be a demonstrated interrelation between the parameter and the cost for licensing incurred by the NRA:

- in order not to create costs which are disproportionate to the fees charged, a minimum threshold should be set beneath which no fee is required
- there should be a clear and economical administrative procedure to determine the basis for applying the parameter (e.g. clear definition of turnover)
- the parameter should be chosen in such a way that publication of the fee by the NRA does not make the deduction of commercially sensitive data possible.

### 10.7.4 Fee calculation models

Taking into account the various charging methods described in Chapter 7 and considering the need for transparency, cost-based charging with differentiation or incentive pricing both seem to be a suitable options.

It seems reasonable that in the case of both charging systems those users that use the most spectrum pay in principle the highest fees. Although in case of incentive pricing other criteria might play a role, such as congestion in certain areas or certain frequency bands, which might level this principle out.

When comparing the different calculation models used in the administrations and the principles they are based on, it should be possible to arrive at certain conclusions with regard to the most efficient and transparent method of licensing of for instance VSATs, Permanent Earth Stations or SNGs. For instance that a licence based on a network is more efficient than a licence per terminal or that calculating the licence fee on the bandwidth used is more efficient than a fee based on the transmitter power. Also recommendations could be made on the number of elements that are taken into account to set a fee. The same (although this is more complicated) could be done in the case of incentive pricing systems.

This ERC Report is just a first step and these issues have not been looked at in great detail, but there seems to be an apparent unfairness with regard to the transparency, but this is not exclusively the case for satellite services. Therefore at a later stage a study could be made of the elements to be contained in a fee, generically and per service.

### 10.7.5 Restoration services

Satellite facilities are in some cases used as a back-up service for terrestrial services. In this case the satellite services, when providing restoration services, operate on frequencies, which are on a day-to-day basis in use for other licensed operations. The satellite operators argue that since licences are already issued once for the use of the frequencies, be it for other services, it is therefore reasonable that the licences for the restoration services could be issued free of costs or at administrative costs. This topic is not solely a matter of fees but further study is needed on how these other operations are licensed and to whom the licences are issued. It is therefore proposed that these issues are resolved first, before the appropriate fees are looked at.

**Annex I**

**Austria**

In accordance with the Austrian Telecommunications Law of 1997 (TKG 1997) the following categories of fees are applicable:

**1- Service licence fee**

Such fees only apply when a concession is needed. However under the current legislation this fee is not applicable for the provision of services via satellite networks.

**2- Frequency assignment fee**

A one-off frequency assignment fee is collected at the time when the operating licence is issued, as follows:

- 98 € per station if no co-ordination is required
- 1964 € per station when co-ordination is required.

In a majority of cases for VSAT type satellite earth station no co-ordination is required.

**3- Frequency utilisation fee**

The following monthly fees are charged for each individually licensed satellite station:

- 14.53 € for each TR<sup>29</sup>-unit with a maximum RF output power < 1 Watt
- 36.34 € for each TR-unit with a maximum RF output power between 1 and 6 Watt
- 50.87 € for each TR- unit with a maximum RF output power between 6 and 30 Watt
- 109.01 € for each TR-unit with a maximum RF output power between 30 and 150 Watt
- 327.03 € for each TR-unit with a maximum RF output power between 150 and 1000 Watt;
- 654.06 € for each TR-unit with a maximum RF output power of more than 1000 Watt.

Indication of maximum transmitter output power is mandatory for issuing the operating licence. However a general licence is applicable for SNG Stations (TES) being operated in Austria for a limited period of time. For operation of such earth stations in Austria, a one-off fee of 49 € is collected for each operating period

**Belgium**

Fees are set out in Royal Decree of 16 April 1998. Each application is subject to the payment of a one-off fee to cover the cost incurred by the application, which differs depending on the need for frequency co-ordination or not. Further to this an annual fee is charged per station depending on the channels and bandwidth used. In addition to the spectrum fees, fees related to the service licence also have to be paid.

**1- Frequency fee**

- One-off fee:
  - 795.74 € if no co-ordination is required
  - 1.854.24 € if co-ordination is required
 This fee is charged for a particular frequency band and not per station.

Annual fee

Bandwidth (X)	Fee per channel
X ≤ 0,2 MHz	54.54 €
0,2 MHz < X ≤ 2 MHz	530.49 €
2 MHz < X ≤ 18 MHz	2382.26 €
18 MHz < X	4764.51 €

<sup>29</sup> TR= Transmitting

## 2- Service fee

- One-off fee:
  - 13.049.12 € for an individual licence
  - 780.86 € for non-public networks
- Annual fee:
  - 9.134.88 € , only for an individual licence

### **Bulgaria**

#### **Satellite Operators:**

No space segment fee.

**No monopoly** for VSAT networks. Licences have been issued to different operators since 1999. The licence procedures and fees are published on the website.

The fees charged by the State Telecommunications Commission are as follows:

#### **1. Initial one-off fee**

a) Individual license:

- Public VSAT networks: 500 € per station
- FSS networks: 500 € per station.

b) General license:

- VSAT networks for private use: 270 € per station
- SNG networks: 145 € per station.

#### **2. Annual fee for the use of scarce resources - radio frequency spectrum**

a) Individual licence:

- Public VSAT networks: 175 € per station for 1 MHz band
- FSS networks:
  - for continuous video signal transmission: 125 € per station for 1 MHz band
  - for continuous transmission of other signals: 175 € per station for 1 MHz band
  - for signals transmission on application: 15 € per station for 1 MHz band.

With smaller or larger bands the fee is proportional to the band used, but can not be less than 20% of the fee for 1 MHz.

#### **3. Annual fee for monitoring and control**

For operators holding an individual licence for FSS networks and public VSAT networks:

- in 2002: 1.6% of the gross annual revenues incurred by the activities licensed
- after 31.12.2002: 1,3% of the gross annual revenues incurred by the activities licensed.

### **Republic of Croatia**

Annual fees

#### **1 VSATs:**

- Up to 9.6 kbit/s: 260 €
- Between 9.6 kbit/s and 64 kbit/s: 520 €
- Between 64 kbit/s and 512 kbit/s: 1.040 €
- Above 512 kbit/s: 2.080 €

#### **2- VSAT network with hub:**

- Up to 25 stations: 3.910 €
- Between 25 and 50 stations: 5.870 €
- Between 50 and 100 stations: 7.830 €
- Above 100 stations: 9.780 €

### **3- Transportable Earth Stations (TES) and SNG**

There is no specific fee for TES. The fees for VSAT applies.

For SNG an annual licence fee of **5.220 €** applies. If the SNG is only used for sound transmission, the fee is **1.040 €**.

### **4- Permanent earth stations (PES)**

An annual licence fee of **39.149 €** is charged for a typical PES. If the PES is to be used on a temporary basis this fee is halved.

#### **Cyprus**

There are currently no fees for satellite earth stations licences.

#### **Czech Republic**

Fees are set in accordance with the Act on Telecommunication No. 151/2000 (Administrative Fees) and the Government Order No. 181/2000 (Spectrum Fees).

The following fees apply to VSATs and PES:

- One-off administrative fee **90 €** for issuing the licence. The fee should be paid before the licence has been issued.
- Annual fee for the use of one assigned frequency channel. The fee is based on the amount of spectrum to be used in the following way:
  - up to the bandwidth of 4 MHz the fee is **300 €**;
  - above 4 MHz the fee is calculated according to the formula:  $fee = 75 [€] \times BW[MHz]$

The annual fee can be divided according to the number of months when the equipment is in use.

The fee of **90 €** is charged for short term licence (not more than 14 days) for SNG TV transmission on one channel.

Fees for the five examples are: **390 €** (System A, D and E), **1590 €** (System B), **765 €** and **2640 €** (System C).

#### **Denmark**

##### **General fee policy**

In Denmark, according to the Act on Radiocommunications and Assignment of Radio Frequencies spectrum fees shall reflect licence holders' use of spectrum. Therefore fees shall be charged that reflect exclusive or shared use, the bandwidth used and geographical coverage. The basis of the calculation of fees is the cost of administration and of other services provided by the National Telecom Agency to the telecommunications sector in the field of radiocommunications. This amount is approved by parliament yearly and is divided over the licence holders according to their spectrum use. Denmark applies a cost based system with differentiation based on certain models for the different services, although, when setting the fees also political considerations may play a role.

One of the aims of the Act is that users be given access to a wide, varied and inexpensive range of telecommunication services. Spectrum management principles that may increase the price of service to end-users are therefore generally inconsistent with Danish policy.

