2. Actions to Promote a Competitive Market

2.1. Introduction

In line with the provisions of Law 2867/2000, and in the framework of its responsibility to regulate the telecommunications market, EETT places particular emphasis on the promotion of competition and on consumer protection in general. These objectives are attained through a series of interrelated actions for development of the market across all sectors, as these are specified in telecommunications. This section attempts to present a picture of those telecommunications market sectors, in which EETT has undertaken actions aimed at promoting and developing competition through relevant regulatory interventions, where this was judged necessary.

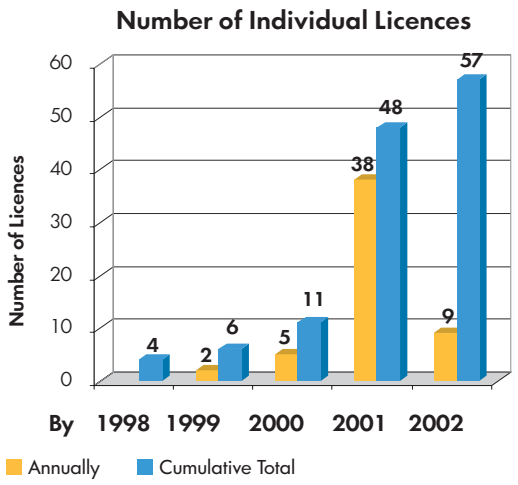
2.2. Increase in the Number of Telecommunications Providers

2.2.1. Licensing

The number of new providers entering the market registered an increase in 2002, albeit at a less steep rate compared to 2001. More specifically, at the end of 2002 the total number of providers active in the market under Individual Licence status increased to 38. These providers hold a total of 57 Individual Licences in force, of which 9 (see Chart 26) were granted during 2002. Of these 9 licences, 4 were granted to undertakings, which had no previous Individual Licence.

It should be mentioned that providers requesting Modification of the Individual Licences that had already been granted to them, in order to expand their networks, expressed a strong interest. During 2002 7 Individual Licences were modified.

Chart 26



The Charts below (Charts 27-28) present the market situation, as established at the year-end and against previous years, in two key areas: provision of fixed voice telephony and development of Local Access networks.

Chart 27

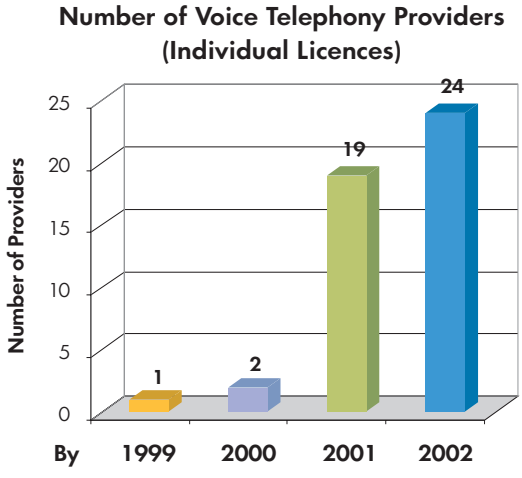


Chart 28

Total Number of Local Loop Providers

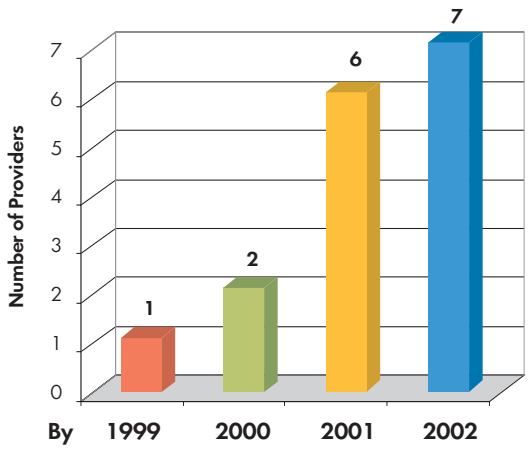


Table 4 presents the number of providers active in the market, grouped by type of activity. A detailed list of the telecommunications companies authorised under Individual Licence status, as at 31 December 2002, is given in Appendix III.

Table 4

Activity	Number of Providers
Voice Telephony and Fixed Network Development	13
Voice Telephony	11
Fixed Network Development	4
Satellite	11
2G Mobile Telephony	4
3G Mobile Telephony	3
TETRA	1
W-LAN	2

As regards Individual Licences, the number of authorised companies on 31 December 2002 fell to 235, compared to 251 at the end of 2001 (see Chart 29). This decrease was mainly a result of the change in the legislative framework, which came into effect in 2001. According to this framework, telecommunications services resellers are not required to hold an Individual Licence. It should also be noted that a total of 19 Individual Licences were granted during 2002.

Chart 29

Total Number of General Authorisations in Force (year-end figures)

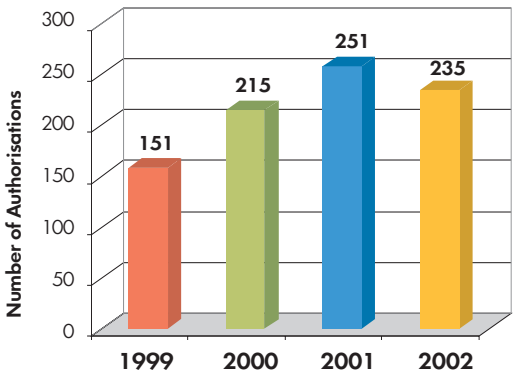
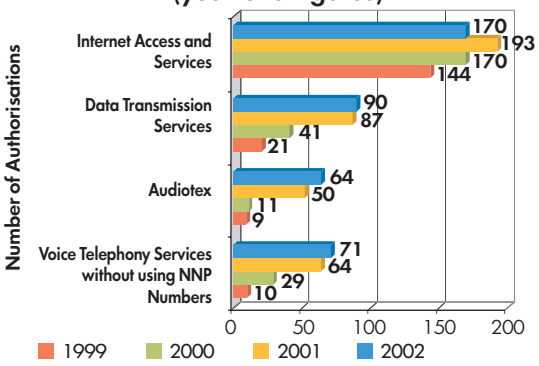


Chart 30 shows the breakdown of companies authorised under General Authorisation status across the main categories of telecommunications services provided. It should be noted that the Individual Licence held by one company might include provision of one or more telecommunications services.

Chart 30

Number of Undertakings providing Basic Telecommunications Services, 1999-2002 (year-end figures)



A detailed list of the telecommunications companies authorised under General Authorisation status, as of 31 December 2002, is given in Appendix III.

2.2.2. Granting of Licences for TETRA Public Digital Mobile Services

TETRA (TErrestrial Trunked RAdio) is a relatively recent standardised wireless digital mobile communication system, through which voice and data services can be provided. It is primarily used for communications between independent user groups (e.g. motorists), and allows users to also call fixed or mobile telephone numbers. The digital technology used by the TETRA system allows the allocation of a specific number of radio frequencies, according to the requirements of users, thus contributing to optimised spectrum usage. At the same time, the system's digital technology ensures high-quality communication, reliability and enhanced security, through efficient use of encryption systems. TETRA networks have considerable advantages over analogue-based Private Mobile Radio (PMR) Networks, which today are commonly used in Greece for covering the above-mentioned needs.

EETT has launched the procedure for granting TETRA Licences in accordance with the following timetable:

Table 5

Timing of the TETRA Licensing Procedure

Public Consultation	21 September - 20 October 2001
Announcement of Public Consultation Results	28 November 2001
Publication of Information Memorandum	15 April 2002
Deadline for submission of remarks on the Information Memorandum	13 May 2002
Publication of Invitation to Tender	22 May 2002
Submission of Participation Files and Bids	25 June 2002
Licence granting procedure	4 July 2002
Granting of Licences	11 July 2002

Following the conclusion of the Public Consultation conducted by EETT in 2001, a relevant Recommendation was submitted to the Minister of Transportation and Communications. On 20 February 2002 a Ministerial Decision was published, setting down the procedure (auction) for granting two Licences with a duration of fifteen years.

EETT then published on 15 April 2002 the Information Memorandum, aimed at providing interested parties with key information on the procedure, the timetable, the number of licences to be granted and the conditions for participation, and invited submission of comments from interested parties on all the aforementioned issues. After taking into consideration the remarks submitted on 22 May 2002, EETT published the Invitation to Tender, which set the rules for conducting the auction, the conditions to be met by candidates, and the criteria based on which final selection of candidates for participation in the auction would take place.

The auction procedure followed was that of auction by multiple rounds using increasing bids. The licences to be granted were two TETRA National Individual Licences, with a 2x2 MHz bandwidth each, in the 411.75 - 415.75 MHz and 421.75 - 425.75 MHz spectrum bands.

- Licence I (A.I): 411.75 - 413.75 MHz and 421.75 - 423.75 MHz.
- Licence II (A.II): 413.75 - 415.75 MHz and 423.75 - 425.75 MHz.

The Opening Price for the auction was set at 3,000,000 euro. "Application for Participation" Files were submitted on 25 June 2002. An Application for Participation was submitted by OTE, with a bid price of 3,000,000 euro. After the File submitted was checked, approval of the participation of OTE in the auction was announced.

The auction was conducted at the offices of EETT, and was concluded on 4 July 2002 with the award of Licence II (413.75 - 415.75 MHz and 423.75 - 425.75 MHz) to OTE. The Individual Licence was granted to OTE at the time of payment of the auction proceeds (on 10 July 2002).

According to the terms of the Licence, operation of the network must take place by the end of 2005. OTE undertakes the obligation to install, operate and maintain the equipment necessary for the provision of services meeting the following requirements:

- Coverage of 85% of the course of main road arteries.
- Coverage of 75% of the course of secondary road arteries, as these are identified in the Invitation to Tender.

2.2.3. Allocation of EGSM Radio Frequency Spectrum

In accordance with European Standards and with the National Frequency Allocation Table (NFAT), the 885 - 890 MHz and 930 - 935 MHz spectrum band, also called EGSM (Extended-GSM) radio frequency spectrum, has been designated as an exclusive zone for provision of 2G Mobile Telephony services.

Following submission to EETT of a relevant request, and after an Opinion issued by the Secretariat General for Communications of the Ministry of Transportation and Communications, EETT proceeded to allocate the EGSM radio frequency spectrum, applying a procedure similar to that followed in July 2001 for granting 2G Mobile Communications Licences.

Allocation of the EGSM radio frequency spectrum by EETT in 2002 was conducted in accordance with the following timetable:

Table 6

Timing of the EGSM Licensing Procedure

Publication of Information Memorandum	27 May 2002
Deadline for submission of remarks on the Information Memorandum	14 June 2002
Publication of Invitation to Tender	21 June 2002
Submission of Participation Files	22 July 2002
Procedure for allocation of the EGSM Radio Frequency Spectrum	31 July 2002
Allocation of the EGSM Radio Frequency Spectrum	28 August 2002

More specifically, on 27 May 2002 EETT published the Information Memorandum, aimed at providing interested parties with key information on the procedure and the indicative timetable. In parallel, EETT gave to interested parties the opportunity to submit their comments and views. After taking into consideration the remarks submitted, on 21 June 2002 EETT published the Invitation to Tender, which set the rules for conducting the auction, the conditions to be met by candidates, and the criteria to be used for the final selection of candidates.

The procedure followed was that of auction by sealed bids, with each Bidder paying the price specified in its bid. The scope of the auction was the allocation of 2x5 MHz blocks in the EGSM (885 - 890 MHz and 930 - 935 MHz) radio frequency spectrum. The Opening Price for the auction was set at 38,158,000 euro.

Submission of "Application for Participation" Files took place on 22 July 2002. COSMOTE S.A. submitted an Application for Participation, with a bid price of 38,160,591 euro. Following the necessary check, participation of COSMOTE S.A. in the auction was announced on 30 July 2002.

The auction was conducted at the offices of EETT on 31 July 2002. The procedure was concluded on 28 August 2002 with the allocation to COSMOTE S.A. of the EGSM (885 - 890 MHz and 930 - 935 MHz) radio frequency spectrum, following payment of the auction proceeds by the company.

2.2.4. Auction Proceeds collected by the Hellenic State

Since late 2000, when the authority to issue Individual Licences was granted to EETT, four auctions have been conducted for granting Licences and one for the allocation of spectrum. More specifically, the auction for FWA Licences was conducted in 2000, the auctions for 2G and 3G Mobile Communications Licences were conducted in 2001, and the auctions for TETRA Licences and for allocation of EGSM spectrum, as mentioned above, were held in 2002. The procedures followed by EETT have resulted in auctions universally acknowledged to have been conducted in an impartial and efficient manner, and in the collection of considerable revenues by the State.

Chart 31

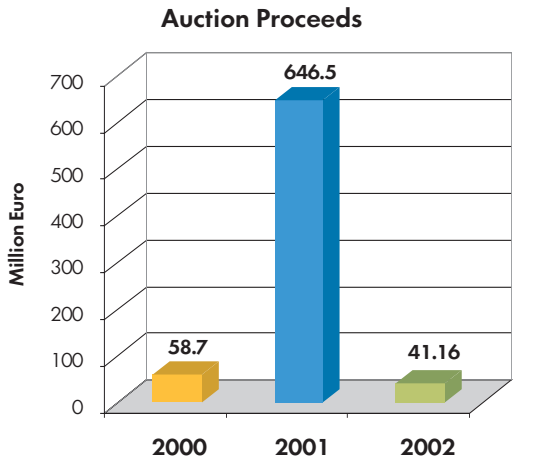


Chart 31 shows the proceeds from the Auctions conducted by EETT during the last three years, which have resulted to 746,360,000 euro of total revenues for the State.

