



Electronic Communications Committee (ECC)  
within the European Conference of Postal and Telecommunications Administrations (CEPT)

**LIGHT LICENSING, LICENCE-EXEMPT AND COMMONS**

**Moscow, June 2009**

**EXECUTIVE SUMMARY**

This Report first reviews the various terminologies that are commonly used to qualify the type of “regulatory regime” or “licensing regime” that is applied when regulating the use of a radio application. It shows in particular that practices in various European countries reflect different interpretation of the terminologies “licence-exempt” and “light licensing”.

Reference terminologies shown in Table 1 below are then proposed in order to capture some fundamental differences between various regulatory options:

<b>Individual authorisation</b> (Individual rights of use)		<b>General authorisation</b> (No individual rights of use)	
<b>Individual licence<sup>1</sup></b>	<b>Light-licensing</b>		<b>Licence-exempt</b>
Individual frequency planning / coordination  Traditional procedure for issuing licences	Individual frequency planning / coordination  Simplified procedure compared to traditional procedure for issuing licences  With limitations in the number of users	No individual frequency planning / coordination  Registration and/or notification  No limitations in the number of users nor need for coordination	No individual frequency planning / coordination  No registration nor notification

**Table 1**

An investigation is then conducted on various implementations of light licensing and licence-exempt regimes, based on the results of a questionnaire to CEPT administrations issued in February 2008. The questionnaire, which identified a list of radio applications as being potentially operated under a “light licensing” regime, invited CEPT administrations to describe the regulatory regime that is implemented using the above analytical grid.

This Report concludes that the use of the terminologies like “licence-exempt”, “light licensing” and “individual licence” as described in Table 1 above is quite convenient as a way to better qualify the “licensing regime” and associated spectrum management approach and to reflect various levels of control of the deployment and/or use of transmitters by the administration that may be needed in order to meet the market demand.

However, due to the fact that the term light licensing can have a broad meaning, it is recommended that when a reference to this term is used, the associated conditions of use should be clearly defined.

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<sup>1</sup> Sometimes also referred to as “traditional licencing”

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**LIST OF ABBREVIATIONS**

<b>Abbreviation</b>	<b>Explanation</b>
CEPT	European Conference of Postal and Telecommunications Administrations
LE	Licence-exempt
LL	Light licensing
CUS	Collective use of the spectrum
GPR/WPR	Ground- and Wall- Probing Radar imaging systems
SAP/SAB	Services Ancillary to Programme making and Services Ancillary to Broadcasting
FS	Fixed Service
FWA/BWA	Fixed Wireless Access / Broadband Wireless Access

## Light Licensing, Licence-Exempt and Commons

### 1 INTRODUCTION

Article 18 of the Radio Regulations stipulates that “no transmitting station may be established or operated by a private person or by any enterprise without a licence issued in an appropriate form and in conformity with the provisions of these Regulations by or on behalf of the government of the country to which the station in question is subject”.

The above term “licence” can be understood in its broad acceptance. This basically means that the use of spectrum must be explicitly permitted.

The conditions of use of the spectrum should be defined in a “Radio Interface Specification” (RIS). Such RIS may apply to non-specific applications or a specific type of application; include a detailed set of technical and operational requirements. It should also specify the applicable “licensing regime”.

Various terminologies are commonly used to qualify the type of “regulatory regime” or “licensing regime” that is applied: unlicensed, licence-exempt, licence free, general licence, general authorisation, light licensing, licensed, individual licence, individual authorisation...

These various terminologies imply besides that the term “licence”, as well as “licensed”, can be understood in a different manner to that suggested by Article 18 of the Radio Regulations.

This Report aims primarily to describe the main types of possible “regulatory regimes” for the use of spectrum by identifying key differentiation factors. The legal basis given under the EU regulatory framework by Directive 2002/20/CE on the authorisation of electronic communications networks and services (the Authorisation Directive) is used as a first level differentiation factor. The Report then focuses on the differences between “light licensing” and “licence-exempt” regimes and gives also some consideration on terminologies such as “collective use of spectrum” and “commons”.

An investigation is then conducted on various implementations of light licensing and licence-exempt regimes, based on the results of a questionnaire to CEPT administrations issued in February 2008. Based on the analysis of these practical implementations, this Report provides a summary of best practices as well as practical difficulties and ways of overcoming these. When characterizing these various implementations, particular attention was given to the different notions of usage rights and interference management.