In areas where demand exceeds supply, and where the first-come-first-served principle cannot therefore be applied, the Act provides for the following frequency administrative methods: public tendering, administrative redistribution, requirements for changeover to more frequency effective methods of utilisation or technologies, requirements for reduced usage, and administrative withdrawal.

### Satellite fees

In the satellite area this general fee policy leads to the following sector fee policy:

All licence holders in Denmark, and therefore also all satellite licensees pay a yearly fee for issuing the yearly licence. This fee also has to be paid when a licence is changed. For the year 2001 this fee is 24 €. This is a basic fee or tax, which is not related to any work done for the Satellite sector. Reasons for this fee are the creation of stable, basic income for the agency, to prevent large fluctuations in the licence fee for the users and to prevent users from unnecessary requesting changes to their licence.

Apart from this basic fee a fee per terminal has to be paid which is in the year 2001 is **22 €**. This fee is identical for all terminals (VSAT, SNG, except when exempted).

For a gateway or hub station of 28 MHz **1218 €** has to be paid yearly. This fee is based on the use of frequencies.

There is no difference between the fee for the first year and for subsequent years.

The provision of services is free of charge in Denmark.

### **Transparency**

The fees itself as well as information about licence procedures and the fee policy are available from the web.

#### Conclusion:

A VSAT/SNG operator pays per year 24 € + 1218 € per gateway/hub station + 22 € per terminal. VSATs operating in the exclusive band with transmitting power maximum 2W, EIRP maximum 50 dBW and not used within 500 meters from airports pay no fee because they are exempted from licence.

An MSS operator pays no fee, since service provision and the operation of MSS terminals is free of charge.

### **Estonia**

- 1) registration of notices of commencement of activities – **19 €**;
- 2) issuing a licence – **32 €**;
- 3) initial inspection of fixed radiocommunications line – **36 €**;
- 4) initial inspection of space earth station – **256 €**;
- 5) issuing and renewing installation permit or permit for use of mobile or portable satellite earth station per one channel or radiocommunications line for 1 year for:
  - a) portable satellite station – **77 €**;
- \* Inmarsat A, Inmarsat B, Inmarsat C, Inmarsat M, Inmarsat M4, mini-M phone, EMS-SAT, EMS-PRODAT are exempted from licence if they are using frequency band 1.5/1.6 GHz and therefore there is no fee;
- 6) issuing and renewing installation permit or permit per one channel or radiocommunications line in one county for 1 year for use of fixed satellite earth station:
  - a. frequency band up to 3 GHz and with bandwidth up to 0.1 MHz – **115 €**;
  - b. frequency band up to 3 GHz and with bandwidth 0.1 to 1 MHz – **613 €**;
  - c. frequency band up to 3 GHz and with bandwidth 1 to 10 MHz – **1150 €**;
  - d. frequency band up to 3 GHz and with bandwidth 10 to 50 MHz – **1725 €**;
  - e. frequency band up to 3 GHz and with bandwidth 50 MHz and more – **6134 €**;

- f. frequency band 3 to 10 GHz and with bandwidth up to 0.1 MHz – **77 €**;
- g. frequency band 3 to 10 GHz and with bandwidth 0.1 to 1 MHz – **230 €**;
- h. frequency band 3 to 10 GHz and with bandwidth 1 to 10 MHz – **613 €**;
- i. frequency band 3 to 10 GHz and with bandwidth 10 to 50 MHz – **767 €**;
- j. frequency band 3 to 10 GHz and with bandwidth 50 MHz and more – **2300 €**;
- k. frequency band 10 GHz and more with bandwidth up to 0.1 MHz – **38 €**;
- l. frequency band 10 GHz and more with bandwidth 0.1 to 1 MHz – **230 €**;
- m. frequency band 10 GHz and more with bandwidth 1 to 10 MHz – **460 €**;
- n. frequency band 10 GHz and more with bandwidth 10 to 50 MHz – **613 €**;
- o. frequency band 10 GHz and more with bandwidth 50 MHz and more – **2300 €**;

### **Finland**

In Finland an annual fee is charged per transmitter. No further fees are being charged.

- **72.32 €** per transmitter, not subject to co-ordination, of an earth station in the fixed satellite service
- **178.28 €** per transmitter, to be co-ordinated, of an earth station in the fixed satellite service.

### **France**

#### **1- VSAT networks**

For a VSAT network with less than 6 stations of which locations are known when requesting a licence, an annual fee for management of spectrum is charged:

- **458 €** for a one way transmission
- **458 € + 76 €** per station, for a two way transmission.

If a private network has more than 5 stations or if the location of the stations is not known the annual fee is:

- **1.524 €** for a one way transmission
- **1.524 € + 76 €** per station for a two-way transmission (beyond 300 stations, the number of stations is not taken into account).

#### **2- SNG**

SNG authorisations are free of charge and fee and are issued for a period of 5 years.

### **Germany**

#### **Statutory Basis and Policy for Fees and Contributions**

The major statutes forming the basis for the fees and contributions payable by satellite earth station operators are

- the Telecommunications Act ("TKG"),
- the Ordinance concerning Telecommunications Licence Fees ("TKLGebV"),
- the Frequency Fee Ordinance ("FGebV"),
- the Ordinance concerning the Contributions for Frequency Usage ("FBeitrV"),
- the Electromagnetic Compatibility Act ("EMVG"), and

- the Ordinance concerning Contributions in accordance with the Electromagnetic Compatibility Act ("EMVBeitrV").

These are supplemented by general statutes applicable in special cases, such as the Administrative Expenses Act ("VwKostG") and the Federal Budget Code ("BHO"). These and other authorisations (eg building permits), for which fees may also be payable but which do not relate to frequency usage as such, are not covered here. Only the standard cases of fees and contributions are dealt with.

The Telecommunications Act covers all basic aspects of licensing and frequency authorisation, including for satellite communications.

In Germany, anyone offering publicly available telecoms services requires a licence from the Regulatory Authority for Telecommunications and Posts ("RegTP"). There are four licence classes:

- Class 1: mobile radio services for the public,
- Class 2: satellite services for the public,
- Class 3: publicly available telecoms services not covered by Class 1 or 2,
- Class 4: voice telephony.

A licence entitles the holder solely to operate transmission paths for public service offerings: if radio equipment is to be used to operate the paths, a frequency authorisation is also required for each frequency used.

The first step in the case of satellite services is to find out whether or not and, if appropriate, to what extent satellite earth station equipment is to be used to set up transmission paths.

If transmission paths are to be operated for publicly available satellite services, a licence (Section 6 of the Act) is required. Licences are awarded on application, provided the conditions detailed in the Act are met. In most cases, a Class 2 (satellite) licence is required. However, if mobile (eg S-PCS) terminal equipment is to be used to set up the transmission paths, a composite Class 1 and 2 (mobile radio and satellite) licence is required. In either case, the licence entitles the holder solely to set up the transmission paths for publicly available services.

A frequency authorisation (Section 47 of the Act) is required before frequencies can actually be used or radio transmitting equipment operated. There are two types of frequency authorisation applicable to satellite earth station equipment: an individual, site-related frequency authorisation, as granted for fixed (eg VSAT) equipment, and a general frequency authorisation, as granted for mobile (eg S-PCS) equipment.

No frequency authorisation is required to operate receive-only equipment, as the equipment does not actually use frequencies within the meaning of the Telecommunications Act. SNG equipment is treated as VSAT equipment.

Thus in some cases a licence (Section 6 of the Act) and a frequency authorisation (Section 47 of the Act) are required, but this depends on how the satellite network is configured.

Fees and contributions are payable for licensing and frequency authorisation (Sections 16 and 48 of the Act). The detailed provisions are contained in the ordinances (TKLGebV, FGebV and FBeitrV).

The aim of the EMC Act is to ensure the electromagnetic compatibility of equipment. The costs incurred for the tasks performed under the Act are divided between the individual user groups, using the formulae in the cost ordinance (EMVBeitrV). This gives the annual EMC contribution payable by each operator in a user group; the contribution is recomputed each year.

All the fees and contributions are generally computed using the RegTP's internal cost accounting data. The RegTP keeps a constant record of the costs incurred for the administrative acts relating to each radio application.

