

Scarce resource regulation

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In accordance with the provisions of the French postal and electronic communications code, CPCE (*Code des postes et des communications électroniques*), the Authority awards operators and users the frequency and numbering resources required for the operation of their business. Because these resources are not inexhaustible, ARCEP attaches particular importance to the way in which they are managed.

Among the frequency issues that marked 2006, of note were the resource allocations for WiMAX licences, player consensus on the reuse of the 900 and 1800 MHz frequencies (currently employed by 2G) for 3G, and the interest expressed in awarding a 4th 3G licence. It was also the year that the secondary frequency market was effectively put into place.

Noteworthy in the area of numbering was the end of the “12” special service number on 3 April 2006¹, replaced definitively by “118” numbers for new directory services.

1 - Close to 234,000 unique visitors (5.5 million page views) for www.appel118.fr, an information site maintained by ARCEP dedicated to “118” numbers (cf. Part 2, Chapter 2, D.), in the month of April.

ISO certified activity

ISO 9001 version 2000 is a standard published by the International Standards Organization which defines the standards to which an enterprise's or an organisation's quality management system must adhere. It aims to satisfy the needs and expectations of service beneficiaries by guaranteeing them reliable performance that complies with existing regulation.

In November 2006, the Authority obtained AFAQ ISO 9001: 2000 certification for its frequency and number-allocation activities.

In 2004, ARCEP engaged in a quality process. The first stage was conducted by the “Frequencies” unit, which obtained AFAQ certification for processing frequency authorisation requests in October 2005. In 2006, the initiative continued in the “Frequencies” unit and was expanded to the “Numbering” unit.

The goal of the quality management system (QMS) implemented in these units, as part of ISO certification, is to guarantee delivery times for scarce resource authorisations, and to ensure the legal infallibility of the decisions made by the Authority. This, in turn, benefits operators and users. This standardisation process encourages authorisation requests to be processed under objective, transparent and non-discriminatory conditions, in accordance with the requirements set by ARCEP.

The ISO 9001 process currently involves two of the Authority's units, and some twenty five people. Other activities will implement a similar process in 2007.

Frequencies

A. General framework

The freedom that wireless, or radio technologies offer depends on the availability of physically limited frequency resources. Therefore, as demand increases the regulator responsible for this resource has to take into account the potential for shortages when setting the conditions for accessing radio frequency spectrum. Scarcity requires resources to be shared and therefore sharing is the key principle governing spectrum management: sharing the spectrum of bands dedicated to certain applications or, depending on the case, having the same band shared by several applications which technical studies have deemed compatible.

1. Frequency management at the national, European and global levels

a. Frequency planning

Frequency planning for France, for which the Authority is responsible, is conducted within an international, European and national framework.

Global rules are set by ITU-R². Their application in Europe is governed by the CEPT (European Conference of Postal and Telecommunications Administrations) and by the European Commission, assisted by the Radio Spectrum Policy Group (RSPG)³ and the Radio Spectrum Committee (RSCom)⁴.

At the national level, France's National Frequency Agency, ANFr, coordinates management of the different wireless spectrum allocators (ARCEP, CSA, civil aviation, CNES, different ministries, etc.).

The Authority is involved at all three of these levels in working groups and conferences dealing with matters that concern the Authority so that it can contribute to the rules governing frequencies.

2 - Cf. Part 10, Chapter 3, A

3 - Group of Member State administrations, responsible for advising the European Commission on frequency policy matters.

4 - Committee made up of the Commission and the Member States, and responsible for making founding decisions on frequencies at the Community level.

b. European standardisation

In concert with ANFr, the Authority continues to contribute to the CEPT's Electronic Communication Committee's (ECC) frequency harmonisation efforts – operating, in certain cases, under a mandate from the European Commission, notably in the areas of operational frequency management principles and spectrum engineering.

The decisions adopted by the ECC in 2006 concern: harmonised spectrum use by UMTS systems operating in the 1900-1980 MHz, 2010-2025 MHz and 2110-2170 MHz bands; the terms for harmonised use of UWB⁵ equipment in bands below 10.6 GHz, and certain imaging applications. Furthermore, the CEPT designated the 2 GHz S band for mobile satellite services that use complementary ground components (CGC). The CEPT has also defined the terms of use for GSM in the 1.8 GHz band onboard aircraft, and the frequency bands for narrowband PMR/PAMR.

The Authority is also satisfied by the adoption of the CEPT's decision concerning the designation of the 880-915 MHz, 925-960 MHz, 1710-1785 MHz and 1805-1880 MHz bands for terrestrial UMTS⁶ networks.

ARCEP has taken an active part in the CEPT's *Frequency Management* working group, and in the different sub-groups working on PMR (professional mobile radio networks), satellite services, broadband wireless access systems and short-range devices. The group's main actions involved not only preparation of ECC decisions⁷ but also ECC reports, notably in response to European Commission mandates for a strategic plan for the use of short-range devices, introduction of the WAPECS project (*Wireless Access Policy for Electronic Communications Services*)⁸ and broadband wireless access systems.

In tandem with ANFr, the Authority was also involved in the work performed by the CEPT group responsible for wireless spectrum engineering. Electromagnetic compatibility studies need to be completed to define the terms for coexistence between wireless services in the 3.4-3.8 GHz band, to enable a harmonious introduction of broadband wireless access systems, and frequency sharing between UMTS and systems operating in bands adjacent to 900 MHz and 1800 MHz. The studies also concerned the terms of use for ground stations onboard ships, mobile systems onboard aircraft, and the definition of the technical conditions to enable more flexible spectrum use by frequency bands dedicated to the WAPECS initiative and by flexible bands.

In addition, the Authority is taking a keen interest in the work being done on frequency band identification for intelligent transport systems, the terms of use for the introduction of new ultra-wideband technologies and new approaches in the area of more flexible management of the radio spectrum. CEPT is also examining the possibility of using the L band for wireless multimedia applications, along with studies on sharing the 1.6 GHz band between mobile satellite systems and with the radio astronomy service, and the conditions for access to new bands by short range devices.

5 - Ultra-Wideband: a radio modulation technique enabling the transmission of a very high-speed signal over a wide frequency, but low power to prevent interference with other signals.

6 - A third generation (3G) mobile telephony technology.

7 - See below.