### 2 DESCRIPTION OF DIFFERENT REGULATORY REGIMES AND TERMINOLOGY

#### 2.1 The Authorisation Directive

Article 5.1 of the Authorisation Directive stipulates that “Member States shall, where possible, in particular where the risk of harmful interference is negligible, not make the use of radio frequencies subject to the grant of individual rights of use but shall include the conditions for usage of such radio frequencies in the general authorisation”.

**The prime distinction between various regulatory regimes is therefore whether the use of radio frequencies is subject or not to the grant of “individual rights of use”.**

Based on this distinction between “individual authorisation” and “general authorisation”, shown in Table 2 below provides for reference a simple set of commonly used terminologies which are generally seen as being equivalent:

Individual authorisation	General authorisation
Subject to the grant of individual rights of use	NOT subject to the grant of individual rights of use
Individual licence	General licence
<i>Licensed</i>	<i>Unlicensed</i>

**Table 2: Commonly used terminologies**

Taking into account however the possible confusion that can result from using the terms “licence” or “licensed” alone (since RR Article 18 stipulates that “*no transmitting station may be established or operated by a private person or by any enterprise without a licence issued in an appropriate form*”), it should be recommended to avoid in the future using in an ECC deliverable the terminologies “*Licensed*” and “*Unlicensed*”. It should be made clear whether the “Licence” is “individual” or “general”. This Report also investigates possible other discrimination factors between these various terminologies.

Concerning possible criteria for issuing a general authorisation, it is generally felt that, in light of the number of possible constellations to be taken into account in a general authorisation, such a list of criteria cannot be exhaustive, nor must every single criterion be specified. Whether it is possible to issue a general authorisation will always require a look at the specific assignment situation.

The following criteria could be used as possible guidance:

- General authorisation when coordination between users is not necessary
- General authorisation when use in all parts of the country is possible
- General authorisation when user individualisation is not necessary
- General authorisation when the use of a frequency or of a frequency band is possible by a number of users within a particular area
- General authorisation when spectrum is available on a long-term basis.

Also, radio applications that do not need individual frequency planning and coordination (or individual frequency assignment) should basically be exempted from individual licensing and should be subject to a general authorisation.

It should also be noted that the current European regulatory framework is under a final review process. This Report could need to be revised once more visibility will be available on results of this review process and administrations will have gained experience on practical implementation of this new framework.

## **2.2 Analysis of key differentiation factors between various regulatory regimes**

### **2.2.1 Individual versus general authorisation**

As underlined in the introduction, the fundamental difference between individual authorisations and general authorisation is of legal nature under the EU regulatory framework.

This legal differentiation basically reflects the obligation or not for the user to be granted individual rights of use before transmitting.

It should however be emphasized that this first level differentiation should not prejudice the various spectrum management practices that can be developed to optimize the use of the spectrum. Nor should it be assumed that this split matches with distinctions between e.g. protected / unprotected use or exclusive / collective use of the spectrum.

### **2.2.2 Obligation for registration and/or notification**

As a second level differentiation factor, it is proposed to retain the possible obligation or not for registration or notification.

Unlike technical (frequency band, max power, channel access rules...) or operational (e.g. geographical area or time restrictions for the operation of radio stations) requirements, an obligation for registration or notification is of administrative nature and necessitates - as a prerequisite for use - that the user contacts the Spectrum Management Authority to meet its obligation.

Such provisions, often associated with the concept of “light-licensing”, would remain in the field of “general authorisation” as long as they are only meant to allow controlling the deployment and use of the application so as to avoid harmful interferences on radio services, but not to restrict it.

Conversely, these provisions would fall under the “individual authorisation” umbrella if associated with possible limitation of the number of users or some kind of coordination prior to use. The answer from an administration resulting e.g. from such coordination process would from a regulatory perspective be equivalent to an “individual

authorisation”.

### 2.2.3 Process for issuing authorisations

It has also been argued that the term “light licensing” describes a process for issuing authorisations for radio use – i.e. individual licences – where the applicant is expected to submit the details for the desired licence electronically to a system operated by the national frequency management authority. The system can then either autonomously or with very little human input issue a licence if the application fulfils the necessary requirements.

Under such approach, “light licensing” cannot be viewed as a “mix” or compromise between licensed and licence-exempt regimes. Instead, licences that are issued as a result of a “light licensing” system are from a regulatory perspective not different from traditional licences. The licences should contain technical conditions that are necessary and sufficient to avoid harmful interference to other systems and users. However, the process of issuing licences is different from traditional licensing since it involves extensive use of IT systems.

The process for issuing licences, which could vary from traditional procedures to involving dedicated IT systems for automatic frequency planning and licence assignment, can thus also be seen as an important differentiation factor.