**Satellite Fees and Contributions**

The table lists the fees and contributions payable for 1999 under the Telecommunications Act and the EMC Act. **The figures in euros have been rounded off.**

Statutory Basis	Fee/Contribution	Unit	Payment Interval	Comments
FGebV	€ 37	Transmitting frequency	One-time	In bands other than 14.0-14.25 GHz and 29.5-30.0 GHz
FGebV	€ 15	Transmitting frequency	One-time	Only in the bands at 14.0-14.25 GHz and 29.5-30.0 GHz
FBeitrV	€ 89	Transmitting equipment	Annually; recomputed annually as from 2000	In bands other than 14.0-14.25 GHz and 29.5-30.0 GHz
FBeitrV	€ 18	Transmitting equipment	Annually; recomputed annually as from 2000	Band at 14.0-14.25 GHz and 29.5-30.0 GHz
TKLGebV	€ 7.669	Licence	One-time	Class 2 licence only
TKLGebV	€ 15,339	Licence	One-time	Composite Class 1 and 2 licence (S-PCS network)
EMVBeitrV	Approx € 5	Transmitting equipment	Annually	Not yet fixed

The total fees and contributions payable for 1999 have been computed for three scenarios:

I. Operation of a VSAT network with 5 VSATs: 4 VSATs in the band at 14.0-14.25 GHz, 1 VSAT at 14.454 GHz; operation of transmission paths for publicly available services

Statutory Basis	Fee/Contribution	Unit	Payment Interval	Amount
Class 2 licence	€ 7.669	Licence	One-time	€ 7.669
Frequency authorisation fee (14.0-14.25 GHz); 4 pieces of equipment	€ 15	Transmitting equipment	One-time	€ 61
Frequency authorisation fee (14.0-14.25 GHz); 1 frequency 14.454 GHz	€ 37	Frequency	One-time	€ 37
Frequency usage contribution (14.0-14.25 GHz)	€ 18	Transmitting equipment	Annually	€ 72
Frequency usage contribution (14.454 GHz)	€ 89	Transmitting equipment	Annually	€ 89
EMC contribution	€ 5	Transmitting equipment	Annually	€ 26
<b>Total:</b>				<b>€ 7.954</b>

II. Operation of a VSAT network with 5 VSATs: 4 VSATs in the band at 14.0-14.25 GHz, 1 VSAT at 14.454 GHz; no transmission paths for publicly available services

Statutory Basis	Fee/Contribution	Unit	Payment Interval	Amount
Frequency authorisation fee (14.0-14.25 GHz); 4 pieces of equipment	€ 15	Transmitting equipment	One-time	€ 61
Frequency authorisation fee (14.0-14.25 GHz); 1 frequency 14.454 GHz	€ 37	Frequency	One-time	€ 37
Frequency usage contribution (14.0-14.25 GHz)	€ 18	Transmitting equipment	Annually	€ 72
Frequency usage contribution (14.454 GHz)	€ 89	Transmitting equipment	Annually	€ 89
EMC contribution	€ 5	Transmitting equipment	Annually	€ 26
<b>Total:</b>				<b>€ 285</b>

III. Operation of a mobile satellite (S-PCS) network, with the hub station located abroad

Statutory Basis	Fee/Contribution	Unit	Payment Interval	Amount
Composite Class 1 and 2 licence	€ 15.339	Licence	One-time	€ 15.339
<b>Total:</b>				<b>€ 15.339</b>

A general frequency authorisation is granted for S-PCS equipment, for which no fees or contributions are payable. If a hub station is operated in Germany, fees and contributions are payable for each band or frequency used, as listed for scenario I.

**Hungary**

Fees are determined in accordance with Ministerial Decrees 6/1997 (IV.22) KHVM and 13/1998 (V.27) KHVM.

For the occupation of a frequency band no fee is being charged for satellite earth stations.

For the use of a frequency band in the case of high-aperture earth stations a fee is being charged of which the amount depends on the frequency and the bandwidth.

The fees for terminals are calculated as follows, “n” being the number of channels:

System	Type of terminal	Channel bandwidth	Fee/month in €
A	Earth station	19.2 kHz	0.03 x n
B	Earth station	20 MHz	19.3 x n
C	Earth station	9 MHz	17.3 x n
C	Earth station	34 MHz	65.6 x n
D	For each SNG terminal	-	38.6
E	For each VSAT terminal	-	3.86

**Ireland**

Fees are defined in Document No ODTR/0064.

For fixed satellite earth stations used in one or both of the frequency bands 12.5-12.75 GHz and 14.0-14.25 GHz or in other bands determined by the ODTR, the following fees apply:

Licence fee for each fixed satellite earth station on the issue of and on each renewal of the Licence:

- **100 €** for each fixed satellite station up to 10 stations
- **25 €** for each additional fixed satellite station above 10.

For fixed satellite earth stations used in other bands than the above and above 3 GHz, a licence fee for issue and on each renewal of the licence is being charged. The amount depends on the frequency band used, the bandwidth of the radio spectrum used and the power emitted by the fixed satellite earth station.

- a) For a station used in frequency band 3-10 GHz with an EIRP below 50 dBW:  
from less than 500 KHz bandwidth to 80 MHz: **1.000 € to 2.000 €**
- b) For a station used in frequency band 3-10 GHz with an EIRP between 50 dBW and 75 dBW:  
from less than 500 KHz bandwidth to 80 MHz: **1.250 € to 2.250 €**
- c) For a station used in frequency band 3-10 GHz with an EIRP above 75 dBW:  
from less than 500 KHz bandwidth to 80 MHz: **1.500 € to 2.500 €**

In case the station is also used as a receiving fixed satellite earth station, the amount in c) is payable in addition to the fee in a) b) or c).

- d) For a station used in frequency band 10-15 GHz with an EIRP below 50 dBW:  
from less than 500 KHz bandwidth to 80 MHz: **500 € to 1.500 €**
- e) For a station used in frequency band 10-15 GHz with an EIRP between 50 dBW and 75 dBW:  
from less than 500 KHz bandwidth to 80 MHz: **750 € to 1.750 €**
- f) For a station used in frequency band 10-15 GHz with an EIRP above 75 dBW:  
from less than 500 KHz bandwidth to 80 MHz: **1.000 € to 2.000 €**

In case the station is also used as a receiving fixed satellite earth station, the amount in f) is payable in addition to the fee in d) e) or f).

- g) For a station used in frequency band above 15 GHz with an EIRP below 50 dBW:  
from less than 500 KHz bandwidth to 80 MHz: **125 € to 1.000 €**
- h) For a station used in frequency band above 15 GHz with an EIRP between 50 dBW and 75 dBW:  
from less than 500 KHz bandwidth to 80 MHz: **250 € to 1.250 €**
- i) For a station used in frequency band above 15 GHz with an EIRP above 75 dBW:  
from less than 500 KHz bandwidth to 80 MHz: **500 € to 1.500 €**

In case the station is also used as a receiving fixed satellite earth station, the amount in f) is payable in addition to the fee in g) h) or i).

Where a licence is granted for a portion of a year the fees are proportionate to the number of months.

In addition to radio fees a fee of **2.500 €** is being charged for the issuing of a Basic Telecom Licence.

## **Italy**

Radio fees are set out in Decree of 21 March 1997.

### **1- Network provisions**

The following administrative one-off fee is charged upon issuing and for each renewal of authorisation to cover the costs incurred by the application:

- **530 €** for the request if no co-ordination
- **2.070 €** for the request if coordination is required

### **2- Service provision**

An administrative fee of **530 €** is being charged upon issuing and for each renewal of authorisation to cover the costs incurred by the application. However, services offered in exclusive bands which are authorised if no negative reply is received from the Authority after four weeks from receipt of the application are exempt from this fee.

### **3- Fee for administrative control and technical verification**

*First year:*

For a VSAT network composed of one-way or two-way fixed or transportable satellite earth stations, including a control station connected to the PSTN:

- |                        |                 |
|------------------------|-----------------|
| 1. Up to 10 stations:  | <b>2.065 €</b>  |
| 2. Up to 100 stations: | <b>5.165 €</b>  |
| 3. Above 100 stations  | <b>10.330 €</b> |

For a VSAT network composed of one-way or two-way fixed or transportable satellite earth stations, including a control station not connected to the PSTN:

- |                       |                |
|-----------------------|----------------|
| 1. Up to 10 stations  | <b>1.549 €</b> |
| 2. Up to 100 stations | <b>3.873 €</b> |
| 3. Above 100 stations | <b>7.747 €</b> |

For one or more SNG stations: **2.065 €**

*Annual fee*

Further to the above in compliance with Art. 12, paragraph 3, of legislative decree of 11 February 1997, n. 55, an annual fee for the operation of a VSAT network is being charged as follows:

- For bandwidth up to 100 kHz: **1.032 €**
- For bandwidth between 100 kHz and 1 MHz: **5.165 €**
- For bandwidth between 1 MHz and 10 M-Hz: **10.330 €**
- Above 10 MHz: **20.660 €**
- For a fixed or transportable dependent station: **103 €**

For SNG stations authorisations issued with a validity of 30 days are charged as follows:

- For each station used: **516 €**
- For each additional geo-stationary satellite connected to the same station: **516 €**
- For each SNG station authorised to transmit an unlimited number of events per year **8.300 €**

## Luxembourg

Fees are set out in Decree of 25 September 1998 as follows.