8 - An initiative launched by European Union Member States, aimed at enabling swift spectrum access for new technologies, with the goal of encouraging competitiveness and innovation (by eliminating obstacles detrimental to maintaining market momentum), and to ensure coherent licence award mechanisms, while upholding the principles of technological neutrality with respect to services.

c. ITU-R

In preparation for the World Radiocommunication Conference (WRC) in 2007, a number of points that concern the Authority directly were the focus of work performed in conjunction with ANFr. The identification of new frequency bands – notably those made available by the digital dividend – for IMT 2000 systems and beyond will be one of the priority topics at the Conference. The WRC will also address the following topics: identification of a frequency band for aeronautical telemetry, identification of frequency bands for broadband satellite Internet access, the introduction of HEO⁹ satellite networks in the 17.7-19.7 GHz bands, connection links for the mobile satellite service at 1.4 GHz, the regulatory provisions for the introduction of HAPS¹⁰ in the 28, 31 and 48 GHz bands and changes to the regulatory framework to achieve more flexible spectrum management.

9 - Highly Elliptical Orbit.

10 - HAPS (High Altitude Platform Stations) is a high-altitude and very high frequency transmission technology.

2. The secondary frequency market

The law on electronic communications and audiovisual communication services of 9 July 2004 introduced the possibility of trading spectrum licences¹¹. This system is commonly referred to as the secondary frequency market. The law specifies that the general terms for trading licences in the secondary market are defined by decree from the *Conseil d'Etat*¹² and that the list of frequency bands for which licences can be traded is to be determined by the Minister responsible for electronic communications¹³.

11 - CPCE Article L42-3.

12 - Decree No 2006-1016 of 11 August 2006, concerning the sale of frequency licences, Journal Officiel of 12 August 2006.

Following publication of these two texts in the *Journal Officiel* of 12 August 2006, spectrum trading became a reality in France.

The introduction of a secondary market is a major step towards allowing operators wanting to deploy networks that use wireless frequencies to gain access to spectrum. In addition to rendering frequency management more flexible, it also enables optimised spectrum use and access to frequencies for market players excluded from initial allocations.

13 - Decision of 11 August 2006, concerning application of CPCE Article L. 42-3 relating to frequencies or frequency bands whose licences can be traded, Journal Officiel of 12 August 2006.

The adopted texts uphold the principle, suggested by the Authority, of widespread liberalisation of the bands for which authorisations are awarded on a site-by-site basis (frequency assignment), notably for PMR and microwave radio systems. For this type of authorisation, only those bands currently in the process of being reorganised will not be open for trading. All of the bands used for satellite services are also open to the secondary market. For both of these types of authorisation, the trading process essentially streamlines administrative procedures in cases of a change of licence-holder.

Among the bands for which authorisations are awarded for the operation of frequencies in a given geographical zone (frequency allotment), without specifying where the equipment will be installed, licences are open for trading for the wireless local loop (WLL) and numerous professional mobile radio bands. Trading in these bands can involve all or a portion of the licence, which can be broken down by frequency, by geographical zone or by time period. This encourages more careful resource management on the part of the actors involved, and enables new actors to develop by targeting operations in smaller zones or with fewer frequencies. Thus, it provides a response to the demands of niche markets that may have been underserved by generalist operators up to now.

The frequency bands on which trading is allowed, and the services that correspond to these bands, will be implemented on ARCEP's frequency register: www.arcep.fr.

3. Spectrum and the Review of the European Regulatory Framework: greater flexibility

In 2006, work continued on reviewing the European Union's regulatory framework on electronic communications. Spectrum was one of the focal points of this review, and the Authority played a large part in the consultations on the issue organised by the European Commission.

The Authority subscribes to the Commission's analysis and its call for greater flexibility in spectrum management and a harmonisation of the terms of authorisation for pan-European services. Any changes to the regulatory framework need to take into account both the need to protect against interference and general interest objectives such as the need to maintain competition, innovation and interoperability, along with the current frequency management structure.

The Authority reiterates its commitment to frequency band harmonisation inside the European Union, which has enabled GSM's spectacular progress, among other things. ARCEP upholds the view that an approach based solely on full deregulation of the spectrum could lead to a fragmented internal market, and be detrimental to European industrial policy. It is also in this spirit that the Authority hopes to see the principle of service neutrality applied on a case by case basis, rather than across the board.

14 - See above. The Authority supports the Commission's system for implementing secondary frequency markets¹⁴. It will examine the Commission's proposals in light of pioneer experiences, and will be particularly mindful of ensuring that the Commission's provisions ensure protection against risks of spectrum pre-emption and hoarding.

15 - See below. In addition, frequencies allocated under the general authorisation system allow innovative systems (Wi-Fi, RFID¹⁵, anti-collision radar systems, etc.) to be rolled out faster and more easily, and contribute to industrial momentum. But because this scheme does not require individual authorisations, its scope must be limited to systems for which the risks of jamming are minimal. The current framework is in fact satisfactory on this point, and ARCEP will continue to work on maintaining a healthy compromise between flexibility and the risks of interference.

Without awaiting the implementation of the new regulatory framework, the European Commission continued its work on the WAPECS project in 2006, and assigned RCom the task of examining its application to certain bands dedicated to access systems (public mobile and broadband networks, for instance). The Authority specified the terms associated with these bands and is closely monitoring the work being done by CEPT, which is now responsible for identifying a set of minimal technical restrictions applicable to these bands. As part of WAPECS, ARCEP is also working to improve the coherence of frequency usage rights within a Commission working group dedicated to the task.

B. Wireless Local Loop/ WiMAX

Definitions

The Wireless Local Loop (WLL) is a technology that uses a wireless communications link to connect fixed or roaming subscribers equipped with a terminal and antenna to an Internet access point.

WiMAX (*Worldwide Interoperability for Microwave Access*) is the common name given to the IEEE's (*Institute of Electrical and Electronics Engineers*) 802.16 standard. It corresponds to using a wireless, long-range broadband transmission technology chiefly in point-to-multipoint architectures, and notably in the 3.4-3.6 GHz frequency band. This standard is being developed by the WiMAX Forum whose role includes certifying the interoperability of IEEE 802.16 standard equipment.

Over the course of 2004, several of the sector's players expressed interest in gaining access to the 3.4-3.6 GHz band, parallel to the emergence of the American IEEE 802.16 standard. This revival of interest was emblematic of the drive to develop competition in the broadband services market and to further regional digital development.