## 2.3 Licence-exempt vs light licensing

While practices in various European countries may reflect different interpretation to the terminologies “licence-exempt” and “light licensing”, it matters to consider possible definitions that capture fundamental differences between various options.

### 2.3.1 Licence-exempt regimes

#### 2.3.1.1 Definitions

In the Report on the “Collective Use of Spectrum” commissioned by the EC and conducted by a consortium of consultancy agencies (the “CUS Report”)<sup>2</sup>, licence-exempt regimes are characterized by the following:

*No individual authorisation or co-ordination is required and no fee payable for using the spectrum. Access is regulated solely by adherence to pre-defined regulatory conditions.*

The RSPG Opinion on aspects of a European approach to ‘Collective use of spectrum’ (RSPG08-244 Final) adopted the following definition of “collective use of spectrum”:

*Collective Use of Spectrum allows an undetermined number of independent users and/or devices to access spectrum in the same range of frequencies at the same time and in a particular geographic area under a well-defined set of conditions.*

Based on the previous analysis on differentiation factors, the following definition could also be proposed:

*A licence-exempt regime is a general authorisation regulatory regime under a well-defined set of conditions that does not include any provision for registration and/or notification.*

It should be noted that such approach would in particular mean that “exempt from an individual authorisation” is not strictly equivalent to “licence-exempt”.

#### 2.3.1.2 General principles

CEPT generally seeks to establish harmonised conditions of use of the spectrum for “licence-exempt” (LE) radio devices, recognizing that the enforceability of national restrictions depends upon the ability of users to conform to their user manual instructions, especially in case of radio transmitters implemented in consumer goods which besides can freely circulate within EU under the R&TTE Directive.

The absence, by definition of LE, of administrative obligations requiring the user to contact the Spectrum Management Authority (SMA) as under a light licensing regime, reduces the enforceability of varying technical requirements within Europe and generally calls for further harmonisation.

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<sup>2</sup> Final Report of the “Study on Legal, Economic & Technical Aspects of ‘Collective Use’ of Spectrum in the European Community”, published November 2006

The following regulations are quoted as examples of licence-exempt regimes:

- Most SRDs under ERC/REC 70-03
- Generic UWB applications (see ECC/DEC/(06)04 and ECC/DEC/(06)12)
- PMR446
- Cordless telephony
- FWA stations in the band 5725 – 5875 MHz on a licence-exempt basis.

In case of radio transmitters that are, due to their technical and/or operational characteristics, unlikely to cause harmful interference when deployed and used, individual licensing may present an unnecessary overhead and a licence-exempt model may be more appropriate.

The definition of conditions for the efficient use of spectrum for a certain frequency band and application usually requires comprehensive compatibility studies so as to ensure that such new licence-exempt usage will not be detrimental to other spectrum users.

This difficulty is particularly acute where the application targets a mass market (SRR, generic UWB, RLANs, RFID...). The enforcement by administrations of a possible future corrective measure in spectrum regulation is actually deemed feasible only if its impact in terms of costs and performances for the application remains proportionate.

Finally, in the absence of any sort of registration or notification, quantification of spectrum usage is likely to be extremely challenging and could require a costly methodology. A frequency band under a licence-exempt regime is usually not suitable for refarming except on very long term basis.

### **2.3.2 Light licensing regimes**

Light licensing regimes can be described in many different manners.

For instance, section 3.6.2 of ECC Report 80 on “Enhancing Harmonisation and Introducing Flexibility in the Spectrum Regulatory Framework” provides the following language:

*A ‘light licensing regime’ is a combination of licence-exempt use and protection of users of spectrum. This model has a “first come first served” feature where the user notifies the regulator with the position and characteristics of the stations. The database of installed stations containing appropriate technical parameters (location, frequency, power, antenna etc.) is publicly available and should thus be consulted before installing new stations. If the transmitter can be installed without affecting stations already registered (i.e. not exceeding a pre-defined interference criteria), the new station can be recorded in the database. A mechanism remains necessary to enable a new entrant to challenge whether a station already recorded is really used or not. New entrants should be able to find an agreement with existing users in case interference criteria are exceeded.*

The possible limitation in the number of users that is suggested above implies that such approach falls under the “individual authorisation” umbrella. It should however be recognized that effective regulatory regimes may combine various regulatory features pending e.g. the geographical area of operation (e.g. “general authorisation” throughout most of a national territory while some coordination zones may be subject to “individual right of use”).