### 1- Radio licence fees

- VSATs  
One-off fee: **6.445 €** per authorisation (i.e. regardless of the number of stations)  
Annual fee: **2.974 €** per authorisation (i.e. regardless of the number of stations)
- Stations other than VSAT and SNG  
One off fee: **24.789 €** per authorisation  
Annual fee: **12.395 €** per transmitter

### 2- Service licence fees

One-off fees:

- **619 €** for a declaration
- **6.197 €** for a licence

Annual fee:

- **124 €** for declaration
- **12.395 €** plus % of turnover  
**0 – 12.394.676 €**: 0,10%  
up to **24.789.352 €**: 0,15 %.

## Netherlands

### Policy framework

The Radiocommunications Agency is an *executive* Agency within the Transport and Water Management Inspectorate, which is part of the Ministry of Transport, Public Works and Water Management. The independent status of an Agency means that the Radiocommunications Agency is free to deploy its resources (including personnel) within a given constraint. The main tasks of Radiocommunications Agency are:

- I. Frequency management.  
This is activity at the creation, planning and issuing of frequencies.
- II. Standardisation of telecommunications equipment.  
The goal is efficient use of the frequency spectrum and meeting the standards for electromagnetic compatibility (EMC); this means that all items of equipment must work together without mutual interference, from electric shavers to radar equipment
- I. Enforcement of the frequency usage arrangements  
These are activities, which contribute to ensuring compliance with the rules and relating to the use of the airwaves and of equipment.

The Radiocommunications Agency operates within the policy framework of the Directorate-General for Telecommunications and Post (DGTP). The Directorate General for Telecommunications and Post (DGTP) formulates the government policy in the field of telecommunications (and postal services). The Radiocommunications Agency *implements* that part of the policy, which is related to the structuring of the radio spectrum.

The distinction between policy and its implementation will lead to productive efficiency: a more effective, flexible and efficient operational performance of the Radiocommunications Agency.

### General Fees policy

The Radiocommunications Agency covers its operational costs. The central idea of the fee policy is the commitment to 100% cost-efficiency per product group. The Radiocommunications Agency has adopted the principle that the beneficiary pays for the costs of the Agency. Positive and negative results per product group are taken into account when determining the fees for subsequent years. The Radiocommunications Agency distinguishes the following product groups:

**I Categories relating to the use of frequency space**

- A Fixed links
- B Mobile communication
- C Mobile public telephony and public paging
- D Radio determination
- E Amateur radio operators
- F Broadcasting

**II Categories of terminal equipment and radio transmitters and other equipment**

- A Examinations
- B Issue of type approval and inspection certificates and certifications
- C Terminal equipment

In general the tariff has two components:

- one-off licence fee
- annual costs for enforcement.

***One-off licence fee***

This fee reflects the once-made costs for issuing the licence such as frequency planning and management, international co-ordination, administrative costs (e.g. paperwork) and investment in equipment. Also the indirect costs of departments such as the communications department and legal department are a part of that tariff. The one-off licence fee is cost-oriented and is not to be confused with the amount to be paid in case of an auction (see below).

***Annual costs for enforcement***

Every year a licence holder pays for the efforts of enforcement and monitoring. These are activities, which contribute to ensuring compliance with the rules and relate to the use of the spectrum and of equipment.

Every year the Minister approves the level of the tariffs. Tariffs are published in the ‘Radiocommunications Agency Charges Order 2002’.

**Auctions**

The new Telecommunications Act determines that in case frequencies for new services are issued these frequencies will be issued by means of an auction or beauty contest. In principle there is a preference for the instrument of auction in case of (expected) scarcity. According to the current policy this is the case for all licences in the category of commercial use and commercial broadcasting. Licensing by way of competitive test procedure can only take place ‘*if it fosters general social, cultural or economic interests*’ (Frequency Decree, Article 3, paragraph 2). As a result in 1998 frequencies for GSM and DCS1800 were auctioned and in July 2000 the Netherlands auctioned the 3<sup>rd</sup> generation mobile telecommunications frequencies (UMTS).

***Absolute minimum price (‘financial instrument’)***

Recently the Telecommunications Act has been altered to secure a certain minimum price when a licence is issued. This as a result of the perceived disappointing auction proceeds of the latest UMTS auction. Now, in case new licences are issued a minimum price has to be paid, regardless of the number of bidders, or even in case there is no scarcity (number of bidders  $\leq$  number of licences). The minimum price itself, must reflect the value of the spectrum. This should also be applied in case a beauty contest is being held. This so-called ‘minimum price’ can also be paid on a yearly basis or after a certain period when applications must be developed first to ensure enough market potentiality. This so-called ‘benefit-sharing’ will for instance be implemented for licences of digital terrestrial TV broadcasting (DVB-T).

***Auction does not affect the cost-based fee structure of the Radiocommunications Agency***

The policy to have an auction in case of (expected) scarcity does not change the general policy of cost based tariffs as explained above. The proceeds of the auction go directly to the State Department (Ministry of Finance). At the same time during the total licence period the licence holder is covered by the cost-based regime (retributions to the Radiocommunications Agency).

**Administrative Incentive Pricing (AIP)**

In 1999 the Radiocommunications Agency conducted research on the possibilities of implementing Administrative Incentive Pricing (AIP) in The Netherlands. AIP has no legal basis in the current Telecommunications Act. Therefore strong arguments had to be found in favour of a (possible) implementation of this concept. The conclusion was that as a result of the above-mentioned policy of auctioning scarce frequencies as a first option the applicability for AIP was not

large. To apply both auctions and at the same time AIP for the same licences was not considered an option. Also there were no convincing reasons for applying AIP for current applications such as PMR and fixed links because there were no apparent scarcity problems (or foreseen problems) in these areas. Therefore it is not expected that AIP will be implemented within a short period of time in The Netherlands.

**Satellite fees**

*General licence Regime*

For the use of frequencies for the purpose of a Satellite Earth Station (SES) a licence from the Radiocommunications Agency is required. No licence is required for Receive-only terminals and all mobile satellite terminals. Inmarsat terminals that take part in the Global Maritime Distress and Safety System (GMDSS) are not licence exempted

The licence can be applied for by the actual user of the SES or by a network provider. The licence will be issued for the provision of permitted satellite services by means of a satellite earth station.

*Fees*

In the above given classification in the Charges Order of product groups satellite fees can be found in the product groups ‘Fixed Links’ and ‘Mobile communication’. These categories are related to the use of frequency spectrum.

*Transmitting satellite earth stations (SES)*

The vast majority of satellite fees is covered by the product group ‘Fixed Links’, the so-called category ‘Transmitting satellite earth stations’. When such a licence is issued a one-off fee of **513.20 €** has to be paid for planning and administrative costs. Then, depending on the bandwidth, a yearly fee has to be paid for control and monitoring tasks<sup>30</sup>. The lesser the bandwidth, the lower this yearly fee. Besides these fees a separate fee is charged in case international co-ordination is necessary. For 2001 this fee was **889.54 €**.

*SNG licence*

For granting a licence for SNG a lump sum has to be paid of **513.20 €** and an annual amount of **267.27 €** per SNG-station. Also this yearly fee represents the costs for control and monitoring.

Receive-only stations are free of charge. As a result of the Telecommunications Act of The Netherlands, no licences are required for the satellites.

Also VSAT’s, SITs and SUTs are exempted from licensing if the Eirp is less or equal than 50 dBW. This regulation only refers to the stations that comply with the following:

- VSAT (Very Small Aperture Terminal)
  - Frequencies: 14.0 – 14.25 GHz (Earth to Space)
  - 12.5 – 12.75 GHz (Space to Earth)
- SITs (Satellite Interactive Terminal)
  - Frequencies: 29.5 – 30 GHz (Earth to Space)
  - 10.7 – 12.75 GHz (Space to Earth)
- SUTs (Satellite User Terminal)
  - Frequencies: 29.5 – 30 GHz (Earth to Space)
  - 19.7 – 20.2 GHz (Space to Earth)

Also the following rules apply:

- The maximum output power is 2 Watt and the maximal radiated power is 50 dB Watt e.i.r.p.
- The equipment is situated at a greater distance than 500 meters outside the boundaries of an airport terrain.