2.3. Interconnection - Special Access

2.3.1. Local Loop Unbundling

Local Loop Unbundling (LLU) offers to telecommunications providers the opportunity to use the Local Loop of OTE in order to provide services to end-users. The Local Loop is defined as the cable network between the subscriber's terminal device and the nearest telecommunications exchange.

At the European Level, the legislative framework governing LLU is laid down by Regulation 2887/2000 of the European Parliament and of the Council of 18 December 2000. At the national level, this framework is determined by Law 2867/2000, and by the relevant EETT Decisions.

Within the above framework, EETT had approved in 2001 OTE's Offers on Fully Unbundled and Shared Access to the Local Loop, which laid the foundations for the conclusion of agreements between OTE and beneficiary providers. During 2002, EETT actions focused on issues concerning pricing of relevant services, clarification of the procedures for provision of LLU, and monitoring the progress made in its implementation. Specifically, EETT:

- Determined prices for all LLU[66] services. Implementation of both Fully Unbundled and Shared Access to the Local Loop requires transparency in the prices for the relevant services. Consequently, this intervention by EETT was considered necessary to ensure effective operation

[66] *EETT Decision 253/87/2002, FEK Issue 720/B/13-06-2002.*

of competition in the local access market and to stimulate competitive provision of electronic communications services.

- In cooperation with an independent auditor, reviewed all prices as proposed by OTE for LLU services, with the aim to investigate their cost-orientation. The audit is under completion, and the results are to be announced in early 2003.
- Developed and published flowcharts illustrating the procedure for LLU provision, with the aim to clarify this procedure and facilitate both OTE and the beneficiary telecommunications operators.
- Held joint meetings with participation by both beneficiaries and OTE, with the aim to identify problems relating to implementation and resolve them on the spot.
- Summoned OTE to a Hearing to investigate non-fulfilment of its obligations regarding LLU prices and the delays observed on the part of OTE concerning provision of LLU. The EETT Decision concerning this Hearing is to be announced in early 2003.
- Reviewed the draft contract proposed by OTE for conclusion of agreements for the provision of LLU to beneficiary telecommunications providers, and requested modifications to be made to it.

As regards the progress made in the implementation of LLU:

- OTE has concluded two agreements and four preliminary agreements with beneficiary telecommunications providers.
- These providers have installed equipment in 50 OTE exchanges (in the framework of either actual or remote co-location), while another 98 applications for co-location have been submitted.
- A total of 121 local loops are in operation, with applications pending for another 25.

Recognising the importance of LLU for the development of competition in the access network, EETT follows closely the progress made in its implementation, together with that in other issues of a broader nature regarding the access network, by circulating special-purpose questionnaires to OTE and to the beneficiary telecommunications operators on a quarterly basis. In addition, EETT participates actively in meetings and activities of competent European bodies, such as the COMmunication COMmittee (COCOM) and the Independent Regulators Group (IRG), presenting proposals for a common approach to the relevant problems that other National Regulatory Authorities (NRAs) are also facing.

2.3.2. Interconnection

Ensuring interconnection of the networks of telecommunications providers is one of the primary conditions for smooth operation of the market and for stimulating its growth. Interconnection is defined as the physical and logical interconnection of two telecommunications networks, which allows users of the interconnected networks to communicate with each other, access all the services provided by these networks, and communicate with users of a third telecommunications network.

The legislative framework governing Interconnection in Greece is primarily regulated by Law 2867/2000, by Presidential Decree 165/1999, which was issued for the purposes of harmonisation with Directive 1997/33/EC, as well as by the relevant EETT Decisions.

The above legislative framework imposes on Operators with Significant Market Power (SMP) in Interconnection the obligation to publish and keep up-to-date a Reference Interconnection Offer (RIO). In the case of Greece, the SMP Operator in the corresponding market for 2002 was OTE. The RIO is used as the basis for negotiations for concluding an interconnection agreement with any beneficiary provider, and, prior to its application, is reviewed and approved by EETT.

In the framework of the above, OTE submitted to EETT the 2002 RIO in February 2002. After reviewing

it, EETT determined that the prices of the basic Interconnection services as included in the proposed RIO did not comply with the costing principles issued by EETT in 2001. Consequently, in order to ensure competition in the Interconnection market, EETT determined prices for the basic services in accordance with the Fully Distributed Cost (FDC) cost-accounting system, on the basis of a costing study conducted by an independent consulting firm. The prices determined are shown in Table 7.

Table 7

Call Origination (eurocents/min.)			Call Termination (eurocents/min.)		
Local	Single Transit	Double Transit	Local	Single Transit	Double Transit
0.71	1.16	1.90	0.71	1.16	1.90

In parallel, EETT invited OTE to determine cost-oriented prices based on the Long-Run Average Incremental Cost (LRAIC) methodology. After that, by a new Decision issued in April 2002, EETT assigned to an independent auditor the task to audit the new prices proposed by OTE using the LRAIC methodology. Following the completion of the audit, EETT approved the 2002 RIO submitted.

The new prices for the basic Interconnection services are shown in Table 8 below:

Table 8

Call Origination*			Call Termination*			Call Transit*	
Local	Single Transit	Double Transit	Local	Single Transit	Double Transit	Single Transit	Double Transit
0.655	1.116	2.590	0.655	1.116	2.590	0.620	0.955

* eurocents/min.

The key points of the above-mentioned EETT Decision, especially regarding the comparison of the 2002 RIO with previous RIOs, were the following:

- Clarification of the procedures for provision of services regarding international calls, call transit and calls using prepaid cards.
- Determination of tariffs and procedures for the freephone and onephone services of OTE.
- Detailed description of maintenance and cooperation procedures between the parties entering into Interconnection agreements.
- Introduction of call termination service to the network of alternative providers.
- Specific conditions for flow control and for ensuring the integrity of networks.
- Detailed description of procedures and implementation timetables for Interconnection requests.

Immediately after publication of the 2002 RIO, EETT initiated the review of the 2003 RIO. In November 2002, EETT held a Public Consultation inviting comments on OTE's approved 2002 RIO.

The most important issues raised were the following:

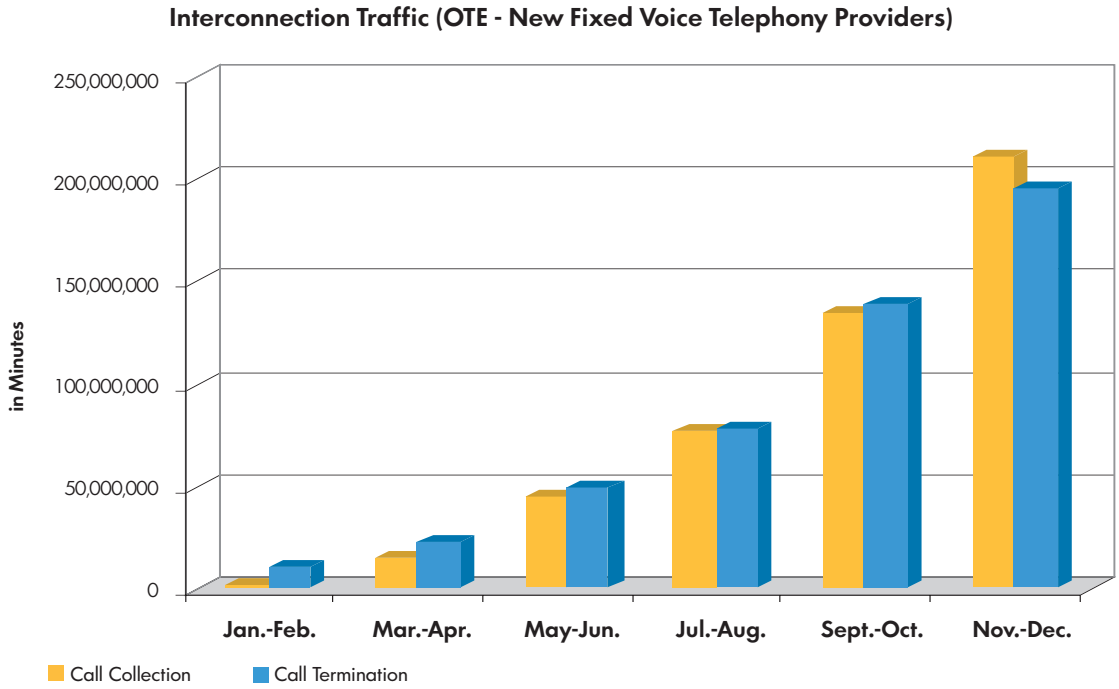
- Issues concerning interconnection of mobile telecommunications network providers with OTE's fixed telecommunications network.
- Allocation of Interconnection cost for Interconnection Links.
- Interconnection for provision of Internet access services.
- Interconnection and introduction of Number Portability/ Carrier Pre-selection.
- Interconnection and Short Message Service (SMS).

Sixteen telecommunications providers participated in the Public Consultation. The results are in the processing stage and are to be announced in early 2003.

The Interconnection agreements concluded between OTE and beneficiary providers are notified to EETT for review. According to the data made available up to 31 December 2002, 17 new fixed telephony providers had entered into Interconnection agreements with OTE, and at least 8 were already providing services to end-users.

In order to properly monitor the progress made in Interconnection, EETT regularly sends to providers interconnected with OTE relevant detailed questionnaires. Responses are collected and processed, with the aim to establish in detail the progress made in Interconnection. The Chart below shows Interconnection traffic between the network of OTE and the networks of the new fixed voice telephony providers (this is the traffic generated both by calls originating from OTE's network as well as by the termination of calls to it).

Chart 32



The increase in Interconnection traffic is also indicative of the progress made during 2002 in the implementation of Interconnection. Continuation of this smooth progress is one of EETT's principal goals for 2003.

On the basis of these, EETT's immediate actions will focus on:

- Continuing to closely monitor the progress made in Interconnection.
- Completing the processing and publication of the Public Consultation results.
- Reviewing and approving the 2003 RIO, which OTE has already submitted.

2.3.3. Leased Lines

Leased Lines are among the most important telecommunications resources available for building, developing and exploiting telecommunications networks. They are used for connecting both the main components of a backbone telecommunications network, and the backbone itself with the network terminating points.

Given the importance of Leased Lines for new-entrants, and aiming at strengthening competition, during 2002 EETT undertook a number of actions, the most important of which were the following.

In response to the new Leased Line tariffs that OTE had proposed in November 2001, EETT, taking also into consideration the recommendation submitted by an independent auditor who had been assigned to audit these tariffs, determined, inter alia, that:

- OTE had not supplied sufficient justifications of the cost-orientation of the proposed tariffs.
- The tariffs proposed were to enter into effect as of 13 January 2002, but OTE was under the obligation to provide until 31 June 2002 all information necessary to justify the cost - orientation of these tariffs.
- OTE was to promptly establish cost-oriented tariffs for wholesale provision of Leased Lines.

In January 2002, EETT sent to OTE, among other things, proposals on improvements concerning the determination of cost-oriented tariffs for Leased Lines.

In April 2002, OTE was designated as SMP Operator in the market for Leased Lines, its most important obligation being to provide Leased Lines at cost-oriented prices, under conditions of transparency, and fully respecting the principle of non-discriminatory treatment.

In parallel, by virtue of the Decision[67] issued in June 2002, EETT determined the obligations of SMP Operators in the market for Leased Lines. The most important provisions of this Decision were the following:

- SMP Operators must notify EETT a relevant Offer relating to the provision of wholesale Leased Line services (to telecommunications operators) and the provision of retail services. EETT reviews the Offer and proceeds to modifications when these are deemed necessary to ensure application of the provisions of the legislation in force, especially in relation to the principles of Open Network Provision (ONP) and of fair competition.
- Offers should at least contain information such as the ordering and delivery procedure (on the basis of a specific timetable), the duration of the agreement, and the procedures for failure notification, repairs, refund of charges paid and test measurements, as well as the technical specifications of Leased Lines.
- SMP Operators must keep statistical data concerning provision and repair of Leased Lines.

In the framework of the above-mentioned Decision, OTE submitted a relevant Offer, which was approved by EETT with modifications. In this way, the procedures for ordering, delivery and repair of Leased Lines were clarified, and clear timetables were set.

In July 2002, EETT summoned OTE to a Hearing to investigate non-fulfilment of its obligations deriving from the legislation in force, and concerning specifically the cost-oriented pricing of Leased Lines and the lack of tariffs for wholesale provision of Leased Lines (to telecommunications operators). Following the Hearing, in December 2002 EETT

[67] *EETT Decision 255/84/2002, FEK Issue 810/B/28-06-2002.*

determined that through its actions OTE continued to violate the provisions of the legislation in force and fined OTE 1,500,000 euro in total. OTE was called upon to refrain from all such actions in the future.

In parallel, several meetings were held at the EETT offices with representatives of telecommunications providers, in order to identify in detail the problems arising in the Greek market in connection with the provision of Leased Lines.

Future EETT actions will focus on the cost-oriented pricing of Leased Lines, and on monitoring the application of the framework mentioned above.

One further important development in 2002 was the approval by EETT of the introduction of Part Circuits in the Greek market. A Part Circuit is defined as a Leased Line with one terminating point located in the end-user's premises and the other in the premises of the telecommunications operator, and with a length not exceeding 5 kilometres.

Part Circuits will be provided to all authorised telecommunications providers wishing to obtain access to end-users, while the parties under obligation to provide Part Circuits are the SMP Operators in the market for Leased Lines. According to a relevant EETT Decision, for the period of time during which the costing system of the above operators shall not include the Part Circuit service, installation charges for Part Circuits shall be the same with those applicable under the tariffs for Leased Lines, while monthly rentals for Part Circuits are determined on the basis of the average price, as this results from the data contained in the 8th Report of the European Commission.