One administration proposed to define light licensing as “*the issuing of licences for radio transmitters using IT for applications and the processing of applications*”. Under this approach, “light licensing” falls precisely under the “individual authorisation” umbrella but is rather considered as a tool for national authorities to utilize IT systems and the Internet to simplify the licensing process for enterprises and other radio users.

It was also argued that “light licensing” should be envisaged only if individual frequency planning is necessary and should imply a real simplification of procedure comparing with typical procedure of authorisation (issuing of licence). For example, the licence for BWA operator consists of general conditions for network operation only, separate registration of base stations is not required.

“Light licensing” was also described as follows in the Licence-Exemption Framework Review (LEFR)<sup>3</sup> consultation document published by Ofcom UK in 2007:

*Light-licensing is a mechanism whereby the users of a band are awarded non-exclusive licences which are typically available to all, and are either free or only have a nominal fee attached to them. There may be further obligations associated with the provision of a licence such as the need to register the location of any transmitters and possibly to coordinate their deployment with other registered users.*

Under this approach, “light licensing” seem to reside somewhere between the licensing and licence-exempt models. It is furthermore expressed in the Ofcom LEFR consultation document that with the emergence of autonomous self-deployment and sensing technologies, the boundaries between light-licensing and licence-exemption will be increasingly blurred.

Finally, it seems that there are two opposite trends:

- Light licensing is a form of individual authorisation characterized by
  - individual frequency planning/coordination
  - simplified procedure comparing with typical procedure of individual authorisation
- Light-licensing regime is a form of general authorisation characterized by
  - no individual frequency planning/coordination
  - a requirement for registration and/or notification that allows controlling the deployment and use of the application, but does not restrict it.

In both cases, light licensing permits typically greater power than licence-exempt regimes.

Concerning the second approach under the “general authorisation” umbrella, one administration actually questioned the regulatory purpose of a registration obligation. The concern is, if there is no restriction of the number of users or the deployment of transmitters for a certain application (i.e. the traditional licence-exempt regime) then there can be no effective means of preventing harmful interference and that any additional notification and registration requirements do not change this.

Noting that such provisions for registration/notification are intended to be implemented on a national basis, the above concern should in any case encourage administrations to regularly review that status of operational light-licensed regimes with a view to conversion to licence-exemption when appropriate.

## **2.4 Considerations on other terminologies**

In this chapter, some consideration is given on the terminologies “Collective use of the spectrum” and “Commons”, noting that such terminologies should not be assumed to be equivalent.

### **2.4.1 Collective use of the spectrum**

The Final Report of the “Study on Legal, Economic & Technical Aspects of ‘Collective Use’ of Spectrum in the European Community” (“the CUS report”) commissioned by the EC and conducted by a consortium of consultancy agencies was published November 2006.

This study provides useful basis to better encompass the terminology “Collective use of the spectrum”. In the Executive Summary (see section 0.3.1 of the CUS Report), Collective use is presented as one of three main approaches to the management of radio spectrum, the other two being the administrative model, whereby individual users are granted exclusive rights to use spectrum on an administrative basis by national regulatory authorities, and the market-based’ model whereby exclusive rights are acquired by market mechanisms such as auctions or spectrum trading.

Section 2.1 of the CUS Report proposes furthermore the following:

*For the purposes of this Report, the term “collective use of spectrum” is used as an umbrella term to designate all spectrum management approaches allowing more than one user to occupy the same range of frequencies at the same time, without the need for individual (exclusive) licensing.*

For each of the categories of collective use identified in section 2.2 of the CUS Report, it is proposed in Annex 1 of

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<sup>3</sup> “A consultation on the framework for managing spectrum used by licence-exempt devices”, published 12 April 2007

this Report to clarify the relevant “regulatory regime” based on the previous analysis.

The RSPG Opinion on “Aspects of a European Approach to Collective Use of Spectrum (CUS)” adopted by RSPG in October 2008 should also be mentioned in this regard.

**2.4.2 Commons**

In the Ofcom LEFR consultation document, the “spectrum commons” model seems to be primarily defined as opposed to an application-specific approach.

An approach with multiple classes of “spectrum commons” is promoted where:  
*Within each class, applications would have broadly similar characteristics, as enforced through regulator-defined constraints on radiated power. In summary, each class would be associated with a particular portion of the spectrum, with licence-exempt devices subject to limits on radiated power (defined by the regulator), and one or more polite protocols (authorised by the regulator but defined by standards bodies).*

References to the concept of “private commons” which fall under the “individual authorisation” umbrella can also be found both in the CUS Report and the Ofcom LEFR consultation document.