**A licence is required:**

When the station operates in another frequency band, or has a higher e.i.r.p. than 50 dB Watt, the licence regime fully applies. This is also the case when the station is situated within 500 meters of an airport terrain. Subsequently the site clearance procedure is in force. This procedure guarantees that these stations do not interfere with signals of aeroplanes or with equipment on the airport.

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<sup>30</sup> 0-2 MHz 17,72 Euro each year;  
 2-18 MHz 89,09 Euro each year;  
 >18 MHz 445,45 Euro each year.

In case of a variable bandwidth the highest possible bandwidth is the calculation base.

Information given by satellite operator/user to NRA (the Radiocommunications Agency, Netherlands)

The following information is needed when applying for a satellite licence in the Netherlands.

Information needed for licensing		
6	Purpose of the licence (SNG, VSAT, HUB etc.)	<p>Company name, complete address and phone/fax numbers</p> <ul style="list-style-type: none"> <li>• Name of contact person</li> <li>• Start of operations</li> <li>• Description of the service (data, video, audio, phone, own use, public use, third party use; if SES, give description of the setting up and management of Closed User Groups.</li> <li>• Billing address (if different from postal address)</li> <li>• Status of the person signing the application</li> </ul>
7	VSAT only (SG10)	<ul style="list-style-type: none"> <li>• Name and location of satellite that will be used</li> <li>• Make/model/type and size (metres) of (parabolic) antenna</li> <li>• Transmitting frequency (GHz)</li> <li>• Receiving frequency (GHz)</li> <li>• Maximum transmission power (EIRP)</li> <li>• Maximum transmission speed (kB/s or MB/s)</li> <li>• Total assigned frequency bandwidth (kHz)</li> <li>• Address, phone and fax of HUB/control/main station</li> <li>• Address, phone and fax of administration centre (if different)</li> <li>• General description of system configuration (e.g. mesh or star, attach diagram showing a plan of the network clearly identifying the HUB station and the Control station (if different) and the points of connections to the Public Network (if any)</li> <li>• Location of each satellite station (address and city)</li> </ul> <p><b>If HUB station in The Netherlands:</b></p> <ul style="list-style-type: none"> <li>• Name and location of satellite that will be used</li> <li>• Make/model/type and size (metres) of (parabolic) antenna</li> <li>• Transmitting frequency (GHz) to satellite</li> <li>• Receiving frequency (GHz) from satellite</li> <li>• Maximum transmission power (EIRP)</li> <li>• Maximum transmission speed (kB/s or MB/s)</li> <li>• Geographical co-ordinates (longitude, latitude)</li> <li>• Total assigned frequency bandwidth (kHz)</li> <li>• Address, phone and fax of HUB/control/main station</li> <li>• Address, phone and fax of administration centre (if different)</li> <li>• General description of system configuration (e.g. mesh or star, attach diagram showing a plan of the network clearly identifying the HUB station and the Control station (if different) and the points of connections to the Public Network (if any)</li> <li>• Information on measures that will be taken to protect the integrity of the system (e.g. availability of staff at the station and/or control centre, redundancy of subsystems)</li> <li>• ITU co-ordination (special application form APS4/III to be completed) Only one form is necessary for the network in The Netherlands.</li> </ul>

8	<p><b>If one-way up-link (SG 20)</b></p>	<ul style="list-style-type: none"> <li>• Name and location of satellite that will be used</li> <li>• Make/model/type and size (metres) of (parabolic) antenna</li> <li>• Transmitting frequency (GHz)</li> <li>• Receiving frequency (GHz)</li> <li>• Maximum transmission power (EIRP)</li> <li>• Maximum transmission speed (kB/s or MB/s)</li> <li>• Total assigned frequency bandwidth (kHz)</li> <li>• Address, phone and fax of HUB/control/main station</li> <li>• Address, phone and fax of administration centre (if different)</li> <li>• General description of system configuration (e.g. mesh or star, attach diagram showing a plan of the network clearly identifying the HUB station and the Control station (if different) and the points of connections to the Public Network (if any)</li> <li>• Location of each satellite station (address and city)</li> </ul> <p><b>If HUB station in the Netherlands:</b></p> <ul style="list-style-type: none"> <li>• Name and location of satellite that will be used</li> <li>• Make/model/type and size (metres) of (parabolic) antenna</li> <li>• Transmitting frequency (GHz) to satellite</li> <li>• Receiving frequency (GHz) from satellite</li> <li>• Maximum transmission power (EIRP)</li> <li>• Maximum transmission speed (kB/s or MB/s)</li> <li>• Geographical co-ordinates (longitude, latitude)</li> <li>• Total assigned frequency bandwidth (kHz)</li> <li>• Address, phone and fax of HUB/control/main station</li> <li>• Address, phone and fax of administration centre (if different)</li> <li>• General description of system configuration (e.g. mesh or star, attach diagram showing a plan of the network clearly identifying the HUB station and the Control station (if different) and the points of connections to the Public Network (if any)</li> <li>• Information on measures that will be taken to protect the integrity of the system (e.g. availability of staff at the station and/or control centre, redundancy of subsystems)</li> <li>• ITU co-ordination (special application form APS4/III to be completed) Only one form is necessary for the network in The Netherlands</li> </ul>
9	<p><b>SNG only (SG30)</b></p>	<ul style="list-style-type: none"> <li>• Name and location of satellites that will be used</li> <li>• State registration numbers from the satellite organisations and/or own registration numbers.</li> <li>• Maximum transmission power (EIRP)</li> <li>• Address, phone and fax of HUB/control/main station</li> <li>• Address, phone and fax of administration centre (if different)</li> </ul> <p>Information on measures that will be taken to protect the integrity of the system (e.g. availability of staff at the station and/or control centre, redundancy of subsystems)</p>

**Norway**

**General fee policy**

In Norway, the fees for radio licences are cost based with differentiation based on certain models for the different radio services. The fees shall only cover the administrative costs incurred in the issue, management, control and enforcement of the licence, including overhead costs. The basis of the calculation of fees is the budget of the Norwegian Post- and Telecommunications Authority, which is approved by parliament yearly.

Fees are divided into 2 categories; standardised fees and individual decision fees. They are both covered by a regulation for fees. Standardised fees are included in a price list in the regulation. They usually refer to a number of stations, a certain frequency band or the bandwidth occupied.

Individual decision fees are administrative decisions relating to the rights or duties of one or more specified persons or companies. They are typically used for large companies with activities in several radiocommunications areas or companies with national frequency blocks. These fees are settled each year on a cost orientated basis. Grounds shall be given for these individual decisions. The administrative agency shall state the grounds at the same time as the decision is made. The agency try to keep individual decision fees stable, but in some cases they might vary from year to year.

The grounds shall also mention the factual circumstances upon which the administrative decision is based. Mention should be made of the main considerations, which have been decisive for the exercise of the administrative agency's discretionary powers.

The exception from the general fee policy are cellular mobile networks where the Ministry of Transport impose a fee for the use of frequencies.

### **Satellite fees**

All licence holders pay a yearly fee. The licences are usually issued for a period of 5-8 years, depending on the size of the network. To keep the licensing regime simple, there are no one-off fees and the yearly fees are the same. This create a stable, basic income for the authority and prevent large fluctuations in the licence fees for the users.

The fees are not different when frequency co-ordination/site clearance has to take place. Receive-only stations are licence free so these are excluded from fees.

The fees are differentiated on the basis of frequency bands in the following manner:

- less than 3 GHz: **618 €** per station
- between 3 and 10 GHz: **371 €** per station
- larger than 10 GHz: **247 €** per station

There are no differentiation on the basis of power, bandwidth or type of terminal.

For larger networks with several satellite stations, the fees are calculated on an individual decision basis each year. These fees vary between **1237 €** and **3711 €**.

### **Poland**

The following fees apply to VSATs:

- One-off fee for licence issuing: **127 €**
- Annual fee: **16 €** per station or **32 €** per station if located in a city of over 100.000 inhabitants

### *Answers to the questionnaire:*

- System A  
The Polish administration does not use C-band for satellite communication. Fixed services have priority.
- System B  
Feeder link station 16 € per 10 kHz of bandwidth per year
- System C  
See System A
- System D  
SNG station: 1.910 per year or 1.910/12 per month
- System E  
VSAT Terminal: 16 € per terminal

All fees are multiplied by two if the earth station is located in a town with more than 100.000 inhabitants.

**Portugal**

Radio fees are set out in Ministerial Order no.462/98 as follows.

1- Administrative fee

Administrative fees for Fixed Satellite services are charged per transmitter and depend on the frequency band:

- Earth station in preferred band: **167 €**
- Earth station in non-preferred band: **500 €**
- Receiving earth station with protection: **166 €**
- Temporary licence of transportable earth station: **35 €.**

**2- Spectrum fee**

Spectrum fees are charged depending on the bandwidth used.