Introduction of Part Circuits is expected to contribute to the intensification of competition in the access network between telecommunications undertakings.

2.3.4. Voice Telephony Tariffs

As SMP Operator in the voice telephony market, OTE is under the obligation to provide cost-oriented tariffs (i.e. tariffs calculated based on the costs of the corresponding service, including a reasonable rate of financial return) in connection with the provision of telephony services and Integrated Services Digital Network (ISDN) services.

In this framework, in January 2002 OTE proposed a reduction in call charge units for local calls (from 0.031 euro/min. to 0.026 euro/min.) and national calls (from 0.082 euro/min. to 0.063 euro/min.), and an increase in the monthly rental charge to 9.98 euro (from 8.22 euro). In addition, OTE proposed a reduction in the monthly rental charge for ISDN Basic Rate Access connections (from 17.6 euro to 13.2 euro). These tariffs were audited by EETT.

The tariffs were based on the EETT-approved methodology for the Operational Costing System (OCS) of OTE. This system follows the FDC costing standard using historic costs, and is used for calculating the cost of OTE retail services under regulation.

According to the results of this audit, which was conducted with the assistance of an independent auditor, the tariffs for conventional voice telephony and, more specifically, the monthly rental charge and the charge for local and national calls[68], were found to be cost-oriented and balanced. In contrast, the monthly rental charge billed for ISDN Basic Rate Access connections was not proven to be cost-oriented. EETT forwarded to OTE proposals for improvements, including, inter alia, proposals on the cost-oriented calculation of Basic and Primary Rate Access ISDN connections.

[68] *For national calls where the calling party and the called party belong to primary exchanges in different prefectures and the distance between such primary exchanges is greater than 45 kilometres, the charging rate is 0.026 euro per 24.9 seconds.*

2.3.5. Fixed-to-Mobile Call Termination

The termination charge is the price paid for each call by one telecommunications provider to another, in order for the calls made by the subscribers of the former to terminate in the network of the latter.

The telecommunications provider in whose network a call is terminating determines the amount of the termination charge, which is ultimately transferred to the subscriber of the telecommunications network from which that particular call originated.

In Europe, it has been calculated that the average peak-time charge for fixed-to-mobile call termination is several times higher than the average Interconnection charges for fixed-to-fixed calls. Indicative of this situation is the reference, made in the 7th Report of the European Commission, that "as regards mobile telephony, mobile-to-fixed and mobile-to-mobile prices have decreased in recent years, in contrast to fixed-to-mobile prices, which do not exhibit a significant change ..." in Greece. As a consequence, the problems created for new-entrant providers are insurmountable, while consumers are faced with high retail prices. Furthermore, according to the aforementioned Report, "... the peak time [call termination] charges in three member states (Greece, Italy and Portugal) are around twice as high as in the member state with the lowest tariffs (United Kingdom)."

In this framework, during the period from 24 December 2001 to 31 January 2002, EETT held a Public Consultation on the level of competition in fixed-to-mobile call termination, its impact in the development of telecommunications and the cost of the services provided.

Thirteen organisations participated in the Consultation and presented their views. The main conclusion reached was that, under current circumstances, the emergence of competitive pressures that would curb or even reduce fixed-to-mobile termination charges is impossible. More specifically, because of the charges for call termination in mobile networks, fixed providers are forced to maintain high price levels for calls to mobiles, a fact that in many cases makes it impossible for new providers to enter the market.

Concerning the approach to address the issues arising, the majority of the participants agreed on the significance of the following points:

- The charge for call termination in a mobile network should not be differentiated depending on whether the originating network is a fixed or mobile one.
- Charges for call termination in mobile networks should under no circumstances be higher than the cheapest retail price offered by mobile telephony providers.
- It is absolutely necessary for EETT to proceed to regulatory action aimed at reducing charges for call termination to mobile networks, in order to reverse the climate of distortion of competition that prevails in the market and protect end-users.

As a first step, on 15 March 2002 EETT designated COSMOTE S.A. and VODAFONE-PANAFON as SMP Operators in the market for public networks and mobile telephony services. These two Operators must assume and fulfil all relevant obligations, pursuant to the provisions of Greek and European legislation.

This Decision by EETT was aimed at remedying a number of distortions caused by the lack of competition in calls originating from fixed networks and terminating in mobile telephony networks.

In parallel, EETT conducted an open public tender procedure for appointment of a contractor to conduct a study on the assessment of the level of competition in the particular market, as this is defined in the relevant European Commission Recommendation[69], so that EETT may proceed to

[69] *Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services.*

the necessary regulatory interventions where necessary.

2.4. National Numbering Plan

Within the framework of completing the introduction of the new National Numbering Plan (NNP), the change in the dialing scheme for fixed numbers was successfully implemented on 20 January and 3 November 2002.

The new NNP serves as a tool for development and has a crucial role in establishing a modern telecommunications environment in Greece. Its introduction was necessitated by the fact that the previous system could not sufficiently meet the increasing needs of the fully liberalised telecommunications market, which result from the increase in the number of providers entering the market, and from the introduction of new services and the expansion of the existing ones.

The new numbering plan:

- Provides all interested parties with access to numbering resources, ensuring conditions of fair competition between telecommunications providers.
- Provides room for more numbers, resulting in the availability of numbering capacity on a long-term basis.
- Allows the provision of new services.
- Facilitates entry of new telecommunications providers in the market.
- Is harmonised with the recommendations and standards of international organisations and consistent with European practice.
- Is user-friendly, given that the first digit of the numbers indicates to the caller the type of service as well as the type of charge applying, as shown in Table 9.

Table 9

National Numbering Plan

First Digit	Category of Numbers
1	Short Codes and Carrier Selection Codes
2	Fixed telephony numbers
3,4	Numbers reserved to cover future needs
5	Corporate numbers
6	Mobile telephony numbers
7	Personal numbers
8	Special (reduced) rate numbers
9	Premium rate numbers
00	International dialing prefix

The new NNP is a closed ten-digit system. Its application began on 8 July 2001, with the introduction of the new dialing scheme for fixed numbers, with the new and old systems operating in parallel until 20 January 2002, when the old system was discontinued. This six-month period of parallel operation was considered necessary for the familiarisation of users with the new NNP and for their preparation in view of its exclusive application in 2002. The last change in the dialing scheme for fixed numbers took place on 3 November 2002, with "0" substituted by "2" as the first digit.

Successful implementation of the new NNP was due to prompt and appropriate advance planning, and to good preparations on the part of telecommunications providers. Despite its scale and technical requirements, the new NNP was implemented by all telecommunications providers consistently and efficiently, resulting in to a complete absence of problems for citizens.

Moreover, the extensive information campaign conducted by EETT during all stages in the transition from the old numbering plan to the new one, contributed significantly to the smooth adaptation of citizens to the new dialing scheme. It should be noted that, in the case of the change that took place on 3 November 2002, on the tenth day after the change, the calls made using the old dialing scheme were a mere 1.5% of the total calls made: these calls were redirected to a recorded announcement service, and continued to exhibit a falling trend during the first month after the change.

The last stage in the introduction of the new NNP will be completed on 19 January 2003, when the first digit of mobile phone numbers will be changed from "0" to "6".

The Table below shows the fees collected by EETT during 2002 from allocation, usage and reservation of numbers under the NNP.

Table 10

Fees for Allocation, Usage and Reservation of Numbers (in euro)

Allocation Fees	Usage Fees	Reservation Fees
780,585	3,724,862.50	372,012.50

2.5. Radio Spectrum Management

The radio frequency spectrum allows transmission of information between two locations without the need for a physical wire connection between them. In more technical terms, the radio frequency spectrum consists of electromagnetic waves, such as the sunlight, infrared and ultraviolet rays etc. Television sets, radios and mobile phones communicate through such electromagnetic waves, which are transmitted between a transmitting antenna and a receiving antenna. A necessary condition for communication between two wireless devices is that they are "tuned" to the same frequency (or to the same channel). By tuning a device to a particular frequency, we are able to receive signals that contain information - such as, for example, a radio station's broadcast.

The radio frequency spectrum is a significant national resource that plays an important part in the development of sectors of the economy, such as telecommunications, transport, and research and development. It is divided into frequency bands, which define the range of frequencies within which specific radio communication services operate. The available spectrum, i.e. all the frequencies that can be made available in a particular geographical area for the operation of radio communication stations, is finite. Consequently, its designation as a scarce resource results from the fact that the finite number of radio frequencies places a limitation on the number of stations that can operate in a geographical area, and thus restricts the development of wireless networks. For this reason, the manner in which the radio spectrum is made available is particularly important.

It is indicative of the importance of this matter that in the EU a number of spectrum management organisations have been created, such as the European Conference of Postal and Telecommunications Administrations (Conférence Européenne des Postes et Télécommunications - CEPT), in which 45 European countries are represented through their respective national delegations, aim at formulating the spectrum management policy at the European level.

The manner in which the radio frequency spectrum is made available and the terms of its usage are constantly evolving, as a result of technological advances and of market regulation. New commercial networks based on wireless

technologies are developing rapidly, such as mobile telephony networks and broadband satellite networks that combine telephony, data transmission, Internet applications, location finding and telemetry functionalities and other services, and provide new value-added services. The introduction of these services in a market results in economic growth and creates new jobs.

EETT, as the authority responsible for spectrum management in Greece, recognising the significance of this scarce resource and its vital importance for the growth of the telecommunications market, focused its activities during 2002 on the improvement of the National Radio Frequencies Registry (NRFR) quality and on the organisation and institution of specific procedures for every individual operation regarding radio frequency spectrum management.

In this framework, since the beginning of 2002 EETT:

- Has improved frequency assignment procedures.
- Has processed the majority of pending applications concerning Licences for Antenna Mast Constructions.
- Has drafted model application forms, and accompanying instructions for completion, for all types of licences or approvals related to spectrum usage, and made them available on the EETT website[70].
- Has sent circulars to the Public bodies involved in the licensing procedure (such as Prefectural Authorities).
- Has procured special fixed and portable equipment for performing frequency measurements allowing tracing of illegal use of frequencies (see sub-section 2.6.1.).
- Has conducted on-site inspections in facilities of illegally transmitting stations, imposing fines and confiscating equipment (see sub-sections 2.6.4., 2.6.5. and 2.6.6.).
- Has published an Invitation to Tender, and has conducted the relevant procedure, for procurement of the National Spectrum Management and Monitoring System - NSMMS (see sub-section 2.8.).

Furthermore, a specialist consultant has been assigned the task to review the organisational structure of the Spectrum Department, taking also into consideration the new EU Regulatory Framework, and propose new regulations and procedures, together with improvements in the existing ones, aimed at a more efficient spectrum usage and at facilitating spectrum users.

2.5.1. Frequency Assignments

The sub-sections that follow present an account of EETT actions concerning spectrum management, in connection with the three most important categories of wireless networks, namely:

- Terrestrial Microwave "Point-to-Point" Link Networks.
- Fixed Satellite Services Networks.
- PMR Networks.

Table 11

Number of Radio Frequencies Assigned
(01-01-2002 - 31-12-2002)

Fixed satellite service	67
Fixed "Point-to Point" service	8,320
Land Mobile service - Private Mobile Radio (PMR) Networks	103

Terrestrial Microwave "Point-to-Point" Link Networks

Terrestrial Microwave "Point-to-Point" Link Networks are composed of fixed radio stations that communicate between them through high-frequency

[70] *http://www.eett.gr, Subject Area "Telecomnunications/ Wireless Communications/Assignment of Radio Frequencies".*

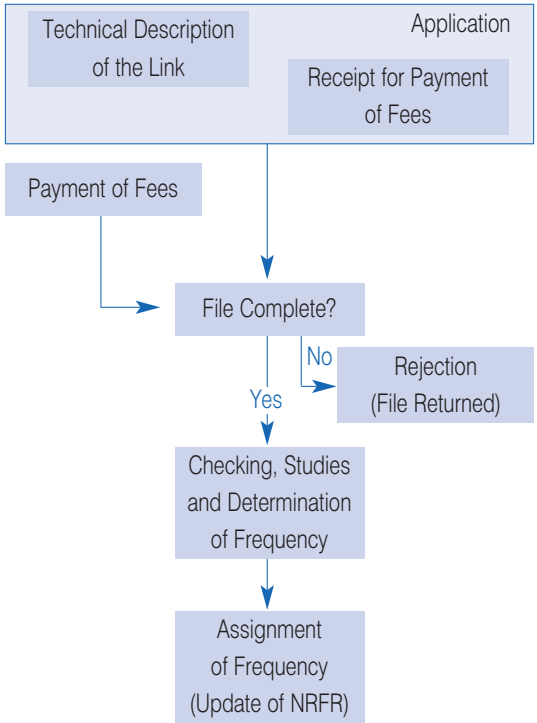
wireless links. These networks play an important part in the liberalisation of the telecommunications market, as they offer to new-entrants the opportunity to deploy, within a short period of time and at a relatively low cost, backbone telecommunications networks that are alternative to those of incumbent providers, which usually use wire links to connect their network nodes.

Radio Frequency Assignment Procedure

The procedure followed for assignment of radio frequencies is summarised in the Figure below.

Figure 1

Radio Frequency Assignment Procedure

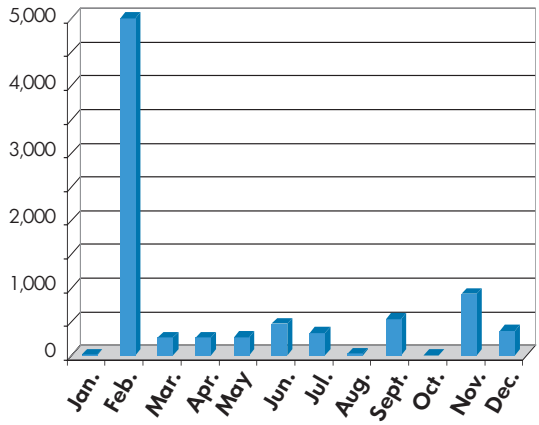


Assignments during 2002

Chart 33 shows the Radio Frequency Assignments for Terrestrial Microwave "Point-to-Point" Link Networks that took place during 2002.