**2.5 Conclusion on terminology**

Practices in various European countries reflect different interpretation of the terminologies “licence-exempt” and “light licensing”.

In conclusion, Table 3 below is proposed to capture some fundamental differences between various regulatory options:

<b>Individual authorisation</b> (Individual rights of use)		<b>General authorisation</b> (No individual rights of use)	
<b>Individual licence<sup>4</sup></b>	<b>Light-licensing</b>		<b>Licence-exempt</b>
Individual frequency planning / coordination. Traditional procedure for issuing licences.	Individual frequency planning / coordination. Simplified procedure compared to traditional procedure for issuing licences. With limitations in the number of users.	No individual frequency planning / coordination. Registration and/or notification. No limitations in the number of users nor need for coordination.	No individual frequency planning / coordination. No registration nor notification.

**Table 3: Key characteristics of different “licensing regimes”**

Note: effective regulatory “light-licensing” regimes may actually combine various regulatory features pending for example the definition of geographical area of restricted operation (e.g. “general authorisation” throughout most of a national territory while some coordination zones may be subject to “individual right of use”). It has also been expressed that ‘light licensing’ should simply be considered as a tool for national authorities to utilize IT systems and the Internet to simplify the licensing process for enterprises and other radio users.

<sup>4</sup> Sometimes also referred to as “traditional licencing”

### 3 IMPLEMENTATION OF LICENCE-EXEMPT AND LIGHT LICENSING REGIMES

#### 3.1 Questionnaire on the implementation of light licensing regimes

##### 3.1.1 Introduction

A questionnaire was prepared so as to investigate various implementations of light licensing and licence exempt regimes, with a view to identify and summarize best practices as well as practical difficulties and ways of overcoming these.

In the introduction of this questionnaire, shown in Table 3 above resulting from the initial investigations within CEPT/WGRA had been provided in order to qualify the fundamental differences between various regulatory options.

The list of radio applications below had been identified as being potentially operated under a “light licensing” regime. Administrations were invited, for each of these applications, to fill in the proposed template (see Annex 2 of this Report):

- Ground- and Wall- Probing Radar (GPR/WPR) imaging systems (see ECC/DEC/(06)08)
- Repeaters
  - DVB-T and DVB-H repeaters (“Gap Fillers”)
  - GSM and UMTS repeaters
  - FM broadcast repeaters in road tunnels
  - GSM onboard aircraft base stations (see ECC/DEC/(06)07)
- FWA/BWA stations at 5.8 GHz (see ECC/REC/(06)04)
- FWA/BWA stations at 3.5 GHz (see ECC/DEC/(07)02)
- FS Point-to-Point links in the 64 – 66 GHz band (see ECC/REC/(05)02)
- VSAT stations
  - Stations in the 11 GHz frequency range (see ERC/DEC/(00)08)
  - Stations in the 14.0 – 14.5 GHz frequency band (see ERC/REC 13-03)
- PR27 equipment (see ERC/DEC/(98)16)
- Amateur stations
- Maritime VHF
- COSPAS-SARSAT radio beacons
- Services Ancillary to Programme making and Services Ancillary to Broadcasting (SAP/SAB)
  - Professional radio microphones
  - Audio / video links
  - Satellite News Gathering Transportable Earth Stations (SNG).

Finally, it was noted also in the questionnaire that some of the applications listed above may not be permitted in some countries, or may be subject to an “individual licence” regime or a “licence-exempt” regime (which means that access to the spectrum is regulated solely by adherence to pre-defined regulatory conditions).

It is indeed important to underline that while the proposed questionnaire focused on examples likely to be considered as “light licensing” (LL) regimes by some administrations as these could offer a variety of implementation cases between the two more extreme (and somehow simpler) types of regimes i.e. “licensed” and “licence-exempt” (LE), the analysis of the results definitely needs to look at “regulatory regimes” in a broader perspective.

##### 3.1.2 Summary of the results of the questionnaire

The Office sent out the questionnaire on the implementation of light licensing regime to CEPT administrations on 5 February 2008 with a deadline for replies on 4 April 2008. The Office received replies from the following 27 CEPT administrations: Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Hungary, Ireland, Latvia, Lichtenstein, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Russian Federation, Serbia, Slovak Republic, Slovenia, Sweden and Switzerland.

Annex 3 of this Report contains an overview of currently applicable licensing regimes over applications, as provided in the responses.