VSAT

<b>Bandwidth</b>	<b>Fees in €</b>
< 200 kHz	51
200 kHz- 2 MHz	127
2 MHz-18 MHz	1.272
>18 MHz	7.632

System	Type of terminal	Channel bandwidth	Licence fee in €	Spectrum fee in €
A	Earth station	19.2 kHz	500	59
B	Earth station	20 MHz	500	30.708
C	Earth station	9 MHz	500	13.818
C	Earth station	34 MHz	500	52.203
D	For each SNG terminal	-	167	35
E	For each VSAT terminal	-	167	35

**Spain**

In Spain fees depend on a number of factors (see coefficients below) which vary if the satellite service is operated for self-provision, to third parties or as a public service.

Spectrum fees are calculated as follows:

Fee= S (km<sup>2</sup>) x B (kHz) x F[C<sub>1</sub>.C<sub>2</sub>.C<sub>3</sub>.C<sub>4</sub>.C<sub>5</sub>] whereby

- S is the geographic area, if the whole of Spain: 505990 km<sup>2</sup>
- B is the bandwidth in kHz multiplied by the number of frequencies per direction
- F[C<sub>1</sub>.C<sub>2</sub>.C<sub>3</sub>.C<sub>4</sub>.C<sub>5</sub>] is a function of 5 criteria related to the service and the band.

The above five parameters are defined below.

1- Coefficient C1: Degree of utilisation and congestion of the different bands and different geographical zones.

The following criteria are taken into account:

- Number of frequencies per concession or authorisation
- Rural or urban area
- Zone of service.

2- Coefficient C2: Type of service for which the spectrum is intended and, in particular, if subject to certain obligations of public services.

The following criteria are taken into account:

- Support of other networks
- Provision to third parties
- Self-provision
- Telephony services with exclusive rights
- Radio transmission services.

3- Coefficient C3: Band or sub-band of spectrum.

The following criteria are taken into account:

- Radio characteristics of the band
- Forecast of future use of the band
- Exclusive or shared use of the sub-band.

4- Coefficient C4: Equipment and technology used.

The following criteria are taken into account:

- Conventional networks
- Networks with random assignment
- Radio connection modulation
- Radiated power.

5- Coefficient C5: Economic value derived from the use or benefits from the radio public domain reserved.

The following criteria are taken into account:

- Non commercial experiments
- Economic profitability of the service
- Social interest linked to the band
- Use derived from market demand
- Population density.

The application of the above criteria is function of the type of service from a radio-electric point of view.

## **Switzerland**

### **General fee policy**

It is a general principle in the Swiss administrative law to distinguish clearly between **licence fees**, which are due for the exclusive right to benefit from or utilise a *regalia* the State confers to the licensee, and **administrative fees**, which are intended to cover the administrative costs incurred by the granting and the regular support of a licence and only these costs.

### ***Licence fees***

- Service licence fees

According to Article 38 para 2 of the Telecommunications Act (TCA) of 30 April 1997 the licensing fees for telecommunication service licences shall only be used to finance the contributions to the provision of universal service. The amount of the fees depends on the amount of funding required by the holder(s) of licence(s) to provide universal service to cover their specific investment contributions (art 19 TCA). It follows that no telecommunications service licensing fees will be levied as long as there are no investment contributions being made for a special universal service. Moreover, the incumbent operator is obliged to guarantee the provision of universal service free of charge during the first five years after the entering into force of the TCA (art 66 para. 1 TCA). This licence is only necessary insofar as the licensee is providing telecommunications services.

- Spectrum fees  
(= licence fees concerning the radio licenses; providing an opportunity to set incentives for an efficient use of radio spectrum)

With respect to radiocommunications article 39 TCA lays down *inter alia* the general principle that the usage of radio spectrum is subject to a yearly spectrum fee (because radio spectrum is a regalia) and the relevant factors for the calculation of this fee. According to article 39 para. 2 TCA the amount of the radiocommunications licence fee shall be calculated on the basis of the consumption of spectrum in particular on the range of assigned frequency, the frequency class, the assigned bandwidth and the territorial and the licence duration.

### **Administrative fees**

All administrative fees shall be based on the specific administrative costs of the sector (for example the sector of satellite communication). To calculate these costs a cost accounting system is used (since 1999).

- One-off Administrative fees

*Paralelly article 40 TCA is the legal basis for the levy by the licensing authority of a one-off administrative fee for the delivery of licences (administration effort), independently from the fact whether the licence is a service licence or a radio licence. That means there are two different one-off administrative fees – one for each kind of licence.*

- Yearly Administrative fees

Finally, the Swiss administration collects two kinds of yearly administrative fees. The first one (concerning the service licences) is levied for the surveillance of the licences aiming at the covering of all linked administrative costs. The second one (concerning the radio licences) is levied for the management and technical control of the radio spectrum to cover the administrative costs caused by the regular spectrum-linked support of the licences.

### **Fees for satellite communication**

#### **Fees concerning the service licence**

(decree: “Verordnung des UVEK über Verwaltungsgebühren im Fernmeldebereich” of 22 October 1997 – status of 28 December 2000 - article 2, 1-3)

- One-off administrative fee\*:  
Individually calculated by the time required with a per hour rate of 290 CHF (190.50 €), but at least 1000 CHF (656.50 €)
- Yearly fee for the surveillance of the licence\*:  
1000 CHF (656.50 €) per year
- service licences fee:  
As has been mentioned above, service licence fees have not been collected yet. Moreover their amount will depend on the amount of funding for which the universal service licensee(s) has (have) been awarded the universal service licence(s).

#### **Fees concerning the radio licence**

(decree: “Verordnung des UVEK über Verwaltungsgebühren im Fernmeldebereich” of 22 October 1997 – status of 28 December 2000 - article 6 and 6a, “Verordnung über Gebühren im Fernmeldebereich”\* of 6 October 1997 – status of 28 December 2000 – 11 and 11a)

- One-off administrative fee:  
Individually calculated by the time required with a per hour rate of 310 CHF (203.60 €), but at least 310 CHF (203.60 €)

- Yearly fee for the management and technical control of the radio spectrum:  
Individually calculated by the time required with a per hour rate of 290 CHF  
(190.50 €)
- Radio licence fee\*:
  - **FSS:**  
Charged per link (up- and down-link) calculated by following formula

$\boxed{\text{Frequency flat rate} * \text{frequency band factor} * \text{bandwidth factor} * \text{range factor}}$

- **MSS:**  
calculated by following formula

*Flat price \* frequency band factor \* bandwidth factor \* time factor*

$\boxed{\text{Frequency class factor (exclusive or shared use)}}$

Annex II

The results of the questionnaire on satellite fees:

Preliminary remarks

Answers to the questionnaire from 26 administrations have been received. It should be noted that the overview in the annex is not yet fully checked by administrations. This is necessary, since it was in a number of cases not easy to interpret the information, so the possibility of mistakes is high. Corrections and remarks are welcome.

Case studies from the questionnaire

Example System A

A typical Permanent Earth Station - 19.2 kHz Bandwidth

Operating to Satellite:	Geo-stationary @ 31.5° W.
Uplink Frequencies:	5890 to 6220 MHz.
Downlink Frequencies:	3665 to 4055 MHz.
Azimuth:	To point at required satellite
Elevation:	To point at required satellite
Emission code:	19k2G1W.
Antenna Type:	Cassegrain.
Dish size:	6.1 m.
Antenna gain Transmit:	49.8 dBi.
Antenna gain Receive:	46 dBi.
Antenna input power:	15.2 dBW.
Max Transmit Power Density:	-27.6 dBW/Hz.
Max Transmit EIRP:	65 dBW.
Beamwidth Transmit:	0.56°.
Beamwidth Receive:	0.86°.
Radiation pattern:	ITU/R Recommendation 580.
Noise temperature:	120K.

Example System B

A typical Permanent Earth Station - 20 MHz Bandwidth

Operating to Satellite:	Geo-stationary @ 13°E.
Uplink Frequencies:	14.00 to 14.500 GHz.
Downlink Frequencies:	Uplink only for Broadcast
Azimuth:	To point at required satellite
Elevation:	To point at required satellite
Emission code:	20M0F3F.
Antenna Type:	Cassegrain.
Dish size:	6.1 m.
Antenna gain Transmit:	56 dBi.
Antenna gain Receive:	55 dBi.
Antenna input power:	20 dBW.
Max Transmit Power Density:	-53 dBW/Hz.
Max Transmit EIRP:	76 dBW.
Beamwidth Transmit:	0.26°.
Beamwidth Receive:	0.31°.
Radiation pattern:	IITU/R Recommendation 580.
Noise temperature:	135K.