Chart 33

Radio Frequency Assignments for Terrestrial Microwave "Point-to-Point" Link Networks



A total of 8,320 channels for "Point-to-Point" links were assigned in 2002, corresponding to the total number of applications submitted during the year. These mainly concerned networks of companies providing telecommunications services to the public.

Fixed Satellite Services

Provision of satellite services presupposes the installation and operation of terrestrial stations linked to geostationary satellites for radio-television broadcasting and data transmission, nationally and internationally, on a permanent or occasional basis, and the operation of Very Small Aperture Terminals (VSAT) for voice and data transmission.

Radio Frequency Assignment Procedure

Installation and operation of terrestrial satellite stations require procedures for national and international coordination with existing national and international wireless networks (satellite and terrestrial ones). EETT has developed model application forms[71], together

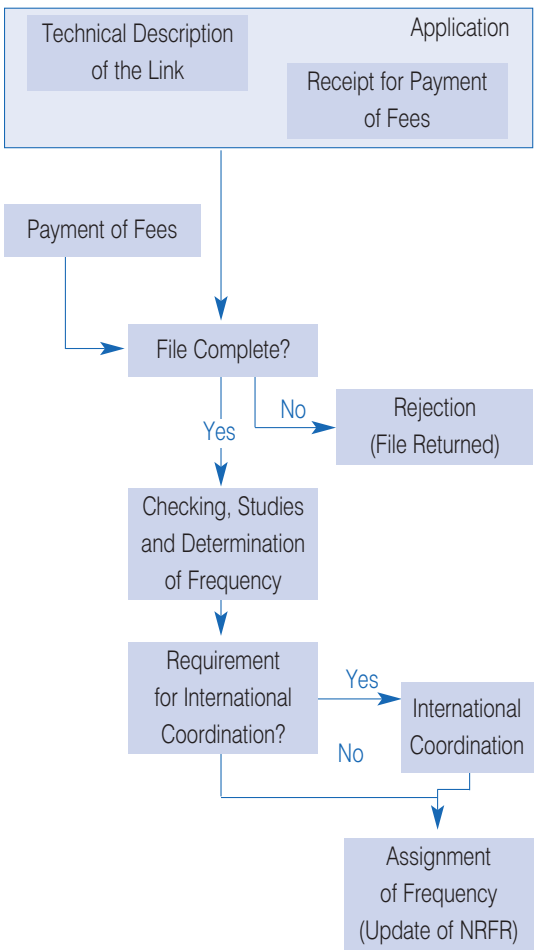
[71] *"Application for Assignment or Modification of Fixed, Temporary or Transportable Satellite Earth Station Radio Frequencies" and "Application for Assignment or Modification of VSAT System Radio Frequencies".*

with corresponding instructions for their completion, which are available on the EETT website[72].

The procedure followed for assignment of radio frequencies is summarised in the Figure below.

Figure 2

Frequency Assignment Procedure for Fixed Satellite Services



Radio Frequency Assignments during 2002

A total of 67 channels were assigned to terrestrial satellite stations, corresponding to the total number of applications submitted during the year. These mainly concerned networks of companies providing telecommunications services to the public.

Private Mobile Radio (PMR) Networks

The term "Private Mobile Radio (PMR) Networks" is used to describe the radio networks of land mobile service used to meet the communication needs of various professional groups and emergency services. Examples of such networks are the communications networks used by radio-taxis and transportation companies, as well as emergency networks such as those used by the Fire Brigade, the National First Aid Centre etc. These networks are intended exclusively for private use, and thus their commercial exploitation is prohibited, as also is their connection to the public telecommunications network.

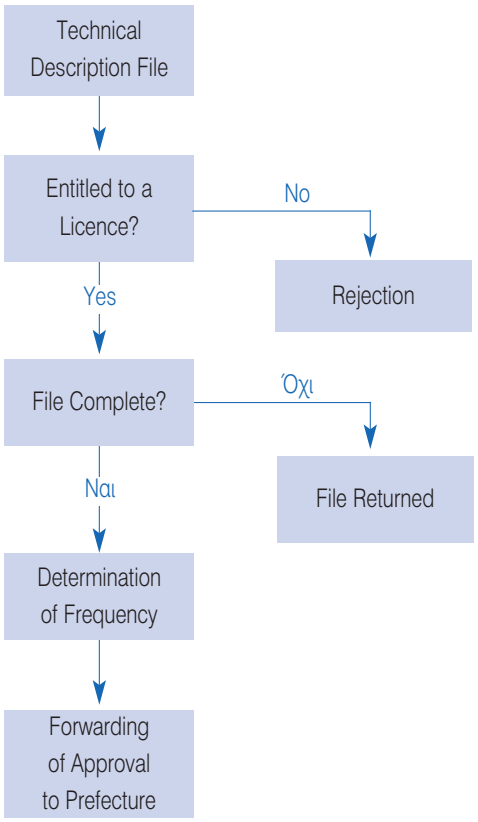
Radio Frequency Assignment Procedure

Operating licences for PMR Networks are issued by the Prefectural Authority, following a concurring opinion by EETT, which grants use of the corresponding operating frequency. Licences are valid for three years as of their date of issue. The procedure followed for assignment of radio frequencies is summarised in the Figure 3.

[72] *http://www.eett.gr, Subject Area "Telecomnunications/ Wireless Communications/Assignment of Radio Frequencies".*

Figure 3

Frequency Assignment Procedure for Private Mobile Radio (PMR) Networks



Radio Frequency Assignments during 2002

In order to improve and accelerate the licensing procedure for PMR Networks, EETT drafted a model Licence application, together with instructions for its completion. The above, together with circulars on the procedures to be followed on all matters related to PMR Networks, were sent to all Prefectural Authorities in Greece, for information purposes[73].

Radio Frequency Assignments during 2002

During 2002, all applications concerning networks with local and regional coverage were processed. The Table below summarises the status in the licensing of PMR Networks in 2002.

Table 12

Number of Radio Frequencies Assigned for Private Mobile Radio (PMR) Networks (01-01-2002 - 31-12-2002)

2002	Total	Approved	Rejected	File Returned	Pending
Applications requesting assignment	156	103	5	48	-

Infrastructure - Tools

The basic tool for spectrum management is the NRFR, which is the record of all frequencies used in Greece. In accordance with Law 2867/2000, EETT is the authority having sole responsibility for maintaining and updating the NRFR. Moreover, all State entities using frequencies are under the obligation to inform EETT, in order for the corresponding information to be entered in the NRFR.

Given the importance of the NRFR for spectrum management, EETT undertakes actions necessary for upgrading and continuously updating the NRFR with full and reliable data. As a result of coordinated efforts, in 2002 the Prefectural Authorities forwarded to EETT all Licences for PMR Networks, so that the NRFR could be brought up to date.

The NRFR is the basic module of the Information Technology (IT) infrastructure for spectrum management, which comprises a set of interrelated

[73] *The relevant information is also available from the EETT website (http://www.eett.gr, Subject Area "Telecomnunications/ Wireless Communications/ Licences for Private Mobile Radio Networks").*

software applications and a central database that operate as a uniform integrated system. The system is capable of adapting to the needs of EETT and to potential changes in the licensing and frequency assignment procedures.

The above applications offer to EETT personnel the capability to know at any given time the frequencies in use in each area and those that are available for assignment. They also represent a useful tool for spectrum management, for use in monitoring illegal use of frequencies by geographical area.

2.5.2. Spectrum Pricing Policy

At the European and international level, radio spectrum users pay special fees - the so-called "radio frequency spectrum fees" - for using the radio frequency spectrum. Imposition of fees acts as an incentive for a more efficient spectrum utilisation by users, and guarantees the operation of the mechanism, which ensures proper use of the radio frequency spectrum and monitors broadcasts for conformity with the law and protection from interference.

Traditionally, these fees were of an exclusively compensatory nature. However, spectrum usage is increasingly intensified in modern telecommunications markets. There is increased demand for allocation of spectrum blocks in specific geographical areas, to serve the provision of new advanced services with high added value. This demand, combined with the fact that the radio frequency spectrum is a scarce national resource, has forced NRAs, which are responsible for spectrum monitoring and management, to re-evaluate pricing approaches and policies.

The EU has determined the key policy principles that must govern spectrum pricing, through a series of legislative texts. These policy principles refer to:

- Non-discriminatory treatment of all interested parties.
- Implementation of the procedure in accordance with the principles of transparency, proportionality and impartiality.
- Pricing in accordance with the value of the spectrum.
- Creation of incentives for technological development and innovation.

In 2002 EETT conducted a tender procedure for awarding a study on the pricing of the radio frequency spectrum, in compliance with the above principles, the European experience and the needs of the Greek market. This study has been included for funding by the Operational Programme "Information Society" (OPIS) under the 3rd Community Support Framework (CSF III). In 2003, EETT will evaluate this study and will modify the existing Regulation[74] as required.

The fees collected by EETT during 2002 were as follows:

Spectrum Usage Fees	Assignment Fees	Operating Fees for Private Mobile Radio (PMR) Networks
14,430,157.70 euro	600,681.55 euro	244,307.99 euro

2.5.3. Development of Wireless Network Infrastructures

Wireless networks consisting of antenna mast constructions play an important part in the liberalisation of telecommunications market, as they offer to new entrants the opportunity to deploy, within a short period of time and at a relatively low cost, backbone telecommunications networks that are alternative to those of incumbent providers.

[74] *FEK Issue 351/B/30-03-2001.*

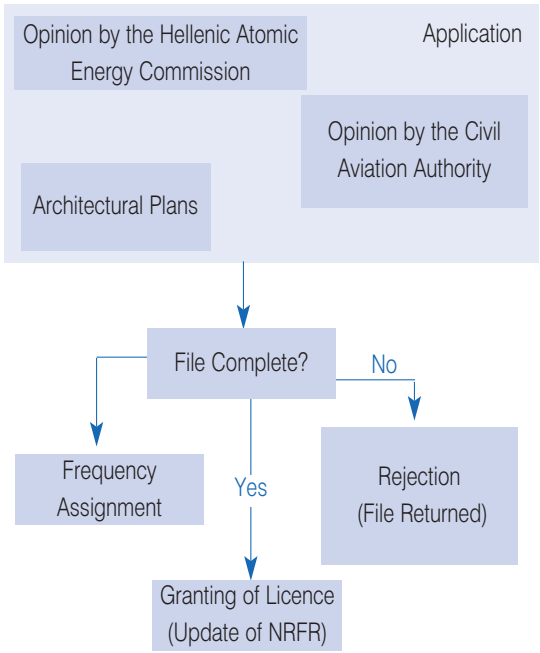
As provided by Law 2867/2000, the review of requests for Antenna Mast Constructions Licences comes under the responsibility of EETT. According to Law 2801/2000, the installation and operation of every transmitting/receiving antenna requires (with the exception of special cases) issuance of a licence, followed by the approval of the competent Town Planning Department. EETT also follows strict procedures for reviewing the licences submitted by companies, in order to ensure protection of citizens' health and safety in air navigation activities, as stipulated by the legislation. Issuance of every licence presupposes the concurring opinion of the Hellenic Atomic Energy Commission on radiation levels, and the approval of the height of the construction by the Civil Aviation Authority.

During 2002, EETT applied the Regulation on Licences for Antenna Mast Constructions[75], which was issued in late 2001, and introduced more flexible procedures for reviewing and processing licensing requests, which led to shorter times required to issue the licences. Facilitation of new providers in deploying their infrastructure and in building up their market activities was among EETT's aims. The average time for issuing an antenna mast construction licence was reduced to 30 days for an application meeting all requirements, while rejected applications are accompanied by full reasoning, allowing companies to promptly amend their applications and faster processing of re-submitted applications. Application of flexible procedures is significant in view of the future needs arising in connection with the introduction of new networks (such as 3G Mobile Telephony), which necessitates the development of new wireless networks infrastructures.

Antenna Licensing Procedure

Figure 4

Procedure for Licensing
Antenna Mast Constructions



During 2002, EETT continued the licensing procedures for new mobile telephony antenna mast constructions of the three providers already in place prior to 2002 (VODAFONE-PANAFON, STET HELLAS S.A., COSMOTE S.A.), as well as of the new entrant (Q-TELECOM). In addition, EETT issued licences for constructions supporting the development of new alternative wireless network backbone and local access infrastructures, and the provision of the fixed voice telephony and Internet access services offered by the new providers.

[75] *EETT Decision 236/79/2001, FEK Issue 1649/B/11-12-2001.*

During 2002, a total of 1,676 new applications were submitted to EETT, in addition to 920 applications pending in late 2001. The majority of these applications was processed (1,491 Licences were granted and 731 applications were rejected).