Wireless access technologies thus constitute both a rival and a complement to wireline technologies, enabling complementary coverage in zones where broadband services are available. A further distinguishing feature of wireless technologies is their deployment flexibility, allowing investment to be staggered.

The Authority consulted with market players several times in 2004 to define the mechanism for allocating available WLL frequencies. At the players' request, it then made it possible to conduct technical trials to be able to assess the true characteristics of the new equipment designed for the 3.4-3.6 GHz band.

1. Launch of a call for bids

In the first half of 2005, in concert with market players, the Authority drafted the procedural method for awarding new spectrum licences for the 3.4-3.6 GHz frequency band, in preparation for wireless local loop network deployment. It also solicited the legal expertise of Daniel Labetoulle, former chairman of the *Conseil d'Etat's* disputes division, to specify the terms of local authority involvement in WiMAX licence awards¹⁶.

This work made it possible to identify a greater number of frequencies, and to fully incorporate the consequences of the **local authorities' new powers in the area of telecommunications** into the system. On 6 August 2005, the Minister of Industry published the WLL licensing procedure, as per the Authority's proposal.

The process began with a preparatory phase involving the submission of letters of intent from future candidates. This stage allowed the players interested in obtaining rights to these frequencies to propose various potential means of sharing the spectrum. This part of the process ended on 6 January 2006 with the candidates' formal submission of their frequency requests, at which point the Authority conducted an inventory of the requests to then assess the scarcity of the frequencies, region by region.

¹⁶ - Daniel Labetoulle's legal memorandum is available on ARCEP's web site: www.arcep.fr.

In Saint-Pierre and Miquelon, where no scarcity was found to exist, ARCEP thus began gradually allocating spectrum licences.

Resources were, however, found to be scarce in Metropolitan regions, in Guyana and Mayotte, as a result of which a beauty contest was conducted for regional licences between February and July 2006.

In Martinique, Guadeloupe and the Reunion all of the licences had already been awarded for the only two available frequency bands. These three overseas *départements* were not therefore concerned by this call for bids.

2. Selection criteria

17 - See below.

The beauty contest was carried out independently in each region.

The candidates were judged on the basis of three criteria¹⁷: the contribution to the development of regional broadband services, the project's ability to stimulate broadband market competition and the fee that the candidate was willing to pay upon obtaining the licence (in addition to the annual fee for accessing and using WLL frequencies).

Each application was marked out of a total 100 points. The candidates selected in each region were those that obtained the highest overall marks.

Each candidate's mark out of 100 was the sum of the marks obtained for each of the selection criteria described below, and based on the following scale:

Criteria	Max. mark on this criterion
Contribution to broadband regional development	34
Project's ability to stimulate broadband market competition	33
Licensing fee that the candidate is willing to pay	33

WLL selection criteria

Project's contribution to broadband regional development

Comparison of the projects took into account the regional scale of the rollout, the candidate's commitments in this area and the services to be offered. The consistency of the candidate's business plan with the projected scale of the rollout, and the validity of the investors' commitments were also analysed.

Regional scale of the rollout

The candidates were thus required to describe the current state of broadband development in the target region, to explain their regional deployment choices,

and to specify commitments for three deadlines: 30/06/2008, 31/12/2010 and 31/12/2013. These commitments included the target number of locations equipped with a base station in the following two types of zone: urban zones of more than 50,000 inhabitants, and non-urban zones of more than 50,000 inhabitants. Candidates could also indicate other commitments made to the Authority and the means for allowing the latter to monitor them.

Services offered to final customers

Broadband development is ensured notably by having a service offering to final customers that is both innovative and tailored to the target users and zone being considered. Each project was judged on the capacity of the proposed service offering to contribute to (especially roaming) broadband regional development in the target region. The added value of the service offering compared to existing solutions was one criterion, as was the ease of subscriber connection, particularly with respect to terminal equipment installation.

Project's ability to stimulate broadband market competition

The project's capacity to stimulate broadband market competition for the benefit of consumers was one of the critical elements considered in the judging process. The projects were compared based on the potential candidate's position in the broadband market, the degree of competition in this market and on the service offering that the candidates were committing to market to service operators.

Player's position in the broadband market

In cases where the candidates already occupied a solid position in the broadband market using other technologies, the positioning of the WLL component and its contribution with respect to the current offering was analysed, based on consolidated share of turnover, customer base and market penetration data.

Current level of market competition and impact of the candidate's project

Based on the current state of broadband market competition in the target region, candidates were invited to explain the extent to which their project would stimulate competition in that market, notably by describing the service offering they would introduce using the wireless local loop frequencies. In particular, they were required to specify whether they planned on offering a wholesale solution to other operators (possibly exclusively of a retail offer), and their offer's positioning with respect to existing wholesale broadband service offers. The candidates' explicit commitments were reiterated in the form of obligations in their licences.

Licensing fee that candidates were willing to pay up front

This is the sum that the candidate was willing to pay if allocated WLL spectrum in the target region – to be paid within two weeks of receipt of the frequency licence delivered by ARCEP.

3. Results of the call for bids

18 - Details on the evolution of these results, notably spectrum trading, will be found in ARCEP's frequency register: www.arcep.fr

The results of the 24 selection procedures were made public on 7 July of last year, in the form of evaluation reports.