The following simple observations can be made:

- The answers on the type of “regulatory regime” that is applied (“traditional licensing”<sup>5</sup>, LL or LE) is characterized by a great dispersion between administrations for almost all listed applications;
- The most frequently cited “regulatory regime” is “traditional licensing”;
- For each listed application, at least one administration described the applicable “regulatory regime” as “light licensing” regime.

This basically suggests that both national practices and interpretation on terminology are poorly harmonized within Europe.

Annex 4 of this Report contains a summary of comments related to benefits/drawbacks of light licensing regime, as provided in the responses.

Table 6 provides useful hints on potential benefits and drawbacks of “light licensing” regimes, based on the consideration of a great diversity of implementation cases. One must therefore be cautious not to consider these elements as being characteristics of a single “light licensing” model.

As indicated by Finland in its response on “Amateur”, the term “light licensing” is not recognized in the Finnish Radio Act. Conditions for use of radio equipment can however be defined on a case by case basis and the legislation enables very flexible solutions from licence exemption to “traditional” licensing with frequency planning and everything between these procedures. This statement may actually be true of most European administrations.

Finally, beyond the various flexible solutions that can be achieved in order to regulate the use of spectrum by certain radio applications, it remains that administrations shall aim in general to specify “minimum regulations”. This necessitates that each obligation attached to the use of spectrum must in any case be justified by the need to ensure the efficient use of the radio spectrum and the avoidance of harmful interference or other public interest requirements.

### **3.1.3 Analysis on specific examples**

Annex 5 of this Report contains overviews of responses from individual administration per application.

It should be noted that a full breakdown of responses from individual administrations can be found in Annex 5 to document RA (08)058 rev1.

#### **3.1.3.1 Ground- and Wall- Probing Radar (GPR/WPR) imaging systems**

Decide 4 of ECC/DEC/(06)08 stipulates that the use of GPR/WPR imaging systems shall be subject to an “appropriate licensing regime”, thus leaving to national administration the responsibility to set practical details for its implementation.

The answers in the questionnaire show actually a balanced appreciation between the 3 options, noting that several administrations still have to implement ECC/DEC/(06)08.

GPR/WPR is a typical example of “light licensing” falling under the “general authorization umbrella” in countries where specific measures are taken in order to control or monitor the use of such systems in the vicinity of radar stations or radio astronomy observatories. There is no limitation in the number of users.

By comparison, Generic UWB devices operating in accordance with the generic UWB regulation are subject to more restrictive power levels or specific mitigation techniques.

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<sup>5</sup> « Traditional licensing » referred in the questionnaire was basically to be understood as an “individual licence” regime where the national administration assigns formally frequency to an individual operator or an individual station.

### 3.1.3.2 Repeaters in licensed bands

In case of **DVB-T / DVB-H repeaters** (“Gap Fillers”) and **FM broadcast repeaters in road tunnels**, the vast majority of answers show a “traditional licensing”.

In the absence of specific regulatory regime applying to such repeaters, this might mean that their use is basically permitted to the broadcasting operators to which individual licence are granted national, regional or local coverage.

Germany underlines for instance that, from the formal point of view, even a FM transmitter in a road tunnel underlies the broadcasting and media regulation in Germany. Similarly, Sweden indicates that licences for broadcast transmitters may only be issued to undertakings with a valid broadcast licence (assigned by Swedish Government or Swedish Radio and TV Authority).

Similarly, the operation of **GSM and UMTS repeaters** is obviously allowed in most countries only by the authorised GSM/UMTS operators. As indicated by Cyprus, GSM/UMTS operators are fully responsible for the design of their networks. The usage of repeaters is not covered by any other authorisation scheme.

Poland however mentions the case of repeaters permitted with a max power of 20 dBm e.r.p. on licence-exempt basis.

Conversely, it is interesting to highlight that the case of **GSM onboard aircraft base stations** seem to rather fall under the “general authorisation” umbrella. Two tentative explanations are given below:

- The deployment of such systems is de facto limited to a well-defined environment (i.e. the cabin of an aircraft)
- There is a CEPT (cf. ECC/DEC/(06)07) and an EC regulatory harmonisation measure.

France indicates that a general authorisation regime is foreseen to be associated with the provisions of recommends 6 of the Cocom MCA Recommendation. The operation of a GSM system onboard an aircraft will require notification to a European database, which is a typical example of “light licensing” regime falling under the general authorisation umbrella. The registration of GSMOBA systems would support the management of interferences to terrestrial networks when required.

Finally, the case of **RNSS repeaters** is not developed here as only one administration indicates to have allowed this type of systems. It is presumed that most European administration will wait until the completion of current CEPT investigations on this topic before allowing such systems.