Chart 34

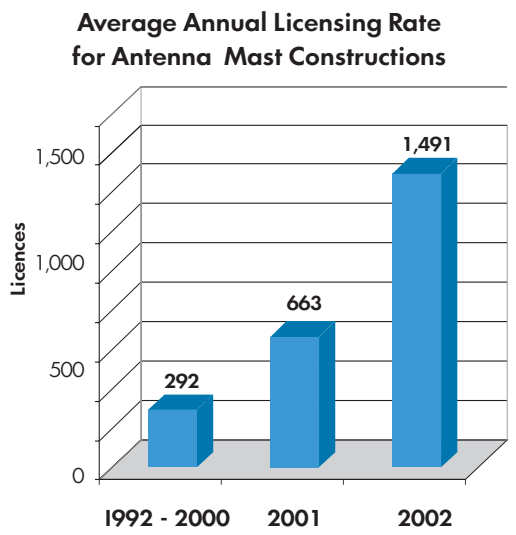
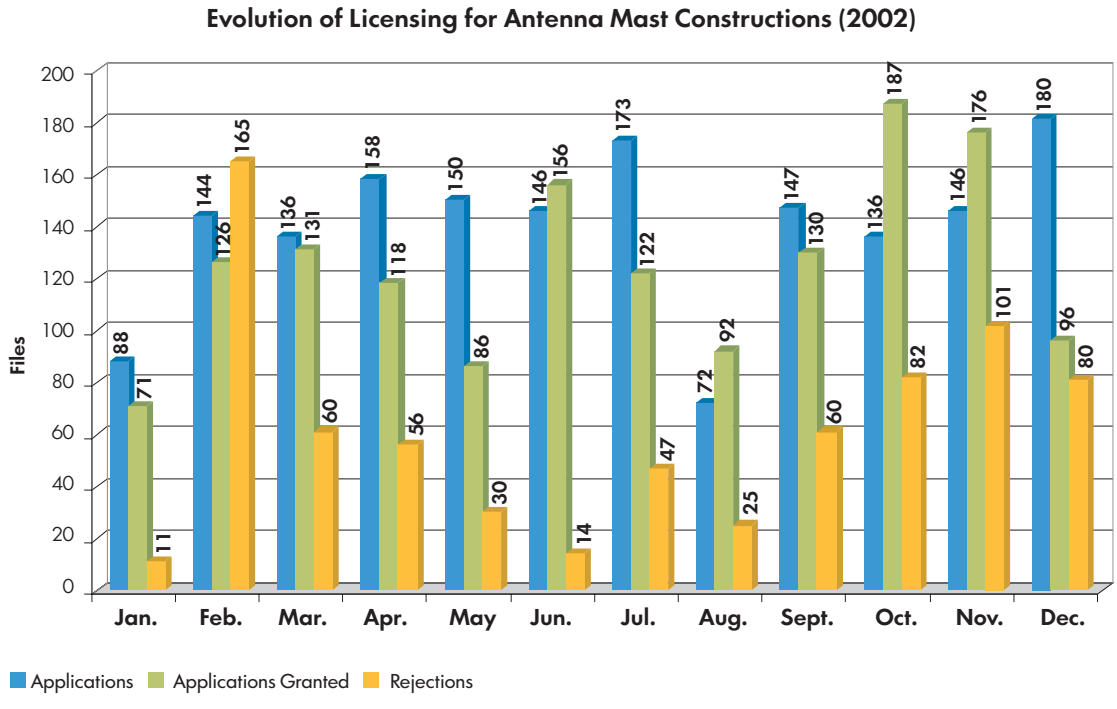


Chart 35



The Table below presents the breakdown of the Antenna Mast Construction Licences granted by EETT in 2002.

Table 13

Breakdown of Antenna Mast Construction Licences (2002)

	Number of Licences
Mobile Telephony Network	1,379
Fixed Wireless Access Network	84
Wireless Backbone Network	28

All information concerning licensed antenna mast constructions are kept in the National Antenna Systems Registry, which EETT maintains and updates regularly, with the purpose of providing to all interested parties prompt information concerning antenna mast constructions and compliance with the conditions provided for by the legislation on telecommunications.

2.6. Spectrum Monitoring

Operation of an effective mechanism for controlling and monitoring radio frequency spectrum usage is a prerequisite for rational management of this scarce resource. To this end, acting within its jurisdiction, EETT:

- Locates and eliminates illegal transmissions, aiming to restrict spectrum usage only to authorised users.
- Deals with harmful interference affecting legitimate users of the radio frequency spectrum, with the aim to protect them from interference-related problems.
- Checks the technical specifications of legitimate broadcasting stations against those stated in their Licences, to ensure - inter alia - protection of citizens from uncontrolled broadcasts that might entail health hazards.
- Checks the application of the relevant regulations and terms under which the licences for the use of radio frequencies are granted, with the aim to create and ensure conditions of fair competition.
- Systematically records spectrum usage and draws conclusions of a statistical nature, such as the availability of frequency bands, with the purpose to facilitate the decision-making process concerning more efficient spectrum management.
- Imposes penalties to those in violation of the legislation and regulations in force.

The priorities established by EETT regarding inspections, either on its own initiative or based on the complaints that it receives, are the following:

- Protection of high-priority networks - e.g. the frequencies used for Air Navigation, the Armed Forces, the Police and Fire Brigade (see sub-section 2.6.4.).
- Protection of citizens from uncontrolled broadcasts.
- Protection of legitimate spectrum users (e.g. telecommunications providers) from harmful interference.

In order to successfully respond to the above tasks and priorities, in 2002 EETT took actions necessary to secure the required technical and human resources.

2.6.1. Procurement of Technical Equipment

2.6.1.1. Equipment of Fixed Monitoring Stations

In order to meet the immediate needs for radio spectrum control and monitoring in the Attica region, EETT in 2001 launched the procedures for procurement of equipment for two Fixed Monitoring Stations (FMSs). These procedures were concluded in early 2002, and the two

Stations were installed at the offices of EETT in Maroussi and in a building inside the Athens International Airport (AIA).

The Maroussi FMS includes a receiver and monitoring antennas allowing control of the 20 MHz - 3 GHz frequency band, with the corresponding equipment of the AIA FMS covering the 20 MHz - 1.3 GHz band. A Control Centre, located at EETT premises, controls the two Stations, via appropriate networking.

The above equipment conforms with modern spectrum monitoring technology, allowing highly accurate measurements to be performed in accordance with the recommendations of the International Telecommunication Union (ITU).

2.6.1.2. Radio Direction-Finding Equipment

The procedures for procurement of a radio direction-finding equipment covering the 20 MHz - 3 GHz band were also concluded in 2002. This equipment was installed in a specially configured vehicle. The mobile radio direction-finding unit meets strict technical specifications and has proven an exceptionally valuable tool in radiolocation and in the suppression of illegal broadcasts (see also sub-section 2.6.1.1.).

This unit is also used to conduct inspections outside Attica, as well as in areas within Attica, which are not covered by the two FMSs.

2.6.1.3. Portable Equipment

In addition to the above equipment, which is permanently installed either in the fixed stations or in the mobile radio direction-finding unit, EETT in 2002 purchased portable equipment that is used according to the type and requirements of each technical check. More specifically, this equipment includes the following systems:

- **GSM/DCS Mobile Telephony Network Control System**
  This system is used to measure specific quality indicators in mobile telephony networks, in order to establish the provides' compliance with the terms of their authorisations, as well as for conducting on-site inspections of illegal mobile telephony base stations.
- **Frequency Spectrum Surveillance Equipment for Frequencies up to 40 GHz**
  This equipment includes a spectrum analyser, mixers and antennas allowing surveillance of the spectrum up to 40 GHz, and is used in checking frequencies above 3 GHz, such as in microwave and satellite links, and Local Multipoint Distribution System (LDMS) networks.
- **Portable Spectrum Surveillance Equipment for the 2 kHz - 3 GHz band**
  This system, procurement of which is expected to be concluded in early 2003, concerns two portable, lightweight receivers, with accompanying directional antenna sets, covering the 2 MHz - 3 GHz. This equipment is to be used for surveillance of the HF band (3 - 30 MHz), as well as for conducting inspections in the VHF (30 - 300 MHz) and UHF (300 MHz - 3 GHz) bands at locations, which cannot be accessed using the mobile radio direction-finding unit, such as on rooftops or, in mountainous areas.

The above equipment, together with the portable equipment already in possession of EETT (one spectrum analyser for the 9 kHz - 2.7 GHz band and two field strength meters for controlling television signals), are transported using a specially configured vehicle.

2.6.2. Staffing

A prerequisite for efficient spectrum monitoring was to increase the EETT human resources supporting Spectrum Monitoring operations. To this end, in 2002 EETT recruited suitable technical and administrative

personnel, and special experts.
At the end of 2002, the personnel employed by EETT on spectrum monitoring numbered 23 individuals (compared to 12 in 2001), who have been trained to meet the requirements of monitoring operations.

2.6.3. Organisation - Procedures

The ever-increasing requirements for effective spectrum monitoring, combined with the increase in human resources and the improvement (in terms of both quantity and quality) of EETT's equipment, necessitate the revision of the existing spectrum monitoring organisation and procedures. An additional factor to this end is the introduction of the new EU Regulatory Framework in Greece.

Recognising this necessity, in 2002 EETT assigned to a specialist consultant the review of the organisation of the Spectrum Division in general, taking into consideration the above issues. The consultant has already reviewed the current situation, in terms of both the legal framework and of the procedures applied, and has also surveyed the practices as applied by other NRAs. Drawing on the above, the consultant will propose new procedures and improvements to the existing ones, as well as the required staffing, with the aim to ensure a more efficient control of the spectrum and a more swift response to complaints and requests submitted by users.

2.6.4. Protection of High-Priority Networks

Protection of wireless networks relating to the protection of human life and public order is a top-priority issue for EETT. Indicative examples of such networks are the networks of the Civil Aviation Authority, the Armed Forces, the Police, the Fire Brigade, and the National First Aid Centre.

In particular, interference in the frequencies used for radio aids and for the communication systems of the Civil Aviation Authority creates problems for Air Navigation security. For this reason, a key concern of EETT in 2002 was to reduce the response times in such cases.

2.6.4.1. Interference Problems in Air Navigation Frequency Bands

The frequency bands made available internationally to meet Air Navigation needs include the 108 - 137 MHz band. Within this band, the 108 - 118 MHz sub-band is intended for radio aids, i.e. for electronic transmission and reception systems used for safe navigation of aircraft, while the 118 - 137 MHz sub-band is used to serve other communication needs, such as the communication between aircraft pilots and air traffic controllers.

The 108 - 137 MHz band is located right next to the band used for FM radio broadcasts (87.5 - 108 MHz). As a result of this adjacency, there are potential risks of interference from radio broadcasts in the Air Navigation frequency band. This interference is usually due to the excessive power of some radio broadcasts, which results in the creation of interference effects which prevent smooth operation of the radio aids and of communications. If the interference takes place on a frequency used for communication, this communication becomes difficult or even impossible, while if this frequency is used by some radio aid, then the interference leads to erroneous instrument readings and, ultimately, to the aircraft diverging from its correct course. In certain circumstances, both situations can prove dangerous for the safety of flights.

From the above, it becomes clear that radio broadcasts should not take place in a reckless manner. Recommendation 1009 of the International Telecommunication Union - Radiocommunications (ITU-R), imposes the obligation for harmonisation of the radio broadcasts with Air Navigation frequencies, and describes in detail the procedure

to be followed. This harmonisation results in the need to impose a set of concrete technical specifications, which must be met by radio broadcasting stations. These specifications concern mainly the following:

- **Broadcasting Frequency**
  Radio stations must broadcast in precisely determined frequencies.
- **Effective Radiated Power**
  The effective radiated power of radio stations is not allowed to exceed a particular maximum value.
- **Broadcasting Position**
  Radio broadcasts must be made from specific positions, where radio-TV parks are organised. The creation of such parks helps significantly the efforts to control the observance of the specifications by licensed stations.
- **Radiation Pattern**
  The radiation patterns of transmission antennas must meet certain specifications.

In its entirety, the set of technical specifications that radio broadcasts in each area must meet are usually referred to as "FM Radio Frequency Map". Regarding Greece, Maps have been drawn up for every Prefecture. Nevertheless, with the exception of the Attica Prefecture, these Maps have not yet been applied: in practice, this has resulted in the non-fulfilment, on the part of radio stations, of the obligation to observe the foreseen technical specifications. Significant problems are thus created in Air Navigation frequencies. During 2002, the Civil Aviation Authority submitted over 400 complaints for interference across the entire Greek airspace.

Regarding the operation of private radio stations, the problem stems from the existing regime. More specifically, Law 2328/1995 introduced the establishment and operation of private radio stations and determined their licensing procedures. Furthermore, in accordance with Law 2778/1999, it was determined that until conclusion of the licensing procedure for the radio stations in each Prefecture, the stations in operation on 1 November 1999 would be considered as "legitimately operating".

The licensing responsibility belonged originally to the Ministry of Press and Mass Media, and today has been transferred to the National Radio-Television Council. This licensing of radio stations has not been concluded, with the exception of the Attica Prefecture. Therefore, the status applying to the radio stations in the rest of Greece is that of "legitimately operating" radio stations. Furthermore, no record has yet been established of the equipment of legitimately operating radio stations, resulting in the inability to locate stations operating illegally and impose on them the penalties as provided for by the legislation.

Finally, regarding Attica, where 35 private radio stations have been licensed, the procedures for organising radio-TV parks in Mount Parnitha and Mount Hymettus, as provided for under the Frequency Map for Attica, have not made any progress. This has resulted, on the one hand, in non-observance of the specifications by the licensed radio stations, and, on the other hand, in facilitating installation of illegal stations in the Mount Parnitha and Mount Hymettus broadcasting centres, which have been configured in a chaotic manner.

A key prerequisite for drastically resolving interference problems is to grant operating licences and determine broadcasting parameters for private radio stations in the peripheral regions of Greece, so that these stations broadcast in accordance with the specifications stipulated by the Frequency Map for each Prefecture. Furthermore, it is necessary to create organised antenna parks at selected locations in every Prefecture, which will ensure legitimate spectrum usage and protection from illegal broadcasts.