a. Overview of the results

3.5 GHz band frequencies were allocated as follows¹⁸ :

Metropolitan France 2 x15 MHz			
Metropolitan regions and départements	3 465 - 3 480 MHz and its 3 565 - 3 580 MHz duplex	3 432,5 - 3 447,5 MHz and its 3 532,5 - 3 547,5 MHz duplex	3 480 - 3 495 MHz and its 3 580 - 3 595 MHz duplex
Alsace	Conseil régional d'Alsace	Maxtel	IFW
Aquitaine	Bolloré Télécom	Conseil régional d'Aquitaine	IFW
Auvergne	Maxtel	Bolloré Télécom	IFW
Basse-Normandie	Maxtel	HD RR France	IFW
Bourgogne	Maxtel	Conseil régional de Bourgogne	IFW
Bretagne	Bolloré Télécom	Conseil régional de Bretagne	IFW
Centre	Maxtel	HD RR France	IFW
Champagne-Ardennes	Maxtel	HD RR France	IFW
Corse	Bolloré Télécom	Collectivité territoriale de Corse	IFW
Franche-Comté	Maxtel	Bolloré Télécom	IFW
Haute-Normandie	Maxtel	HD RR France	IFW
Ile-de-France	Bolloré Télécom	SHD	IFW
Languedoc-Roussillon	Bolloré Télécom	HD RR France	IFW
Limousin	HD RR France	Bolloré Télécom	IFW
Lorraine	Maxtel	HD RR France	IFW
Midi-Pyrénées	Bolloré Télécom	Maxtel	IFW
Nord-Pas de Calais	Maxtel	HD RR France	IFW
Pays de la Loire	Maxtel	HD RR France	IFW
Picardie	Bolloré Télécom	HD RR France	IFW
Poitou-Charente	Conseil régional Poitou-Charentes	HD RR France	IFW
Provence-Alpes-Côte d'Azur	Bolloré Télécom	SHD	IFW
Rhône-Alpes	Bolloré Télécom	Maxtel	IFW
Overseas 2 x42 MHz			
Départements concernés	3 410 - 3 452 MHz and its 3 510 - 3 552 MHz duplex	3 452 - 3 494 MHz and its 3 552 - 3 594 MHz duplex	
Guadeloupe	WLL Antilles Guyane	Médiaserv	
Martinique	WLL Antilles Guyane	Médiaserv	
Réunion	WLL Réunion	Guet@li Haut Débit	
Overseas 2x28MHz			
Départements and local authorities concerned	3 410 - 3 438 MHz and its 3 510 - 3 538 MHz duplex	3 438 - 3 466 MHz and its 3 538 - 3 566 MHz duplex	3 466 - 3 494 MHz and its 3 566 - 3 594 MHz duplex
Guyane	Médiaserv	France Télécom	Guyatel
Mayotte	STOI Internet	France Télécom	Guet@li Haut Débit
Saint-Pierre-et-Miquelon	France Télécom	Omtel SPM	Médiaserv

b. Financial results of the call for bids

Upon allocation of the frequencies, the State received a total of €125 million in licensing fees. It will also collect annual fees (set by decree) from the operators for the provision and use of WLL frequencies. Licence holders will also pay an annual licensing fee of an average €37,000 per operator, per region, which will bring in a total sum of roughly €2.4 million for all of the frequencies allocated in the Metropolitan region (€800,000 for an operator with WLL frequencies in the 22 regions) to the State's general budget.

c. Selected candidates' obligations

The commitments made by the candidates in their applications were transposed to the licences, in the form of obligations:

- ◆ **Rollout obligation:** the selected candidates made significant deployment commitments, which primarily satisfied regional telecommunications coverage objectives¹⁹. They include the deployment of over 3,500 sites by June 2007, of which 70% are outside urban zones, many of which are “dead zones” (i.e. zones where no broadband offer exists)²⁰. Some candidates also made additional specific commitments to cover these “dead zones”.
- ◆ **Provision obligation:** all WLL operators made commitments to make frequencies available to local authorities. These commitments are confined to frequencies not used by the operator's network. The mechanism for making the frequencies available is more or less detailed depending on the operator.
- ◆ **Stimulating competition:** the arrival of two WLL operators in every region in Metropolitan France, in addition to IFW²¹, is expected to stimulate competition in the broadband access market, not only in rural zones but also in densely populated ones, as they will be competing with existing networks.

d. The service offerings

WLL operators are authorised to supply both a fixed and a roaming service²².

In addition, wholesale offers will enable competing service providers to gain access to WLL infrastructures. Retail offers, which will be based on WLL operators' wholesale offers, will deliver speeds ranging from 512 kbs to several Mbps.

e. What next?

It is now up to the successful candidates to deploy the wireless local loop networks, and to establish their service offerings (before 30 June 2008, the first deadline set in the licences).

Furthermore, the CPCE provides for a flexible system that will enable frequency distribution to evolve: it makes it possible to sub-lease or resell frequency licences in a secondary market²³ and is an integral part of the frequency allocation plan for the 3.4-3.6 GHz band. This flexibility thus allows providers that did not obtain a licence in the initial allocations to gain access to frequencies.

19 - See Part 9

20 - It is nevertheless impossible to distinguish sites that will be deployed in “dead zones” from those which will be in “grey zones” (i.e. zones where at least one broadband offer is available).

21 - IFW, formerly Altitude Telecom, is an Iliad subsidiary. It holds a WiMAX licence for every region in Metropolitan France (cf. ARCEP Decision 03-1294 of 9 December 2003).

22 - A service offering that allows customers (equipped with compatible terminal equipment) to connect to the licence holder's network at different points covered by the network – the terminal equipment remaining in the same place throughout the connection with the network of base stations, but which can be moved when not connected.

23 - See above.

The Authority will monitor progress on the projects. An assessment will be made in mid-2008, taking into account the first rollouts resulting from the licence awards, technological and market changes, and specific prospects of additional frequencies becoming available. This assessment will then enable the regulator to evaluate the opportunities and conditions for the possible award of additional licences, depending on the available resources.

C. Mobile licences

1. GSM licence renewals

a. Renewal of Orange France and SFR's GSM licences

Orange France and SFR having been notified of the terms of their licence renewals – which were published by the Ministry responsible for telecommunications in 2004 – the Authority renewed the two operators' GSM licences in 2006.

Upon renewal of their licences, the mobile operators were subject to new obligations.

(a) Provisions applicable to mobile operators

New obligations applicable to all GSM and 3G cellular operators, in both Metropolitan France and the overseas *départements*, were set at the time of the renewal of the Orange France and the SFR licences. These provisions were defined by decree²⁴ and by a decision by the Authority²⁵.

Among other things, these provisions require that:

- ◆ Orange and SFR inform disabled persons of the actions taken to adapt and improve the accessibility of mobile services for people with disabilities – adapted handsets and services, new technologies;
- ◆ in a bid to improve health and environmental protection, Orange and SFR must publish a list of their radio site locations, and ensure that they can be shared with other operators;
- ◆ Orange and SFR can host another French operator's customers on their network, to ensure that operators provide complementary regional mobile coverage;
- ◆ Orange and SFR will open their networks up to the customers of foreign operators with which they have signed an international roaming agreement²⁶;
- ◆ the two operators can implement mechanisms for preventing subscribers from accessing other operators' services for a limited period of time, provided that subscribers are informed of this and can deactivate the mechanism once the period has elapsed (maximum six months from the contract start date).