### 3.1.3.3 FWA/BWA stations in the 3.5 GHz and 5.8 GHz bands

The wide majority of responses concerning **FWA/BWA stations at 3.5 GHz** refer to “traditional licensing” scheme for the base stations. The “terminal stations” are however often presented as being permitted under a LE basis, as it is common practice for terminal station operating under the control of licensed operator.

France refers to individual authorisations granted to wireless local loop operators combined with the possibility for operators in adjacent areas to negotiate greater values of power surface density; the corresponding agreements have to be notified to the administration. Similarly, Sweden indicates that Block licences have been assigned following competitive procedures (“beauty contest” for national and regional licences in 3.4 – 3.6 GHz band, auction for municipal licences in 3.6–3.8 GHz band). “Light licensing” is applied for the licence holder’s individual base stations.

Estonia also describes these frequency bands as “self-planned frequency bands” which mean that the use of them is regulated by the user of radio frequencies pursuant to the conditions established by a frequency authorisation. The user is responsible for planning of frequencies for network operation. All technical restrictions indicated in the licence (incl. provisions of multi- or bilateral coordination agreement) shall be taken into account.

By contrast, Russian Federation considers that taking into account the fact that the frequency resource of the considered bands is limited, the application of the “light licensing” is considered to be impossible.

The above observations seem actually to illustrate primarily a difference in the language being used as, in all cases, a given frequency band or block is assigned to only one operator. The way the blocks are assigned also requires administrative treatment and selection process. We are therefore clearly in a “traditional licensing” scheme in the first place. However, “light licensing” seem to be used with respect to the frequency assignment process for

individual station.

By comparison, the case of **FWA/BWA stations at 5.8 GHz** is characterised by rather low degree of implementation, in particular due to incompatibility with other users of the band.

Within Ireland, this application offers a case of “light licensing” regime where internet user application is possible and IT systems are used for processing of user applications. Registration of system details with ComReg is mandatory. However, no frequency planning is performed and there is no limit on number of users, no protection for users and no fees.

Within Norway, there is an even greater degree of freedom for the user since there is no requirement for registration: Norway applies a LE regime, noting that the power density shall not exceed -122.5 dBW/m<sup>2</sup> measured with a reference bandwidth of 1 MHz on the boarder between Norway and neighbouring countries.

#### 3.1.3.4 FS Point-to-Point links in the 64 – 66 GHz band

The majority of responses concerning **FS Point-to-Point links in the 64 – 66 GHz band** refer to “traditional licensing” scheme. In general, effective implementation of ECC/REC/(05)02 seems however quite low.

Norway seems to implement a kind of LL regime where registration of the stations is mandatory. However, no frequency planning is performed and there is no limit on the number of users for the time being. Paper applications are processed and it is indicated that, when the number of links increases other registration methods must be evaluated, e.g. automatic online registration.

#### 3.1.3.5 VSAT stations

The answers on VSAT seem to reflect balanced views and practices between a “licence-exempt” and “traditional licensing”. This could require more detailed consideration in view of greater harmonisation of the regulatory regime between European countries.

#### 3.1.3.6 PR27 equipment (CB)

The wide majority of responses concerning **CB** refer to a “licence-exempt” regime.

#### 3.1.3.7 Amateur stations, Maritime VHF and COSPAS-SARSAT radio beacons

It is interesting to note that, within the list of application listed in the questionnaire, Amateur stations, Maritime VHF and COSPAS-SARSAT radio beacons are among the most frequent where a reference is made to “light licensing”.

A few administrations have made a reference to “Licence-exempt” (LE).

The fact that these frequency bands are assigned to corresponding radio communication services on a primary basis and that the stations require “protection”, is certainly a good explanation for the reference being predominantly made to “traditional licensing”.

However, as far as EU member states are concerned, it should be considered that the stations are allowed on a “general authorisation” basis since there’s no “individual right of use” assigned to the station.

Having the conclusion on terminology in mind (see section 2.5) on “light licensing” under “general authorisation” LE seems inappropriate to describe the regime that is applied as there is an obligation (Registration and/or notification) for call signs or other identifiers or even user certificate prior to use. Therefore “light licensing” could be used in this “general authorisation” context to qualify this type of registration constraint.

#### 3.1.3.8 Services Ancillary to Programme making and Services Ancillary to Broadcasting (SAP/SAB)

A majority of answers refer to “traditional licensing”. This result needs however to be balanced and considered for individual examples of SAP/SAB system in view of greater harmonisation of the regulatory regime between European countries.