In 2002, EETT undertook actions necessary to address efficiently the interference problems in high-priority networks, and especially in Air Navigation frequencies.

2.6.4.2. EETT Actions to Protect High-Priority Networks

Relevant EETT actions during 2002 were as follows:

- **Installation of Fixed Spectrum Surveillance Stations**
  As already mentioned in sub-section 2.6.1.1., in 2002 EETT installed a fixed spectrum surveillance station in its offices and another in the premises of the AIA. These stations record daily the spectrum usage in the frequency range in which Air Navigation networks and other public security networks operate.
  The data recorded by the station located in the premises of the AIA are transmitted via a telephone line to the EETT offices, allowing for continuous information on spectrum usage. In the event of harmful interference in the airport frequencies, the type of interference is immediately identified and the required actions to resolve the problem are undertaken.
  In addition, in order to address the risks of interference, EETT monitors daily the broadcasting power of radio stations, through the measurements gathered by the two Monitoring Stations, and informs the responsible bodies (National Radio-Television Council, Public Prosecutor's Office, Ministry of Transportation and Communications, Ministry of Press and Mass Media) in cases where the legally allowed maximum transmitted power is exceeded.
- **Determination of Procedure for Dealing with Emergencies**
  For handling emergencies, the "standby" operation was introduced. On a daily basis, including holidays, a "standby" team (composed by suitably trained technical and investigation personnel) is ready, on a 24-hour basis, to immediately investigate interference problems in high-priority networks. This team is brought to action following a telephone call from the responsible departments.
- **Dealing with Interference Problems at the Athens International Airport**
  During 2002, 13 cases of interference in the terrestrial frequencies of the AIA were reported and dealt with successfully. Most of the interference problems were due either to licensed stations exceeding the broadcasting power limits, or to broadcasts by illegally operating stations. In the first case, the licensed stations were obliged to immediately reduce their broadcasting power and then take appropriate corrective action (e.g. replacement or calibration of antenna systems) in order to avoid similar problems in the future. In the cases were the interference was due to broadcasts by illegally operating stations, EETT suspended their operation and confiscated their equipment, in application of the procedure for flagrant offences, as provided for by Law 2801/2000.
  It should be noted that conclusion of the licensing procedure for the 35 radio stations in Attica by the Ministry of Press and Mass Media, and the harmonisation of their operating frequencies with the Frequency Map in force, has helped significantly to reduce interference problems in the AIA frequencies. The actions implemented by EETT for establishing detailed records of radio broadcasting installations in Mount Hymettus, and the confiscation operations conducted by EETT in 2002 (see sub-section 2.6.5.), were in line with the above.
- **Handling Interference Problems in Airports outside Attica.**
  EETT also is active in ensuring smooth operation of radio communications in airports outside Attica. In 2002, EETT conducted relevant inspections throughout Greece, intervening to resolve interference problems. More specifically, in 2002 EETT crews, using the mobile radio direction-finding unit, visited the airports in Skiathos, Chios,

Thessaloniki, Heraklion and Chania, as well as the telecommunications station of the Civil Aviation Authority in Mount Geraneia.

It should be noted that in their overwhelming majority (over 90% of cases), occurrences of interference in Air Navigation frequencies are reported only in receivers on aircrafts, and not on the ground. These interference occurrences are usually due to the high broadcasting power levels of radio stations broadcasting across the entire Greek territory. In such cases, inspections from the ground are impossible and, therefore, dealing with this problem is extremely difficult.

2.6.5. Control of Radio-TV Broadcasting Installations

In order to respond more effectively to its auditing role, EETT launched in 2002 the operation to establish a detailed record of the broadcasting installations of radio-TV stations in Attica, starting with the Mount Hymettus broadcasting centre.

Control of broadcasts originating from radio-TV installations located in Mount Hymettus is of particular importance, as it is directly related to the safe operation of the AIA.

In March 2001, after the licensing procedure for the first 20 private radio stations was completed, and prior to the Airport becoming fully operational, a large-scale operation was conducted to locate 40 illegal radio stations and suspend their operation. Nevertheless, stations broadcasting illegally in the FM band appeared again in the course of time.

In addition to the State-owned radio-TV organisation, the Mount Hymettus broadcasting Centre is home to the majority of the licensed private radio stations and of the legally operating private television stations. The conditions under which the centre operates, however, exhibit significant shortcomings compared to those of a model radio-TV park. A key feature of the current situation is the absence of any serious guarding of the site, which would ensure the operation only of licensed and legally operating stations, deters the operation of illegal stations. In addition, the fact that the broadcasting installations (containers, antenna systems) belonging to the radio stations whose operation was suspended in March 2001 have not yet been removed, provides the opportunity for illegal radio stations to establish themselves and operate there, using some of the existing and theoretically inactive installations.

The combination of past experience with the issues mentioned above create a situation requiring a comprehensive overall approach and the application of systematic resolution methods for resolving the problems arising in Mount Hymettus. For this reason, during the second semester of 2002 EETT focused its efforts on drawing a detailed picture of the situation in the Mount Hymettus broadcasting centre. These efforts were structured as follows:

- All legally operating radio and television stations were initially asked to submit technical files on the equipment that they have installed in the Mount Hymettus broadcasting centre. The data of the files submitted were used to create an electronic file for each station's broadcasting equipment.
- Following a relevant order from the Public Prosecutor's Office, a preliminary inquiry was held concerning illegal broadcasts originating from the Mount Hymettus area. These activities resulted in detailed records on the containers and antenna systems that did not belong to legally operating stations. The relevant preliminary inquiry material has already been forwarded to the Public Prosecutor, while on the basis of these records it concluded that around 1/4 of the total number of containers to be found in Mount Hymettus do not belong to any legally operating radio or television station.

- In the last quarter of 2002, EETT employees conducted four operations inspections on Mount Hymettus installations, during which broadcasting equipment from a total of 20 containers was confiscated. The equipment confiscated includes the transmitters of five illegally broadcasting radio stations, while it should be noted that two of these FM transmitters were found in the container of a legally operating TV station.

It should be pointed out that during the period from 26 October to 31 December 2002, i.e. after these inspections, EETT received only three complaints for interference in the AIA frequencies. This proves the effectiveness of the inspections conducted, whose immediate goal was to protect the AIA frequencies.

Future EETT actions to cease operation of illegal stations in Mount Hymettus are structured along the following two action lines:

- Inspections of installations.
- Removal of containers and antenna systems that do not belong to legally operating stations, in cooperation with other competent authorities.

It should be mentioned that illegal installation and operation of non-licensed radio and television station entails violation of several other provisions of the legislation in force (trespassing on forest area, illegal connection to the power supply network etc.). Consequently, putting an end to this phenomenon requires cooperation between all involved entities - EETT, Forest Department, Ministry of Environment, Physical Planning and Public Works, Public Power Corporation, Police - until the problem is finally resolved, through the creation of the radio-TV parks provided for by the Frequency Maps, organised in accordance with international standards.

2.6.6. Investigation of Complaints

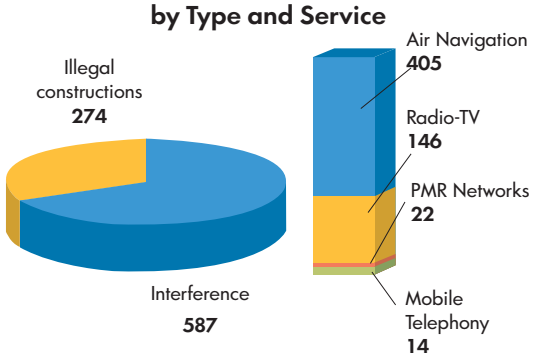
In addition to EETT actions aimed at creating the structures required for the exercise of its responsibilities regarding spectrum monitoring, the Spectrum Monitoring Division was also active in investigating complaints submitted by both spectrum users and citizens.

In order to respond to spectrum monitoring requirements in regions other than Attica, in 2002 EETT cooperated with the Transportation and Communications Departments of the local Prefectural Authorities, on the one hand, and with University Institutions, on the other. These organisations made a significant contribution to meeting the needs arising, in cases where EETT resources were not sufficient.

The total number of complaints concerning interference problems or illegal antenna mast constructions in 2002 amounted to 861. Chart 36 shows the breakdown of complaints by type and service.

Chart 36

Breakdown of Complaints by Type and Service



The main volume of complaints concerned interference problems in Air Navigation frequencies. A total of 405 such complaints were submitted in 2002, of which 368 concerned interference problems occurring on aircraft only, for which technical checks from the ground are for the time being impossible. The remaining 37 complaints, which concerned ground interference problems, were mainly dealt with by dispatching a technical EETT team (see also sub-section 2.6.4.2.).

Investigation of complaints concerning mobile antenna mast constructions was one of the most important EETT activities in 2002 (see sub-section 1.4.3.). A total of 274 such complaints were submitted, of which 130 concerned non-licensed constructions. Monitoring operations consisted in a total of 91 on-site inspections of mobile telephony base stations, of which 83 were in Attica and 8 in the rest of the country. In addition, one case was assigned to the Radio Communications Laboratory of the Aristotle University of Thessaloniki (AUTH), while assistance from the relevant Prefectural Authorities was sought for 56 cases outside Attica. It should be noted that these inspections (148 in total) also included 18 cases of licensed antenna mast constructions, which were checked to verify the observance of the terms of their licences.

It is worth noting that, following the above actions, all investigations of complaints concerning illegal mobile telephony antenna mast constructions within Attica were completed, while investigation is pending for 31 cases of complaints outside this region.

A total of 146 complaints concerning interference problems in radio-TV stations were submitted during 2002. Of these, 78 concerned the Attica region, and were investigated almost in their totality. In the cases were the investigations confirmed the contents of the complaint, the technical reports were forwarded to the National Radio-Television Council and to the Ministry of Press and Mass Media for imposition of the administrative penalties provided for by the legislation on radio-television. The remaining 68 complaints, which concerned problems outside Attica, were forwarded to the relevant Prefectural Authorities.

A smaller number of complaints (22) concerned interference problems in PMR Networks. Due to the limited technical resources available, the intermittent nature of the transmissions and the legal particularities regarding licensing, these cases are in general difficult to deal with. Special priority was given to cases of interference in Police and Fire Brigade radio networks, for which every effort possible was made, with positive results.

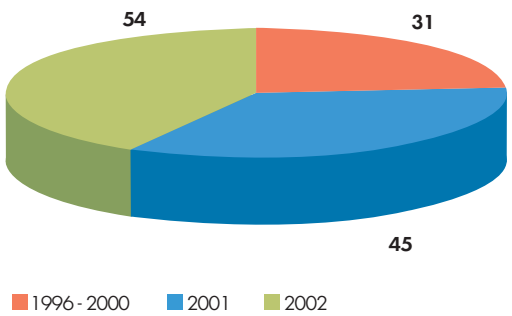
Finally, a small number of complaints (14) concerned interference in mobile telephony networks. Of these, all cases in Attica (6) were investigated and resolved. For cases of interference outside Attica (8 complaints), two of these complaints are still pending.

2.6.6.1. Confiscation of Illegally Operating Stations

In addition to the investigation of complaints concerning interference in frequencies used by legitimate spectrum users and illegal antenna mast constructions, in 2002 EETT conducted spectrum inspections in the Attica region, in order to ascertain, locate and suppress illegal broadcasts. In order to perform these inspections EETT took into consideration written complaints in addition to the recordings made by the Monitoring and Radio Direction-Finding Stations.

Chart 37

Cases involving Suspension of Operation and Confiscation of Equipment of Illegally Operating Stations



These investigations resulted in the location and confiscation of broadcasting equipment (see Chart 37) belonging to a total of 54 illegally operating stations, registering a 20% increase compared to corresponding actions in 2001 (45).

2.7. Radio Equipment and Telecommunications Terminal Equipment

Radio equipment is all equipment, which includes a transmitter and/or receiver and provides radio wave communication. Examples of radio equipment include mobile phones, satellite terminals, Citizen Band (CB) devices and radiotelephones on ships, cordless phones, transponders, remote controls, wireless control systems, cordless microphones, wireless local area network equipment, and remote control toys.

Telecommunications terminal equipment is the equipment connected, either directly or indirectly, by any means, to telecommunications networks (mobile telephony networks, public analogue and digital telephony networks), for the provision of services to the public. Examples of telecommunications terminal equipment are fixed and mobile telephones, fax machines, answering machines, modems, and telephone exchanges.

The regime governing placing on the market and use of Radio Equipment and Telecommunications Terminal Equipment (RE-TTE) across Europe has been determined by Directive 1999/5/EC of the European Parliament and of the Council. The aim of the Directive was to establish a legislative framework that would harmonise the regime of placing on the market and use of such equipment throughout the EU, and would facilitate the introduction of new products in the market.
Directive 1999/5/EC of the European Parliament and of the Council "On radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity" was transposed into the Greek legislation by Presidential Decree 44/2002[76], which was issued in early 2002 to regulate the placing on the market, free movement and putting into service of RE-TTE.

The key priorities of the Directive and PD 44/2002 refer to the following action lines:

- Conformity of equipment to the essential requirements (requirements for protection of the health and the safety of the user or of any other person, protection requirements with respect to electromagnetic compatibility).
- Effective spectrum usage and avoidance of harmful interference.
- Assessment of conformity to the essential requirements.
- Conditions for placing on the market and free movement of equipment.
- Surveillance of the market and adoption of measures for its protection.