(b) Provisions attached to individual frequency licences

The individual Orange France and SFR licences, which were delivered by two ARCEP decisions²⁷, came into effect on 25 March 2006 and are valid for a period of 15 years. New provisions were added to the ones carried over from the expired GSM licences:

- ◆ The operators must ensure coverage of the “dead zones” listed in the second phase of the agreement of 15 July 2003, at their own expense. Taking these “dead zones” into account, Orange France and SFR must cover 99% of the

24 - Decree No 2006-268 of 7 March 2006, concerning the conditions for establishing and operating networks and supplying wireless mobile communication services, Journal Officiel of 9 March 2006.

25 - ARCEP Decision No 05-1083 of 8 December 2005, specifying the rights and obligations of operators providing GSM or IMT-2000 services, based on CPCE Article L. 36-6, sanctioned by decree.

26 - Cf. Part 7, Chapter 4, C.

27 - ARCEP Decisions No 06-0140 of 31 January 2006 and No 06-0239 of 14 February 2006, authorising the operators to use frequencies in the 900 MHz and 1800 MHz bands for establishing and operating a public wireless network.

population of Metropolitan France, compared to the current 90%, as well as the main transport routes and in particular the trunk roads in each *département*.

- ◆ As concerns the public, the operators are required to be transparent about network coverage, notably through the publication of sufficiently detailed information on national coverage levels and the implementation of an annual coverage survey.
- ◆ In addition, the Minister responsible for electronic communications has set a new licensing fee structure for the 900 and 1800 MHz²⁸ bands. For both operators, it is now composed of:
 - a set portion: the sum of €25,000,000 to be paid annually before 30 June of the current year;
 - a variable portion, also paid annually, equal to 1% of the turnover generated by the use of the frequencies.

28 - In accordance with the opinion of the Ministry of the Economy, Finance and Industry, published in the Journal Officiel of 20 June 2004.

b. Renewal of Bouygues Telecom's GSM licence

Bouygues Telecom's GSM licence was awarded on 8 December 1994, for a period of 15 years. Two years prior to its expiration, i.e. 8 December 2007, the operator must be notified of the terms of its licence renewal, or the reasons for its non-renewal.

As a result, on 5 October 2006 ARCEP launched a public consultation, the goal being to gather input from market players on the principle of renewing Bouygues Telecom's licence, under the same terms as the renewed Orange France and SFR licences. No opposition to the principle was voiced.

2. Fourth 3G licence and reuse of the 900 and 1800 MHz bands

a. Background

On 5 October 2006, the Authority launched a public consultation on:

- ◆ reuse of the 900 and 1800 MHz frequencies, currently employed by 2G, for 3G;
- ◆ the available licence in the 2.1 GHz band for a third generation mobile licence ("fourth 3G licence").

This reuse of the 900 and 1800 MHz frequencies is a necessary measure for extending the coverage of 3G mobile networks beyond current deployments in the 2.1 GHz band. Orange France and SFR, in accordance with the terms of their licences, formulated a request for the swift finalisation of the mechanism in spring 2006.

To determine whether three or four operators should be considered in the mechanism for sharing the 900 and 1800 MHz frequencies reused for 3G, inquiries had to be made into the players' interest in acquiring the available fourth 3G licence.

b. Results of the public consultation: a new situation

21 market players, operators and equipment makers responded to at least one of the questions.

(a) A new situation: signs of interest in the fourth 3G licence

Several players clearly expressed their interest in obtaining the fourth 3G licence. A request was made that the procedure be launched as quickly as possible.

This reaction confirmed that the situation in the mobile communications market has changed: up until now, no-one had expressed interest in obtaining the fourth licence that remained available after the two previous calls for bids, which had led to three of the four 3G licences being issued to Orange France and SFR in 2001, then to Bouygues Telecom in 2002.

(b) Confirmation of a key issue: the reuse of the 900/1800 MHz frequency bands for 3G

Responses to the consultation also confirmed the importance of quickly allowing 3G to reuse the frequency bands currently used by 2G. Gaining access to 900 MHz frequencies is particularly important, as much for existing operators as for new entrants, given the growing coverage of 3G networks across the country. During the consultation, manufacturers confirmed the upcoming availability of UMTS network equipment and terminals in the 900 MHz band.

The feedback obtained also underscored the fact that access to other, lower frequency bands would eventually become just as important to achieving nationwide and indoor coverage for broadband mobile communications, as a result of which the future allocation of the digital dividend – created by the frequencies that become available following terrestrial TV's digitisation – represents a crucial issue.

c. Consequences of this new situation

(a) Launch of a call for bids

The Authority proposed that the Minister responsible for electronic communications launch a call for bids for the award of the fourth 3G licence. It will then be incumbent on the players to confirm their interest by submitting an application for the licence as part of the procedure.

It is the Authority's view that this fourth licence could increase competition in the mobile communications market and stimulate the evolution of cellular services to third generation systems, which would benefit consumers.

(b) Swift finalisation of the mechanism for enabling reuse of the 900/1800 MHz frequencies for 3G

In late 2006, ARCEP began working on rapidly finalising the mechanism for allowing 3G to reuse the frequencies currently employed by 2G. This mechanism will be based on sharing between four operators if the fourth licence is awarded, or on three-way sharing if it is not.

(c) Mobile access and call origination market analysis postponed

Finally, the Authority has postponed its analysis of the “mobile access and call origination” market, which supplies mobile virtual network operators (MVNO). This postponement proved necessary since, depending on the outcome of the call for bids, future decisions may need to take account of a fourth mobile network operator in the French market. In the meantime, wholesale mobile access and call origination markets will continue to be monitored.

D. The digital dividend

1. The digital dividend: an historic opportunity

New wireless systems are very quickly opening up a host of possibilities: evolution of UMTS, WiMAX, DVB-H (mobile TV), etc., and further innovations will undoubtedly emerge in the coming years, or even months. Strong growth driven by new wireless broadband uses cannot be sustained and develop unless the necessary frequency resources are identified and made available.

These frequency resources will need to be tailored to achieving one of consumers' top demands, namely full coverage – in other words not only in densely populated zones but nationwide, both outdoors and indoors.

Here, the frequencies that will be freed up by the migration of television from analogue to digital broadcasting represent an exceptional opportunity.