**Example System C**

A typical Permanent Earth Station - Variable Bandwidths between 9 and 34 MHz as defined by emission code

Operating to Satellite:	Geo-stationary @ 18°W.
Uplink Frequencies:	5967 to 6280 MHz.
Downlink Frequencies:	3742.5 to 4055 MHz.
Azimuth:	202.4°.
Elevation:	28.7°.
Emission code:	9M00F2FNN, 27M0F3FNN, 22M0F7FNF, 34M0G2DWN.
Antenna Type:	Cassegrain.
Dish size:	9.3 m.
Antenna gain Transmit:	54 dBi.
Antenna gain Receive:	51 dBi.
Antenna input power:	30 dBW.
Max Transmit Power Density:	-39.5, -44.3, -43.4, -45.3 dBW/Hz.
Max Transmit EIRP:	84 dBW.
Beamwidth Transmit:	0.31°.
Beamwidth Receive:	0.51°.
Radiation pattern:	ITU/R Recommendation 580.
Noise temperature:	79K.

**Example D**

A typical Transportable Earth Station (TES) – Bandwidth 64kHz

Operating to Satellite:	As Required*
Uplink Beam:	As Required*
Uplink Frequencies:	14.00 to 14.500 GHz.
Downlink Beam:	None specified*
Downlink Frequencies:	None specified*
Azimuth:	None specified*
Elevation:	None specified*
Emission code:	None specified*
Antenna Type:	Cassegrain.
Dish size:	1.9 m.
Antenna gain Transmit:	46.9 dBi.
Antenna gain Receive:	None required.
Antenna input power:	None specified*
Max Transmit Power Density:	None specified*
Max Transmit EIRP:	None specified*
Beamwidth Transmit:	0.75°.
Beamwidth Receive:	None specified*
Radiation pattern:	29-25logβ.
Noise temperature:	None specified*

\* Mainly for SNG transmission - Satellite, Frequencies, Emission Codes etc dependant on application.

**Example E**

A typical Very Small Aperture Terminal (VSAT) – Bandwidth 150kHz.

Operating to Satellite:	Geo-stationary @ 37.5° W.
Uplink Beam:	REH.
Uplink Frequencies:	14.00 to 14.25 GHz.
Downlink Beam:	NAB.
Downlink Frequencies:	11.6465 GHz.
Azimuth:	None specified – dependant on terminal* location
Elevation:	None specified – dependant on terminal* location
Emission code:	150kF1D.
Antenna Type:	Offset.
Dish size:	1.2m.
Antenna gain Transmit:	43.2 dBi.
Antenna gain Receive:	41.7 dBi.
Antenna input power:	0 dBW.
Max Transmit Power Density:	-56.1 dBW/Hz.
Max Transmit EIRP:	43.2 dBW.
Beamwidth Transmit:	1.2°.
Beamwidth Receive:	1.4°.
Radiation pattern:	ITU/R Recommendation 580.
Noise temperature:	160K.

\* calculate preferably for 100 terminals

Questionnaire Results

Admini- stration <sup>1</sup>	Type of fee	System A (PES-19,2 kHz band- width)	System B (PES-20MHz band-width)	System C (PES- variable bandwidth between 9 & 34 MHz)	System D (TES – bandwidth 64 kHz)	System E (VSAT –150kHz bandwidth100 stations)
Austria	1 <sup>st</sup> year	1406 <sup>2</sup> 3272 <sup>3</sup>	1406 3272	4022 5888		18 098 19 964
	Yearly	1308	1308	3924	49 <sup>4</sup>	17 441
Belgium	1 <sup>st</sup> year	822 <sup>2</sup> 1849 <sup>3</sup>	5393 6420	5393 6420	822	5970
	Yearly	52	4623 <sup>5</sup>	4623	52	5200
Bulgaria	1 <sup>st</sup> year	535	4 000	2 075-6 450	145	535
	Yearly	35	3 500	1 575-5 950	-	35
<b>Croatia</b>	1 <sup>st</sup> year					
	Every year	N/A	19 570 <sup>14</sup> 39 140	39 149 19 575 <sup>15</sup>	5 220 <sup>16</sup> 1 040	104 000 <sup>17</sup> 7 830 <sup>18</sup>
<b>Cyprus</b>	1 <sup>st</sup> year Yearly	No fees	No fees	No fees	No fees	No fees
<b>Czech Republic</b>	1 <sup>st</sup> year	390	1 590	765-2 640	390	390
	Yearly	300	1 500	675-2550	<sup>19</sup> 300	300
<b>Denmark</b>	1 <sup>st</sup> year					
	Yearly	26	46	399 <sup>20</sup> 1508	46	0
<b>Estonia*</b>	1 <sup>st</sup> year	326-403 <sup>21</sup>		901-2013 <sup>21</sup>	365	0
	Yearly	38-115 <sup>21</sup>	460-1 725 <sup>21</sup>	613-1 725 <sup>21</sup>	77	0
<b>Finland</b>	1 <sup>st</sup> year					
	Yearly	161 <sup>22</sup>	66 <sup>23</sup>	161 <sup>22</sup>	66 <sup>23</sup>	6 600 <sup>23</sup>
<b>France</b>	1 <sup>st</sup> year	0	0	0	0	0
	Yearly	534 <sup>25</sup> 307 <sup>26</sup>	0	534 <sup>25</sup> 1 438 <sup>26 &amp; 6</sup> 3 076 <sup>26 &amp; 8</sup> 3 705 <sup>26 &amp; 7</sup> 4 587 <sup>26 &amp; 9</sup>	0 <sup>27</sup>	1 524 <sup>28</sup> 9 124 <sup>29</sup>
<b>Germany*</b>	1 <sup>st</sup> year	131 <sup>30</sup>	38 <sup>31</sup> 131 <sup>32</sup>	242	131 <sup>33</sup>	3 800 <sup>31</sup>
	Yearly	94	23 94	94	94	2 300
<b>Hungary</b>	1 <sup>st</sup> year					
	Yearly	0	232	209 <sup>34</sup> 790 <sup>35</sup>	465	4651

Admini- stration <sup>1</sup>	Type of fee	System A (PES-19,2 kHz band- width)	System B (PES-20MHz band-width)	System C (PES- variable bandwidth between 9 & 34 MHz)	System D (TES – bandwidth 64 kHz)	System E (VSAT –150kHz bandwidth100 stations)
<b>Ireland</b>	1 <sup>st</sup> year					
	Yearly	1250	100 <sup>36</sup> 1750 <sup>32</sup>	4000 <sup>34</sup> 4500 <sup>37</sup>	100 <sup>38</sup> 500 <sup>39</sup> 750 <sup>40</sup> 1000 <sup>41</sup>	3250
<b>Italy</b>	1 <sup>st</sup> year	10 000	10 000	10 000	12500 <sup>42</sup> / 5000 <sup>43</sup>	21 400
	Yearly	0	0	0	8000/1000	15 000
<b>Latvia</b>	1 <sup>st</sup> year	1870	5460	33150	1870	276 931 <sup>44</sup>
	Yearly	1020	4610	32300	1020	276 846
<b>Lithuania</b>	1 <sup>st</sup> year	280	1486	1245 <sup>45</sup> 5319 <sup>46</sup>	263	28 025
	Yearly	53	1072	858 4252	53	5300
<b>Luxembourg</b>	Fees under revision					
<b>The Netherlands</b>	1 <sup>st</sup> year	1447 <sup>47</sup>	1 883	1883	795	2341
	Yearly	18	454	454	272	1800
<b>Norway</b>	1 <sup>st</sup> year					
	Yearly	375 <sup>48</sup>	250	375	250	<b>3 750</b>
<b>Poland*<sup>49</sup></b>	1 <sup>st</sup> year					
	Yearly	N/A	31 580	N/A	1890	1 579
<b>Portugal</b>	1 <sup>st</sup> year	618	31 208	14 318 <sup>20</sup> 52 703	202	16 770
	Yearly	118	30 708	13 818 52 203	35	70
<b>Spain<sup>50</sup></b>	1 <sup>st</sup> year					
	Yearly	60	17 730 <sup>51</sup> 21 336 5 337	18 145 <sup>52</sup> 22 658 5 650  44 355 55 413 13 823  54 392 68 035 17 009  68 515 85 644 21 390	60	132 150 60

Admini-stration <sup>1</sup>	Type of fee	System A (PES-19,2 kHz band-width)	System B (PES-20MHz band-width)	System C (PES- variable bandwidth between 9 & 34 MHz)	System D (TES – bandwidth 64 kHz)	System E (VSAT –150kHz bandwidth100 stations)
<b>Slovenia</b>	1 <sup>st</sup> year					
	Yearly	1521	1521	1521	507	<b>152 100</b>
<b>Sweden</b>	1 <sup>st</sup> year					
	Yearly	1 800	60 <sup>53</sup> 360	1797	60 360	60 360
<b>Switzerland<sup>54</sup></b>	1 <sup>st</sup> year	1 190	2451	4 649 <sup>55</sup> 5 490 6 518 6 518	805	25 635
	Yearly	934	2 195	4 393 5 234 6 262 6 262	550	25 609
<b>Turkey<sup>55</sup></b>	1 <sup>st</sup> year Yearly					
<b>UK</b>	1 <sup>st</sup> year					
	Yearly	1 621 <sup>57</sup>	8 105	16 209	13 778	6 484

#### Service fees

Adminis-tration <sup>1</sup>	Type of fee	Fee
Estonia	1 <sup>st</sup> year	<b>20 €</b>
Germany	1 <sup>st</sup> year	<b>7669 €</b>

<sup>1</sup> Administrations marked with an\* request a separate service licence fee. This fee is not included in the tables.