According to PD 44/2002, the following responsibilities are assigned to EETT:

- Determination of radio interfaces, i.e. of the technical specifications for spectrum usage.
- Publication of the interfaces of telecommunications providers, so that the design of terminal equipment capable of connecting to the specific interfaces and of using the services provided by these is feasible.
- Determination of criteria and procedures for assessment of the parties interested in being designated as Notified Bodies, having as their main task to perform audits and assess the compliance of manufacturers for certain classes of equipment. These Bodies are notified to the EU by EETT.
- Surveillance of the RE-TTE market.
- Representation of Greece in the Telecommunication Conformity Assessment and Market Surveillance Committee (TCAM).

EETT Actions

During 2002, EETT received all radio equipment notifications submitted by the equipment

[76] *FEK Issue 44/B/07-03-2002.*

manufacturers or their authorised representatives, as provided for by PD 44/2002. EETT developed a system for electronic management of notifications, so that a common database for all notifications is available and the time required to process requests is reduced.

Information on the application of the Directive and the model notification form (in Greek and in English) were provided on the EETT website. In parallel, responses were provided to all queries that were submitted to EETT regarding the distribution and use of RE-TTE.

The advances in technology and the establishment of new European and international standards created the need for the use of frequencies by various classes of radio equipment, for which no provisions had been made in the National NFAT. In order to harmonise the Greek status concerning distribution and use of radio equipment with that in the other European countries, EETT sent to the Ministry of Transportation and Communications a relevant Recommendation on the Modification of the NFAT, so that these new classes of radio equipment can be placed on, and operate in, the Greek market.

In 2002, EETT drafted the interfaces for a considerable number of radio equipment classes, in Greek and in English. The procedure for notification of these interfaces to the European Commission, in accordance with the provisions of PD 39/2001, will begin during 2003. In the framework of procurement of the NSMMS, a provision has been made for the purchase of hardware and software to meet the needs of EETT in relation to RE-TTE. EETT maintains the relevant records, publishes information, applies the opinions by the European Commission, and promotes the issues arising in the interests of Greece.

Important issues regarding the use of classes and types of radio equipment arise in view of the 2004 Olympic Games to be held in Greece. In the Management Plan developed for the Olympic Games, a provision has been made for covering the needs to arise through the use of radio equipment.

EETT has set as an immediate goal for 2003 the completion of a modern Regulatory Framework with appropriate specifications for the use of equipment. In addition, EETT intends to plan and implement an effective and efficient internal organisation and a market surveillance system for the RE-TTE market.

In order to attain the above goals, EETT is working closely with the specialist consultant who has undertaken the project of the "Organisation of the Spectrum Department". During 2003, EETT is expected to issue Regulations on:

- The determination of the features for all interfaces, which are regulated by EETT and notified, to the European Commission.
- The identification of terms and procedures on the basis of which the interfaces of telecommunications providers will be published.
- The determination of criteria and procedures for assessment and publication of Notified Bodies.

In addition, upon completion of the Regulatory Framework and based on its responsibility regarding market surveillance, EETT will systematise the performance of sample inspections regarding conformity levels for the RE-TTE placed on the Greek market. In parallel, EETT will undertake initiatives for provision of information to the market.

2.8. National Spectrum Management and Monitoring System

In parallel, with the equipment previously mentioned, which aimed at meeting the immediate control and monitoring needs, in 2002 EETT embarked on the

procedures regarding procurement, installation and operation of the NSMMS.

The NSMMS, which has been included in the OPIS under CSF III, is an integrated system composed of software, applications, and hardware, which will support spectrum management and monitoring operations. Through procurement and operation of the NSMMS, EETT seeks to attain the following objectives:

- ***Effective Spectrum Management***
  The nature of the electromagnetic spectrum as a scarce resource necessitates the implementation of mechanisms for its proper management and effective utilisation. The extensive demand and increasing intensified usage of radio frequencies necessitates the creation of a national system meeting the above requirements.
- ***Surveillance of Proper Spectrum Usage***
  Surveillance of legitimate usage of the radio frequency spectrum is one of the most important aims of the NSMMS. More specifically:
  - *Protection of High-Priority Networks*
    The system will provide the means necessary for ensuring, at a national level, the smooth operation of the services that are related to the security of the citizens and the national defence, such as locating the source of interference in the frequencies used by the Civil Aviation Authority, the Armed Forces and the Police.
  - *Location of Illegal Broadcasts*
    The NSMMS will provide the capability for quickly and effectively locating illegally broadcasting stations, protecting in parallel legitimate users.
  - *Compliance of Legitimate Users with the Terms of their Licences*
    The system will be used for surveillance of the operation of broadcasting stations of legitimate users, and the measurements to be performed will be used to assess the level of compliance of each user with the specifications and terms of the licence held by the user.
- ***Provision of Secure and Reliable Radio Communications Environment during the 2004 Olympic Games***
  The requirements for spectrum management and monitoring in the framework of the 2004 Olympic Games will be particularly increased, and implementation of the NSMMS is absolutely necessary for meeting the needs to arise.
- ***Stimulation of Competition***
  Implementation of the NSMMS, which will ensure spectrum surveillance and compliance with the relevant laws and regulations, will contribute to the creation of conditions of fair competition between commercial users.
- ***Cooperation of Greece with International Authorities***
  At the global level, coordination of spectrum usage is exercised by ITU, and, at the EU level, by the European Commission. The NSMMS will support coordination with international authorities, compliance with international frequency coordination standards, and resolution of interference problems with neighbouring countries.

Implementation of the NSMMS has been divided in two phases. The first phase, currently in progress, aims to cover the Athens and Thessaloniki regions, and to contribute to spectrum management and monitoring during the Olympic Games. The second phase, which is foreseen to begin within 2004, will include coverage of all other regions of Greece.

In the first phase, the NSMMS will include the following sub-systems (see Figure 5):

- National Control Centre (NCC), located in the EETT headquarters in Athens, where spectrum management and monitoring operations at the national level will be performed.
- Regional Control Centres (RCCs), in Athens and Thessaloniki.

- 3 FMSs in the wider Athens region, and 2 FMSs in the wider Thessaloniki region.
- 4 Mobile Monitoring Stations based in Athens, and 3 such stations based in Thessaloniki.

Mobile Monitoring Stations will also be equipped with portable equipment and, whenever this is required, will travel to various locations in the country to perform inspections to assess spectrum usage.

In 2002, EETT conducted a public open tender procedure to award the first phase of the NSMMS. The budget for the project was 14,670,000 euro (exclusive of VAT). The contract was awarded to ROHDE & SCHWARZ GMbH & Co.KG, a German company, with the final cost reaching 12,338,854 euro (exclusive of VAT). It should be noted that this project has been included for funding in the OPIS under CSF III. A first part of the System is expected to be delivered and enter into service for the first time in the framework of the Olympic Test Events, to be held in August 2003.

2.9. Internet - Electronic Transactions

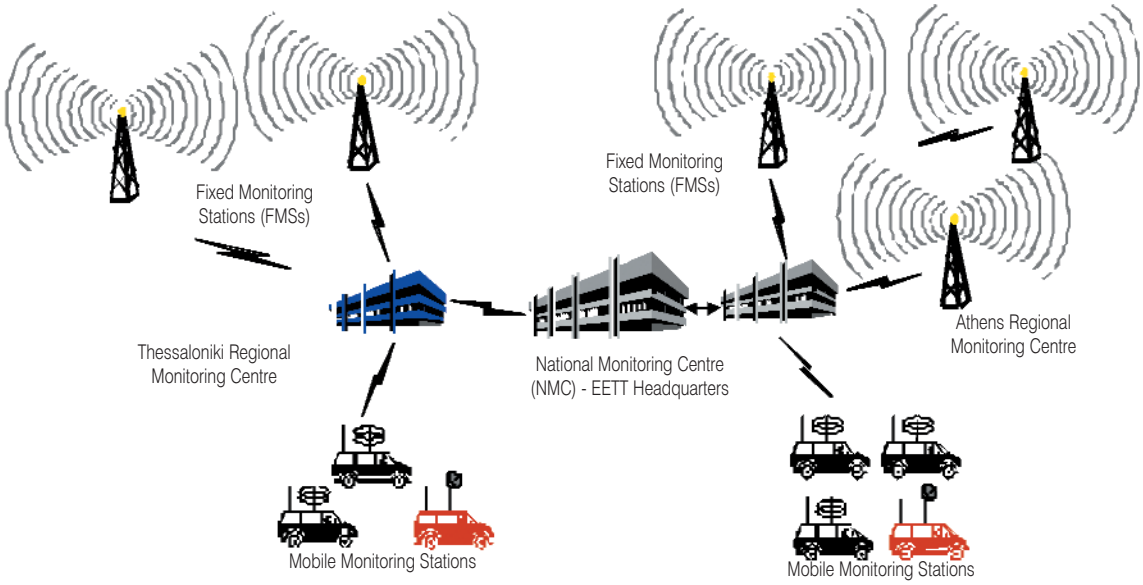
2.9.1. Electronic Signature

The global growth of the Internet during the last decade was admittedly rapid, as it already is a widely used communication and information retrieval tool. In addition, a large number of entities (public and private) is already active in the Internet and provides advanced electronic services and products, offering to consumers a variety of capabilities and facilities. Nevertheless, the growth of electronic commerce was not the one expected, contrary to relevant forecasts.

The most important reason for the limited diffusion of electronic commerce is the lack of trust on the part of consumers, who consider that the Internet does not or cannot have available sufficient security levels.

Figure 5

Structure of the National Spectrum Management and Monitoring System (first phase)



Use of digital certificates, and of Electronic Signature in particular, within a pre-determined legislative framework that will govern the operation of Electronic Signature Certification Services, is expected to lay the foundations for users' confidence in the Internet and, by extension, in electronic transactions.

The recent PD 342/2002 on the "Movement of documents via electronic mail between public services, legal persons governed by public law and Local Authorities or between these and natural or legal persons governed by private law and associations of natural persons" emphasises the importance of Electronic Signature in transactions between State entities, and lays down the basic framework for the expansion of electronic transactions to the benefit of citizens.

The responsibilities of EETT include, inter alia, provision of Voluntary Accreditation for Certification Service Providers (CSPs), i.e. accreditation which will take place following a relevant request submitted by the providers. Voluntary Accreditation defines rights and obligations that govern the Provision of Certification Services, aiming to improve the quality of the relevant services.

Harmonisation of the Greek legislation with the provisions of Directive 1999/93 on Electronic Signature took place by PD 150/2001[77], from which the following responsibilities derive for EETT:

- Determination that the software/hardware used for creating the Electronic Signature (e.g. smart cards) is secure, a task that EETT may assign to public or private entities.
- Provision of Voluntary Accreditation, following an application in writing by the interested CSP, possibility to assign this task to public or private bodies.
- Supervision and control of CSPs established in Greece, as well as of the bodies appointed by EETT for accreditation and checking of the software/hardware used to create the Signature.

In 2002, EETT announced the results of the Public Consultation, which was held in 2001 with the aim to record the views of the interested parties on issues such as the terms, obligations and prerequisites for Voluntary Accreditation, as well as on the scheme proposed for implementation of Voluntary Accreditation and CSP control and supervision. In broad terms, the majority of the participants acknowledged the necessity for Voluntary Accreditation, but also for the existence of independent auditing bodies to determine compliance by CSPs with respect to the secure Signature-creation devices[78]. In addition, EETT has recorded the participants' proposals/approaches on international standards regarding reliable systems and products, thus obtaining an overall picture of the likely requirements from a standardisation viewpoint.

In the framework of its supervisory and controlling role, EETT issued in May 2002 a Regulation[79] that determines the legislative framework for operation of the control mechanisms and lays the foundations for widespread diffusion of Electronic Signature. More specifically, EETT regulates the supervision and control of Electronic Signature CSPs who are established in Greece and issues certificates or provides other services related to Electronic Signature. The Regulation also clarifies matters concerning qualified certificates, which confirm the identity of the signatory party and have the same legal

[77] *PD 150/2001, FEK Issue 125/A/25-06-2001.*
[78] *Secure Signature Creation Device: Hardware (e.g. smartcards, tokens) or software, which is under the exclusive possession of the person signing electronically and which ensures the uniqueness and secrecy of the Electronic Signature. Provided that specific requirements, as determined by the European and Greek legislation in force, are fulfilled, then the Signatures generated by such a device are legally equivalent to hand-written signatures.*
[79] *EETT Decision 248/71/2002, FEK Issue 603/B/16-05-2002.*

validity as that person's handwritten signature. Consequently, the persons who certify an electronic transaction using their Electronic Signature cannot subsequently deny the responsibilities resulting from that transaction. According to Directive 1999/93/EC and PD 150/2001, qualified certificates are of a specific format and are issued by a provider meeting certain requirements.

It should be noted that Provision of Certification Services by CSPs does not presuppose licensing by EETT, but merely the registration of CSPs in the relevant Registry maintained by EETT. CSPs send to EETT a registration statement, which states the types of services and certificates that they provide. In parallel, CSPs pay to EETT a relevant registration fee. Each party enrolled in the Registry must produce a detailed annual report on its certification-related activities, together with evidence of its financial reliability.

According to the Regulation, in case they suspend their activities, CSPs:

- Must meet all arising financial obligations, as well as the damages, if any, sustained by third parties as a consequence of the suspension.
- Are under the obligation to notify EETT in good time, and cancel the certificates that they have issued.
- In the case of a CSP who issues qualified certificates (in which case the CSP is under obligation to maintain a file with information concerning such certificates for a period of thirty years), the CSP must have reached agreement with another similar CSP who issues qualified certificates regarding delivery and maintenance of the first CSP's file.

Particular emphasis should be given to the provision of full information to the beneficiary of the certificate, prior to contract signature, on the responsibilities and obligations of the two parties. In addition, the obligations of beneficiaries concerning storing and protection of their private key[80] should be pointed out, together with the consequences from its publication. In the case of loss of the private key, the beneficiaries must notify the provider immediately.