The terrestrial TV service switch to digital will increase the efficiency of spectrum use considerably, as digital broadcasting is roughly six times more efficient than analogue. This technical evolution will also make it possible to free up a sizeable quantity of spectrum: an increase in available resources referred to as the digital dividend.

This digital dividend is a particularly significant opportunity given that the bands involved are below 870 MHz, in other words in the most coveted portion of the entire spectrum, offering particularly attractive physical radio propagation characteristics, which enable both long range and good indoor penetration.

These frequencies are currently used by analogue television, based on a frequency plan established some 50 years ago, at a time when little else employed these resources. The new wireless applications that have emerged since that time had to be introduced into the ever higher end of the spectrum – less suited to achieving widespread coverage and coverage indoors, and so making network deployment more costly. As a result, second generation mobile (GSM) was first introduced in the 900 MHz band and then in the 1800 MHz band, and third generation mobile telephony (UMTS) is currently being deployed in the 2 GHz band, with an extension planned in the 2.7 GHz frequency band. The inability to access lower bands, and the ensuing sole option of using increasingly higher bands are clearly obstacles to the economic growth of new wide-coverage broadband wireless access systems.

This is why the Authority feels it is important for Europe to seize the exceptional opportunity provided by the migration of television to digital, and that the work being performed to identify and, if possible, harmonise all or a portion of the digital dividend for new wireless broadband uses when analogue is switched off, be completed in the near future.

Early and relatively harmonised identification of these frequencies would send out a strong message to European and French industry players, providing them with an incentive to undertake the R&D needed to prepare for the new generation of wireless ultra-broadband access systems.

This opportunity represents an economic and societal challenge that will shape the coming years, at a time when the content and network universes are converging more and more. Political authorities need to seize upon this opportunity straight away.

2. Work being performed in France

In France, CSN (*Comité stratégique pour le numérique*), a digital strategy planning committee, was formed²⁹ in May 2006 on the order of the President of the Republic³⁰.

29 - Decree No 2006-502 of 3 May 2006, enacting the creation of the CSN, JO of 4 May 2006.

30 - Speech by the President of the Republic concerning the creation of the *Comité stratégique pour le numérique*, available on the Elysée's website: www.elysee.fr.

31 - The President of the Republic appointed Jean-Michel Hubert Chairman of CSN.

CSN: Digital strategy planning committee

CSN is chaired by the Prime Minister or a chairman appointed by him³¹. It includes:

- ◆ the Minister responsible for audiovisual communication;
- ◆ the Minister responsible for electronic communications;
- ◆ the Minister responsible for regional development;
- ◆ Three qualified members, including the Deputy Chairman, selected for their expertise in the committee's area of activity, appointed by decree.

The Chairmen of the French broadcasting regulatory body, the *Conseil supérieur de l'audiovisuel* (CSA) and ARCEP act as permanent associates in the work performed by CSN.

CSN is in charge of coordinating and steering the actions undertaken in view of terrestrial television digitisation, the switch-off of analogue broadcasting and the re-use of frequencies freed up in the process.

As concerns the digital dividend, CSN has the task of drawing up a national plan for reuse of the frequencies freed up by the migration to digital broadcasting. This plan must first define the exact quantity of the frequencies that will be liberated, then propose a reallocation plan and establish a roadmap to enable the effective liberation of frequencies from a technical standpoint. This plan must take into account the harmonisation work performed at the European and global levels, and will be approved by the Prime Minister, in conjunction with the national analogue switch-off plan.

3. Global harmonisation efforts

In Europe, the Radio Spectrum Committee recently defined a CEPT mandate for conducting technical harmonisation studies in view of identifying the sub-bands for mobile and multimedia services (mobile TV) in the digital dividend bands. The work is due to be completed by summer 2007, and will include a certain number of technical compatibility studies on media broadcasting services.

The mandate will be completed by a policy position paper from the Radio Spectrum Policy Group aimed at encouraging harmonisation efforts, and the definition of a European position in view of upcoming global conferences³².

32 - See below.

Aside from the work carried out to identify the sub-bands for the mobile service and multimedia services in the digital dividend bands (addressed by the CEPT ECC “TG4” working group), the digital dividend is being examined in other areas as well, including the identification of new bands for broadband wireless.

France, and ARCEP in particular, have supported the RSCom mandate at the CEPT. The identification of a harmonised sub-band for mobile and multimedia services in Europe is indispensable for making the digital dividend a concrete reality.

As to global efforts, the ITU will be holding its WRC in late 2007 in Geneva – an event that requires a number of preparatory efforts in France (steered by ANFr), in Europe (Commission, CEPT working groups) and worldwide.

The position adopted by France for the World Radiocommunication Conference aims to:

- ◆ attribute the 470-862 MHz band to the service, on equal footing with the broadcasting service, so that wireless electronic communications can be deployed in this frequency band;
- ◆ have a resolution adopted requesting studies be performed by the ITU in view of identifying a harmonised frequency sub-band for mobile services. This identification would need to be achieved in time for the WRC in 2011.

In addition, France supports the creation of a new regional planning conference, similar to the Regional Radiocommunication Conference (RRC) that took place in 2006. RRC06 enabled an overhaul of broadcasting frequency planning to allow for the implementation of coordinated digital terrestrial broadcasting across Europe/Africa/the Middle East. Following the WRC in 2011, a further regional conference would enable coordinated implementation of one or several sub-bands in the digital dividend bands, for wireless electronic communication services.

E. Miscellaneous

1. Radio frequency identification (RFID)

Radio frequency identification technologies (RFID) open up an array of opportunities, notably for logistics and product tracking, food traceability, and access control. From a physical standpoint, the equipment consists of electronic chips or tags that contain information on the product in which they are inserted, and readers that can query the tags remotely (within a radius of several metres).

33 - ARCEP Decision
No 06-0841
of 25 July 2006, approved
by the ministerial order
of 6 September 2006.

ARCEP authorises³³ use of this equipment in the UHF 865-868 MHz band. The Ministry of Defence, which has sole control over this band, allowed the band to be opened up to this type of application in early 2006. This decision makes it possible to satisfy longstanding requests from a great many French industry players to have access to this band, which has been harmonised at the European level.

2. Mobile satellite

New mobile satellite network projects are being developed in Europe in the S band at 2 GHz (1980-2010/2170-2200 MHz duplex band), identified internationally for IMT2000/UMTS systems. These "2GHz MSS" (mobile satellite service) projects propose an original architecture that combines satellite with a complementary ground component (CGC). This enables access to available services by alleviating the restrictions resulting from the shadow regions associated with satellite coverage (particularly in cities), and provides increased spectral efficiency.