<sup>2</sup> When no international coordination has to be carried out (this is the case for most VSAT type satellite earth stations)

<sup>3</sup> When international coordination has to be carried out

<sup>4</sup> It should be noted that a general licence is applicable for SNG earth stations (TES) being operated in Austria for a limited period of time. For operation of such earth stations in Austria a one-off fee of 49 € is collected for each operation period.

<sup>5</sup> Plus broadcasting authorisation from a community

<sup>6</sup> Emission code 9M00F2FNN

<sup>7</sup> Emission code 27M0F3FNN

<sup>8</sup> Emission code 22M0F7FNF

<sup>9</sup> Emission code 34M0G2DWN

<sup>10</sup> up to 7 days

<sup>11</sup> up to 14 days

<sup>12</sup> for each 7 days following the 14<sup>th</sup> day

<sup>13</sup> on a continuous basis

<sup>14</sup> The first fee is for uplink (E/S) only, the second for up and down link (S/E)

<sup>15</sup> If the station is not in use 24 hours a day the fee is 50%

<sup>16</sup> First fee for SNG with TV , second fee for SNG with only sound transmissions

<sup>17</sup> For single VSAT station with the Bandwidth of 150 kHz licence fee would be 1 040 €/year.

For other capacities of single stations the fees are as follows:

1. For up to 9.6 kbit/s 260 €/year
2. For more than 9.6 up to 64 kbit/s 5 20 €/year
3. For more than 64 up to 512 kbit/s 1 040 €/year
4. For more than 512 kbit/s 2 080 €/year

2. For VSAT networks with hub would be as follows:

1. Up to 25 VSAT stations 3 910 €/year
2. For more than 25 up to 50 stations 5 870 €/year
3. For more than 50 up to 100 stations 7 830 €/year
4. For more than 100 VSAT stations 9 780 €/year

<sup>18</sup> 100 stations with hub (see previous footnote)

<sup>19</sup> If operated less than 14 days the fee is 90 €, otherwise 300 €.

<sup>20</sup> The first amount is for 9 MHz, the second for 34 MHz

<sup>21</sup> Fees vary depending on the frequency band and bandwidth used. The highest figures have been used for the charts in chapter 8.

<sup>22</sup> coordinated earth station

<sup>23</sup> uncoordinated earth station

<sup>24</sup> one and two way transmission

<sup>25</sup> Private networks

<sup>26</sup> Public networks

<sup>27</sup> authorisation is given for 5 years

<sup>28</sup> one way transmission

<sup>29</sup> two way transmission

<sup>30</sup> System A and C, coordination required

<sup>31</sup> Band 14 – 14.25 GHz

<sup>32</sup> Band 14.25 – 14.50 GHz

<sup>33</sup> Band 14 – 14.50 GHz

<sup>34</sup> 9 MHz

<sup>35</sup> 34 MHz

<sup>36</sup> 100 € per terminal in the 14-14.25 GHz band, up to 10 terminals, additional station 25 per station.

<sup>37</sup> from to 34 MHz

<sup>38</sup> 14 –14.25 GHz band, if operation with more space stations is required a separate licence is required for each.

<sup>39</sup> EIRP ≤ 50 dBW

<sup>40</sup> EIRP between 50 dBW and 75 dBW

<sup>41</sup> EIRP ≥ 75 dBW

<sup>42</sup> Unlimited number of events

<sup>43</sup> One event

<sup>44</sup> The fee is calculated for 100 terminals, although in case of a significant number of terminals the fee is negotiable

<sup>45</sup> bandwidth below or equal to 10 MHz

<sup>46</sup> bandwidth above 10 MHz

<sup>47</sup> Including coordination fee of 906 € ( example A,B and C)

<sup>48</sup> The annual fees for a single earth station in the frequency range:

- 1) lower than 3 GHz are 625 €
- 2) 3 GHz to 10 GHz are 375 €
- 3) higher than 10 GHz are 250 €

For frequency usage less than 6 months, the fee is half.

<sup>49</sup> All fees are multiplied by 2 when the earth station is located in a town with more than 100 000 inhabitants

<sup>50</sup> A legal representative in Spain is necessary for these kind of licences

<sup>51</sup> The first fee is for self provision, the second for third person provision and the third one for public service

<sup>52</sup> The first three figures are for a bandwidth of 9 MHz, the second three for a bandwidth of 22 MHz the third three for a bandwidth of 27 MHz and the last ones for a bandwidth of 34 MHz

<sup>53</sup> The first fee applies when no coordination is required, the second one when coordination is required

<sup>54</sup> Eventually a service licence fee composed until 1.1.2003 exclusively of a one-off administrative fee for the delivery of the service licence based on an hourly rate and varying usually between 2250 and 6200 € has to be paid in addition to these fees for a radio licence

<sup>55</sup> The 4 fees mentioned are for 9 MHz, 22 MHz, 27 MHz and 34 MHz respectively

<sup>56</sup> Licence fee is based on calculation per station and varies between 4.5 € and 38.50 €.

<sup>57</sup> 1621 € for connection to each additional satellite. This applies to example A, B and C

**Annex III**  
**Glossary of terms**

BSS	Broadcast Satellite Service
CEPT	European Conference of Postal and Telecommunications Administrations
EC	European Commission
ECTRA	European Committee for Telecommunications Regulatory Affairs
EIRP	Effective Isotropic Radiated Power
ERO	European Radiocommunications Office
EU	European Union
FS	Fixed Service
FSS	Fixed Satellite Service
GSO	Geo-stationary satellite orbit
ITU	International Telecommunication Union
ITU RR	ITU Radio Regulation
MES	Mobile Earth Station
MSS	Mobile Satellite Service
NRA	National Regulatory Authority
ROES	Receive Only Earth Station
SAP	Satellite Action Plan
S-DAB	Satellite Digital Audio Broadcasting
SIT	Satellite Interactive Terminal
SNG	Satellite News Gathering
S-PCS	Satellite Personal Communications Service
SUT	Satellite User Terminal
TVRO	Television Receive Only
VSAT	Very Small Aperture Terminal
WGRR	ERC Working Group Radio Regulatory
WRC	World Radio Conference

Annex IV

Abbreviations for CEPT administrations

ALBANIA	AL
ANDORRA	AND
AUSTRIA	A
BELGIUM	B
BOSNIA AND HERZEGOVINA	BH
BULGARIA	BG
CROATIA	HR
CYPRUS	CY
CZECH REPUBLIC	CZ
DENMARK	DK
ESTONIA	EST
FINLAND	FI
FORMER YUGOSLAV REPUBLIC OF MACEDONIA	MK
FRANCE	F
GERMANY	D
GREECE	GR
HUNGARY	H
ICELAND	IS
IRELAND	IRL
ITALY	I
LATVIA	LV
LIECHTENSTEIN	FL
LITHUANIA	LT
LUXEMBOURG	L
MALTA	M
MOLDOVA	MD
MONACO	MC
NETHERLANDS	NL
NORWAY	N
POLAND	PL
PORTUGAL	P
ROMANIA	RO
RUSSIAN FEDERATION	RUS
SAN MARINO	RSM
SLOVAK REPUBLIC	SK
SLOVENIA	SLO
SPAIN	E
SWEDEN	S
SWITZERLAND	CH
TURKEY	TR
UKRAINE	UA
UNITED KINGDOM	GB
VATICAN CITY	SCV