The Regulation defines the cases where the CSP must revoke a qualified certificate from the user. Indicative such cases mentioned are the issue of a certificate based on false information, a court decision ordering revocation, loss of legal capacity etc. For this reason, the obligations of CSPs issuing qualified certificates include uninterrupted operation (24 hours-a-day, 7 days-a-week) of the revocation service.

The EETT Registry with the data of the providers enrolled in it, and other relevant information, are available on the EETT website[81].

In April 2002, EETT announced a public open tender procedure for awarding a Study on the Organisation, Planning and Implementation of Voluntary Accreditation of CSPs and on other issues pertaining to the Provision of Electronic Signature Certification Services. This project has been submitted for inclusion in the OPIS under CSF III.

The purpose of the project is to identify the precise framework for implementation of Voluntary Accreditation, as this has been defined in PD 150/2001, and the criteria for the selection of - public or private - Authorised Entities for (a) Voluntary Accreditation of Electronic Signature CSPs, and (b) determining compliance with the secure Signature creation devices.

[80] *A unique alphanumeric sequence used to generate the Signature.*
[81] *http://www.eett.gr, Subject Area "Telecommunications/ Electronic Signature".*

The Figure below presents indicatively the key elements in the organisation of the above framework.

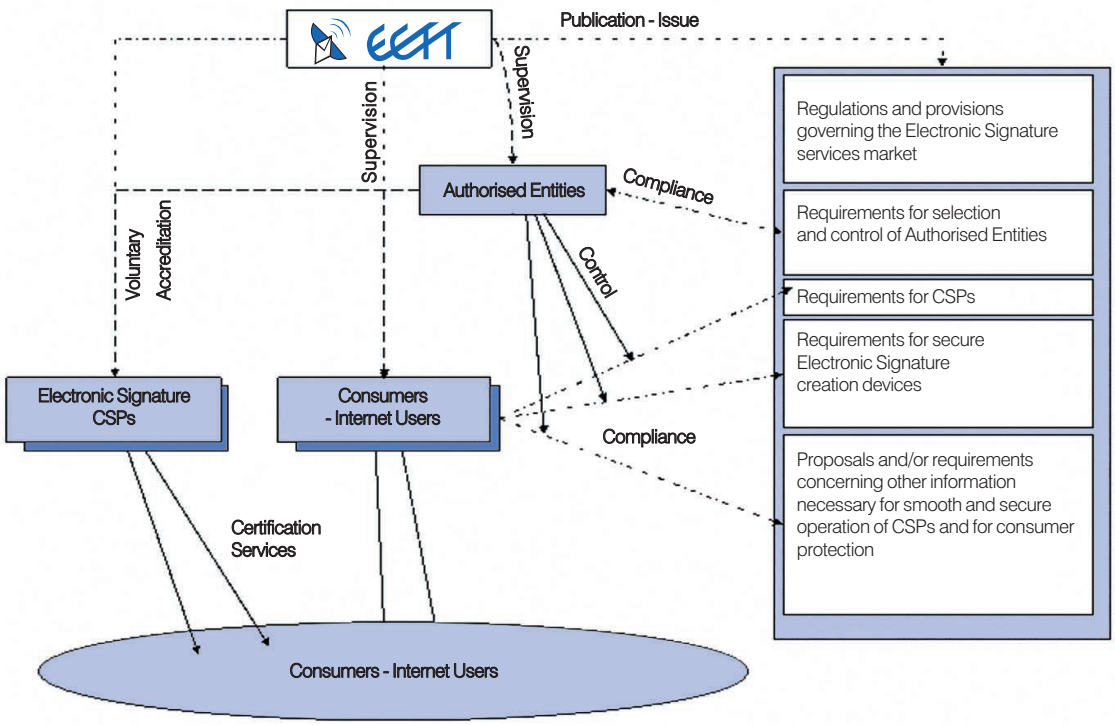
In formulating the key regulatory action lines, EETT supports diffusion of Electronic Signature, by promoting electronic transactions and Internet-based communication, in public sector areas (e-Government) as well as in the private sector. Thus, a competitive market for Electronic Signature certification products and services is to be promoted, to the benefit of end-users as well as to that of the organisations and bodies that will automate communication and transaction procedures.

Implementation of the Voluntary Accreditation scheme will be the starting point for creation of a reliable certification infrastructure for implementation and establishment of Electronic Signature. The CSPs to participate in this scheme will provide reliable and high-quality services, which will observe the necessary specifications. Furthermore, the institution of auditing bodies for certification of "secure signature creation devices" will contribute to ascertain whether the preconditions for the legal validity of an Electronic Signature occur.

2.9.2. Domain Names

Domain Names are a prerequisite for Internet use and electronic transactions, since they offer to users information, entertainment, the possibility to make purchases, perform transactions with their bank, obtain services from Public Organisations etc. This is why during the last years a rapid increase in the number of applications for registration of Domain Names is observed throughout the world as well as in Greece.

Figure 6



According to Law 2867/2000, EETT is responsible for assigning [.gr] Top-Level Domain Names. EETT has assigned the management of these Names to the Computer Science Institute of the Foundation for Research and Technology Hellas (FORTH-ICS). On 31 December 2002, a total of 65,747 Domain Names were registered in the [.gr] Top-Level Domain Name, corresponding to an increase of around of 27.3% compared to 2001 (51,649 Names).

During the period from 1 to 30 July 2002, EETT held a Public Consultation on assigning and managing [.gr] Domain Names. The aim of the Consultation was to record in detail the views of Internet Service Providers (ISPs), of users and of any other interested party on issues such as selection of the model to be used as a basis for conducting the Domain Name registration procedure, registration rules, and especially issues such as Names transfer, protection of trademarks, maximum number of registrations allowed by natural persons, registration of geographical Names and out-of-court resolution of disputes.

EETT then issued a Regulation on assigning and managing [.gr] Top-Level Domain Names[82]. The following specific rules were set regarding the procedure for assigning Domain Names:

- A three-tier scheme (Registrants - Registrars - Registry) is adopted, and specific obligations governing the operation of the Registrars and of the Registry are determined.
- Specific conditions are set for the assignment of a [.gr] Domain Name, the principal of such conditions being the existence of distinctive capacity (i.e. the Domain Name must be capable of "personalising" the corresponding website, so that other users are not precluded from obtaining a website with similar contents, while at the same time the Domain Name holder should not be granted excessive advantages in relation to potential competitors), and non-violation of third-party rights.
- The geographical names coming under the "Kapodistrias" plan are reserved for assignment to the corresponding Local Authorities.
- The restriction concerning registration of just one Domain Name by natural persons is lifted.
- The right of registration is extended to all natural or legal persons, regardless of citizenship.
- Restrictions in the transfers of Names are lifted.

In the framework of its responsibility for assignment of Domain Names, and of its obligation to regulate the smooth operation of Internet domain-naming operations, in 2002 EETT settled several cases of Domain Names whose registration had been disputed, thus avoiding further litigations between the interested parties.

In addition, EETT was represented before the courts in certain disputers concerning Domain Names, without being itself a party proper to the litigations, with the aim to more fully brief the Greek Courts on the protection of distinctive marks on the Internet, so as to contribute to the formulation of the relevant jurisprudence.

In this way, EETT contributed to the consolidation of the regulatory framework for Domain Names registration. This framework is expected to be further expanded in 2003, through a competitive tender procedure to be conducted for appointment of the Registry and subsequent entry of Registrants in the market.

[82] *EETT Decision 268/73/2002, FEK Issue 1617/B/31-12-2002.*

2.10. Regulation on Universal Service Costing and Pricing Principles - Designation of Operators under Obligation to Provide Universal Service

2.10.1. Regulation on Universal Service Costing and Pricing Principles

In September 2002, EETT issued a Decision[83] concerning US costing and pricing principles.

The most important points in this Decision are the following:

- The costing model used is the FDC one, with current costs used as a costing base.
- Costs are determined taking into account the costs of an efficient telecommunications operator.
- The tangible and intangible benefits for the USP are taken into account in the calculation of the US net cost.
- In principle, the method used to calculate the cost of capital is the Weighted Average Cost of Capital (WACC).
- The costs borne by the mobile telephony companies for provision of elements of US are all the costs that can be justified.
- The ultimate aim of the EETT Decision on pricing and costing principles is to ensure application of equitable, transparent and impartial methods in the calculation of the cost of US.

2.10.2. Designation of Operators under Obligation to Provide Universal Service

In October 2002, EETT issued a Decision[84] designating OTE as the Operator under Obligation to Provide US until 31 December 2003.

This, along with other actions (see sub-sections 1.2. and 1.4.2.), lays down the foundations of the legislative framework for the re-organisation of US provision in a competitive environment. In parallel, it promotes social cohesion and effective provision of high-quality telecommunications services to all citizens.

Given that the legislative framework for provision of the US was established during 2002, in 2003 EETT will focus its actions on monitoring and controlling the implementation of the US content. Besides, EETT is responsible for the correct implementation of all the US elements mentioned above, as well as for ensuring their availability to all citizens.

In addition, EETT is responsible for conducting all actions concerning the determination of the net cost borne by the Operator under Obligation to provide the US. In order to formulate a policy on this issue, as well as on the issue concerning the designation of USP (after 2003), EETT is to hold a Public Consultation during 2003.

2.11. 2004 Olympic Games

During the 2004 Olympic Games to be held in Greece, requirements in radio frequency spectrum will be extremely high, due to the flexibility, ease and deployment speed which is typical of wireless networks as compared to fixed wire ones. Use of wireless systems for transmitting data, voice and image is a very significant part of the infrastructure required for holding successful Olympic Games.

The main users of these systems will be the accredited users, such as the ATHENS 2004 Organising Committee, the Athens Olympic Broadcasting (AOB), i.e. the contractor to act as the broadcaster to provide the official radio-TV coverage of the Games, the broadcasting organisations holding

[83] *EETT Decision 261/143/2002, FEK Issue 1208/B/18-09-2002.*
[84] *EETT Decision 264/140/2002, FEK Issue 1368/B/24-10-2002.*

coverage rights for the Games, the Press and photo services, the International Federations, the International Olympic Committee etc. In addition to these, strong interest will be expressed by other users, mainly by international broadcasting and news Media, which will be required to use radio frequencies for the radio-TV coverage of the Olympic competitions and of events to be held outside the Olympic Venues.

The main services expected to be used are cordless microphones, hand-held radios, translation - guiding services, telemetry - telecommand and wireless systems for production of radio-TV signal and satellite communications.

The expected (extremely high) use of radio frequencies, concentrated within geographically restricted spaces (e.g. Olympic Games Facilities), requires careful planning and organisation, in order to ensure availability of the required spectrum, free from any interference, which will in turn ensure smooth and unimpeded operation of wireless transmission services.

To this end, EETT has developed the 2002 "Management Plan for the provision of a secure and reliable radio communications environment during the 2004 Olympic Games". Implementation of the Management Plan is already under way, and covers a broad range of actions.

The goal for EETT is to provide information to the interested parties on the procedures and conditions of use of the radio spectrum; to inspect and certify the equipment to be used during the Games; to grant corresponding Temporary Licences; and to monitor the spectrum for identifying any illegal broadcasts and interference problems.

It is worth noting that for the first time in the Olympic Games, the application for temporary radio frequency assignment will be submitted over the Internet. More specifically, EETT has developed, in cooperation with the ATHENS 2004 Organising Committee, the "e-Spectrum" application for electronic submission of applications for radio spectrum usage, which is already available on the Internet (http://services.athens2004.gr/espectrum). Through this application, interested radio frequency users can obtain information on the current radio frequency licensing status for the Olympic Games, submit their enquiries and monitor their progress via the Internet. The very first applications have already been submitted.

Furthermore, during 2002 EETT continued its active participation in the Working Group on radio spectrum issues, working closely with the ATHENS 2004 Organising Committee, the Ministry of Transportation and Communications and the main radio frequency spectrum users (Armed Forces, Civil Aviation Authority, Greek Radio and Television, OTE etc.), with the aim to resolve availability and scarcity problems that arise and ensure that the requirements of the Games will be met.

For conducting the equally critical spectrum monitoring operations and for avoiding interference problems during the Games, EETT will be fully supported by the NSMMS (see sub-section 2.8.). It is worth noting at this point the importance of the television signal, which is globally broadcasted live, and the minimal response time margin available in cases of interference. In addition, an "early" version of the NSMMS will operate for the August 2003 Test Events.

2.12. Administrative Penalties imposed on Telecommunications Undertakings during 2002

Table 14

Table of Fines

Company	Reason	Total Fines (in euro)
COSMOTE S.A.	18 illegal installations of mobile telephony antenna mast constructions	208,426
OTE	Violation of the legislation on Leased Lines	1,500,000
OTE	Discriminatory treatment of OTENET S.A.- Violation of the legislation on Leased Lines	400,000
STET HELLAS S.A.	13 illegal installations of mobile telephony antenna mast constructions	145,892
VODAFONE-PANAFON	27 illegal installations of mobile telephony antenna mast constructions	237,392

Table 15

Table of Recommendations

Company	Recommendation on
OTE	Relocation of mobile telephony antenna mast construction
3C COM LUXEMBOURG S.A.	Violation of the legislation on the provision of telecommunications services
OTE	Violation of existing provisions for free competition
UNITEL HELLAS S.A.	Violation of the provisions of Law 2867/2000 and of EETT Decision 207/2/2001 ("Regulation on Individual Licences") concerning transfer of shares and change in controlling ownership of Individual Licence holders
MEDITERRANEAN BROADBAND ACCESS S.A.	Violation of the provisions of Law 2867/2000 and of EETT Decision 207/2/2001