These satellite projects only make economic sense if implemented Europe-wide, and the sector players have therefore been campaigning for cross-country harmonisation. Since early 2005, the European Commission and CEPT have thus been engaged in efforts with Member States to define a European regulatory framework for authorising these innovative networks.

Meanwhile at the CEPT, a working group in which ARCEP is involved prepared a draft decision on the terms for use of the S band at 2 GHz. This work resulted in the adoption of a decision by CEPT on 1 December 2006. Subject to voluntary application by the Member States, this decision suggests reserving the 2 GHz band for mobile satellite systems only (including those with a ground component), in other words to exclude solely terrestrial mobile systems from using the band. This decision also defines the conditions for the complementary ground component, aimed at ensuring its indissociable operation with the satellite component.

This decision was later taken up at the Community level, and is expected to be adopted in the near future. It should enable identification of the band for these systems at the EU level by 1 July 2007. This will be a legally binding decision within the European Union.

Furthermore, in light of a potential scarcity of frequencies in the S band at 2 GHz, the Commission, in tandem with RSCoM and CoCoM (Communications Committee), is developing a harmonised selection process for the European Union. This Community-wide process must guarantee a certain number of projects access to enough radio resource in all EU countries, a *sine qua non* for the industrial success of these systems.

The process also makes it possible to examine all of the projects, and to select those with real technical and economic credibility. It constitutes the basis of a real European industrial policy in the electronic communications sector. The goal set by the Commission and the Member States is to select operators in the 2GHz S band in all EU countries by 2008.

F. Frequency Assignments and Allotments

1. Fixed service and fixed satellite services

In 2006, the operational process of issuing spectrum licences for the fixed service (excluding the 1.5 GHz band) and for fixed satellite services, which resulted in a technical and administrative coordination report prepared by the Authority, translated into:

- ◆ 11,957 new frequency assignments, or a 14% increase in the number of assignments compared to the number of assignments in service in 2005;
- ◆ 386 changes to existing frequency assignments;
- ◆ 5,199 frequency assignment cancellations;
- ◆ 1,730 international coordination efforts

As of 31 December 2006, the Authority's database was managing:

- ◆ 6,484 in-service frequency assignments for the fixed satellite service;
- ◆ 58,353 in-service frequency assignments for the fixed service.

On 25 March 2006, ARCEP announced the implementation of new management terms for frequencies above 20 GHz for fixed service point-to-point links. These frequencies will now be managed either by assignment or by allotment upon request and justification of the requirements. Use of the frequency bands below 20 GHz is authorised solely through frequency assignment.

2. Professional terrestrial mobile and fixed networks in the 1.5 GHz band

In 2006, 234 decisions concerning professional terrestrial mobile and fixed networks in the 1.5 GHz band were adopted, broken down as follows:

- ◆ 28 decisions on microwave links;
- ◆ 123 decisions on mobile networks, excluding single frequency networks (PMR networks)
- ◆ 83 decisions on PMR networks: terrestrial (68), maritime (9) and aeronautical (6), representing 1,700 created networks, 1,600 renewed and 600 modified.

The situation in 2006 remained relatively unchanged in terms of the number of analogue terrestrial mobile service networks (including PMR), while the number of digital networks increased from 52 to 79 during the year.

G. Frequency register

Making a frequency register available is an important part of the frequency management process, allowing the actors concerned to access relevant information on licences that could be made available for trading.

As a result, the Decree No 2006-1016 of 11 August 2006 concerning spectrum trading, required the Authority to create a frequency register to enable the process.

To that end, the Authority incorporated all of the information relating to the use of frequencies that it is responsible for managing into a new database. This database is scheduled to be posted on ARCEP's website in 2007.

The database will provide a complete view of all electronic communications services and applications. The frequency register will provide details on the different categories of use, and the specific terms associated with them. It will be accessed via searches by frequency band, type of application or geographical zone.

It will also supply access to the terms for spectrum trading in the different frequency bands open in the secondary market, and will allow users to perform searches on licences for which publication was made mandatory by the decree governing this market. The goal, therefore, is to increase the transparency of spectrum usage and to stimulate the secondary frequency market.

To guarantee the relevance of this information, updating the database is part of the quality process initiated by the Frequency Unit in 2005, which received ISO 9001 certification in October 2006.

Lastly, all of the data in the base will be able to be exported, notably to periodically enhance the European EFIS (*ERO Frequency Information System*) database, and so provide additional visibility for all of this information.

Numbering

Main categories of numbers allocated by the Authority

Person-to-person communications

Geographic numbers: numbers starting with 01, 02, 03, 04, 05, reserved for fixed lines (allocated to operators by blocks of 10,000 numbers).

Non-geographic numbers: (new) 09AB numbers reserved for fixed lines (097B numbers are due to replace 087B numbers by 15 December 2008).

Mobile numbers: numbers starting with 06 reserved for mobile operators' customers.

Value-added services

Non-geographic numbers: 08AB numbers (excluding 087B) enabling access to value-added services (free or paid calls).

Six-digit 118XYZ numbers: for providing directory assistance services.

Special 10XY numbers: numbers reserved by an operator for offering services to its subscribers (e.g. for reporting service interruptions).

3BPQ short numbers: numbers reserved for calling card services, two-step dialling for carrier network selection, value-added services, etc.

Prefixes

E or 16XY format prefixes: one or four-digit prefix to be dialled instead of 0 ahead of the number being dialled. Enables callers to select their long-distance or local carrier.

A. ARCEP's missions

The Authority is responsible for establishing the national numbering plan (operational management of the plan, defining management rules and designing future changes) and for allocating operators the numbering resources needed for their business, pursuant to Articles L.36-7 7° and L.44 of the CPCE, which transposed into French Law the European Parliament and Council's Article 10 of the Framework Directive and Article 6 of the Authorisation Directive³⁴.

34 - Directive 2002/21/EC of 7 March 2002 (referred to as the "Framework" Directive) and Directive 2002/20/EC of 7 March 2002 (referred to as the "Authorisation" Directive).

This competency concerns the assignment of telephone numbers that can be used on the PSTN (geographic, non-geographic, short and special numbers and prefixes), as well as the attribution of addressing resources for data networks, post-paid card numbers, semaphore signalling points³⁵ and MCC+MNC codes (for GSM network SIM cards and TETRA networks).

35 - These codes correspond to technical addresses that serve to identify PSTN signalling resources, based on the CCITT No 7 protocol. They are similar to the X.25 addresses used in packet switching transmission networks.

ARCEP is also responsible for ensuring the proper use of these numbers and the operational implementation of the structures needed to ensure this function (files, databases).

The terms attached to ARCEP's assignment of numbers to operators are defined by Article L.44 of the CPCE, which provides notably for the payment of taxes. The schedule for paying these taxes and their amount is set by decree³⁶. To give an example: a block of 10,000 "classic" numbers – such as 01 40 47 MC DU – costs 200 euros a year; a four-digit prefix costs 40,000 euros a year. For a single-digit prefix, referred to as an E prefix, the beneficiary must pay an annual fee of 400,000 euros.

36 - Decree No 2005-605 of 27 May 2005, modifying the second Part of the CPCE, JO of 29 May 2005.

ARCEP ensures the ongoing monitoring of European and international technical and regulatory developments in the area of numbering. It is worth remembering that French national numbering is part of a global system that was implemented worldwide by the International Telecommunications Union (ITU) and regionally by the European Conference of Postal and Telecommunications Administrations (CEPT).

B. Status report on the national numbering plan update

1. 09 numbers

37 - ARCEP Decision No 05-1085 of 15 December 2005, setting the terms of use for the national numbering plan categories.

On 15 December 2005, the Authority established³⁷ the organisation of the national numbering plan categories – drawing a distinction between three main categories of resource:

- ◆ person-to-person communication numbers;
- ◆ numbers for accessing value-added services;
- ◆ codes.

Among the numbers for person-to-person communications, the decision was made to introduce numbers beginning with 09, as a complement to existing numbers: geographic numbers starting with 01 to 05 and mobile numbers starting with 06.

09 numbers were created for several reasons. In the short term, they will replace the 087B numbers used by certain Internet access providers for VoIP applications originating on a service box. The 087B range reached saturation in mid-2006 and new resources needed to be created for this application. In addition, these numbers

had the major drawback of being in the same range 08 range as numbers used for accessing value-added services, which led to a lack of clarity in tariffs for the operators employing them. 087B numbers will therefore be permanently replaced by 09 numbers in December 2008.

In the medium and long term, 09 numbers will be non-geographic numbers that can be used for innovative operator services that do not belong with geographic or mobile numbers. In particular, the 09 range could be used for future roaming and/or convergence services marketed by operators. Service provider Free was the first to use them, in November 2006, and several other operators have been allocated 09 numbers, which seems to indicate that they will start coming into widespread use in 2007.

2. 118 numbers

In terms of numbering resources, the introduction of 118 numbers represents a significant innovation in the world of value-added services since it is the first range of new numbers to be opened up for this type of service since the introduction of short 3BPQ numbers in 1997. Furthermore, this upgrade to the numbering plan brings the French plan in line with the European recommendation that proposed the use of numbers starting with 118 for directory assistance services.

Also worth noting is that these new numbers, whose use is confined to directory assistance services based on the universal directory, have met with a certain degree of success in the sector as some 50 numbers have been assigned. A great many new companies specialising in directory assistance services were thus able to enter the French market thanks to this new format. In late 2006, some thirty 118 numbers were in use in the market, even if only a handful of actors accounted for the bulk of users' calls.

C. Changes and innovations in management rules

The decision on the numbering plan, which was adopted on 15 December 2005, was accompanied by a new decision on the rules for managing the plan, which adapted the 1998 management rules to the new regulatory framework – in addition to introducing several new elements.

The reservation procedure was eliminated following the adoption of the *prorata temporis* for numbering fees.

In addition, the Authority introduced a procedure for making resources available to a third-party operator, allowing an operator that has been allocated numbering resources to make them available to another operator, which will in turn assign them to final customers. This procedure makes it possible for small operators to launch their own business more easily by using resources supplied by another operator, without having to be allocated the resources directly. This solution is nevertheless only permissible between operators declared with the Authority, pursuant to Article L.33-1 of the CPCE, and after having informed the Authority.

Finally, the new management rules reinforce control over how numbering resources are employed, notably by defining more specific terms of use for the different number categories.

D. Resources allocated as of 31 December 2006

Status of numbering resources at the end of 2006

Type of number	Quantity of numbers allocated
Person-to-person communications	
Fixed geographic numbers (01, 02, 03, 04, 05)	181,910,000
Non-geographic person-to-person numbers (09AB and 087B)	26,780,000
Mobile numbers (06)	76,030,000
Value-added services	
Special numbers 10XY	19
Short numbers (3BPQ)	195
Six-digit numbers (118XYZ)	35
Non-geographic VAS numbers (08AB except 087B)	13,650,000
Codes	
"E" prefixes	4
16XY prefixes	31

Breakdown of allocated or reserved 3BPQ short numbers by service category

Short numbers (3BPQ) for offering calling card or assimilated services	20
Short numbers (3BPQ) for offering two-step dialling carrier network selection	5
Short numbers (3BPQ) for other uses	170
Total	195

Other resources allocated in 2006

38 - These resources correspond to technical addresses that serve to identify PSTN signalling resources, based on the CCITT No 7 protocol. They are similar to the X.25 addresses used in packet switching transmission networks.

National common channel signalling points ³⁸	5418
International common channel signalling points	120

An information system is available to the public on ARCEP's website³⁹: by entering the first four, five or six digits of a number, visitors can obtain information on its validity and find out the name of the operator to which it is assigned. Internet users can also download the list of assigned numbering resources.

39 - Cf. ARCEP's website: http://www.arcep.fr/index.php?id=interactive_numeros.

Number database for the industry

ARCEP offers members of the telecommunications sector online access to the G'NUM* database.

This database allows them to access a range of information on person-to-person service numbers housed on ARCEP's server. The data (management status, beneficiary's name, the trunk exchange area, the local sorting zone, the exchange for given geographic number blocks, assignments, etc.) are very useful for the deployment of services and/or the implementation of their taxation mechanisms.

22 companies currently subscribe to this service. The database is updated regularly with information supplied by local loop operators.

Access to the database is by subscription, which costs €1,500 a year.

* www.gnum.arcep.fr