## 3.2 General trends

Based on the material collected through the questionnaire and further analysis, it is proposed to try and draw general trends on different implementations of licence-exempt and light licensing regimes. A particular attention is given here to the different notions of usage rights and interference management.

### 3.2.1 Licence-exempt regimes

Consideration of different examples shows that implementations of “Licence-exempt” (LE) regimes can range from generic assignments (e.g. non-specific SRDS, generic UWB) to specific assignments where authorised transmitters shall bear a high degree of sharing with various spectrum users. Some specific LE assignments may also be quasi exclusive (e.g. social alarms, CB, PMR446).

“Licence-exempt” radio devices in general operate on “*non-interference, non-protected basis*”.

The “*non-protected basis*” implies for instance that a LE user usually cannot claim to the administration (which is generally responsible for the quality of the spectrum that is made available) an action to resolve an interference case.

It is also supposed:

- that spectrum regulation for LE transmitters takes into consideration the feasibility for LE transmitters to operate as intended (for instance by not permitting a LE usage that is likely to suffer interference from incumbent services),
- but also that manufacturers develop sufficiently robust receivers and select frequency bands in adequacy with the targeted Quality of Service.

The RSPG Opinion on “Aspects of a European Approach to Collective Use of Spectrum (CUS)” needs to be mentioned here as it elaborates substantially on the issue of quality of service under CUS.

This specificity of operating on “*non-interference, non-protected basis*” is usually explicitly stated in Decide parts of ECC deliverables; it qualifies somehow the “regulatory status” of the transmitters. Particular caution is however needed when referring in an ECC deliverable to a “radiocommunication service” in the sense of the ITU Radio Regulations (RR) since a LE transmitter may well operate within a frequency band allocated to a primary “radiocommunication service” and in accordance with the RR definitions (e.g. RLAN, ITS...).

The reference to the RR could wrongly suggest that such stations are somehow “protected” whereas rights and obligations specified in the RR applies to the signatory states and only stations that are duly “registered” at the ITU may be granted an effective protection from other uses in other countries.

The RR status has presumably no effect on the status of LE transmitters which are deployed and used without any control from administrations. Legal actions may be taken on a national stage only against unauthorised emissions. References to RR rather provide information on the international context, which is of particular importance when performing compatibility studies prior to regulating.

### 3.2.2 Light licensing regimes

The term “light licensing” seems actually quite useful in order to qualify spectrum management approach where a certain degree of control of the deployment and/or use of transmitters is kept by the administration without going as far as implementing a “traditional licensing” regime.

It seems that one can distinguish three main cases where such terminology could be adequate.

#### 1) GPR/WPR imaging systems

This example refers typically to LL regulatory regimes allowing higher power than comparable LE applications. The transmitters are operated on “*non-interference, non-protected basis*”.

There is no limitation in the number of users and no individual frequency planning. Coordination may be needed in order to ensure the protection of some sensitive radio stations.

This example seems to rather fall under the general authorization umbrella.

2) Amateur / Maritime VHF

Although some administrations refer in the questionnaire to “individual licence”, it has to be clear that there is no individual frequency planning and no limitations in the number of users nor need for coordination in case of Amateur and Maritime VHF.

As explained by one administration in case of operation of COSPAS/SARSAT stations on-board a ship registration is required “in order to fulfil the requirements of the applicable provisions of the ITU Radio Regulations”.

Although Amateur /Maritime VHF rather fall under the general authorization umbrella, it seems quite clear that actions should be taken by national administrations in case interference should occur.

A greater degree of protection is indeed expected than for basic LE transmitters. The use of the terminology “light licensing” in a general authorisation context primarily refers to existing obligations for registration (e.g. call-sign, Operator certificate, MMSI...). It also enables in this case to distinguish such frequency use from LE frequency use based on a strict “*non-interference, non-protected basis*”.

3) Light licensing under individual authorisation

This approach, which refers to ‘light licensing’ to be considered as a tool for national authorities to utilize IT systems and the Internet to simplify the licensing process for enterprises and other radio users, was identified early in this Report. Sweden operates a system that permits users to submit online applications for maritime VHF licences (<http://e-tjanster.pts.se/Vhf/>).

The “first come first served” model referred to in ECC Report 80 and relying on a publicly available database of installed stations containing appropriate technical parameters (location, frequency, power, antenna etc.) to be consulted before installing new stations seems actually to follow that trend.

More experience is however to be gained on such approaches. It is expected that the operator of a station being authorised accordingly would benefit from an “individual right of use” and would obviously seek adequate protection.

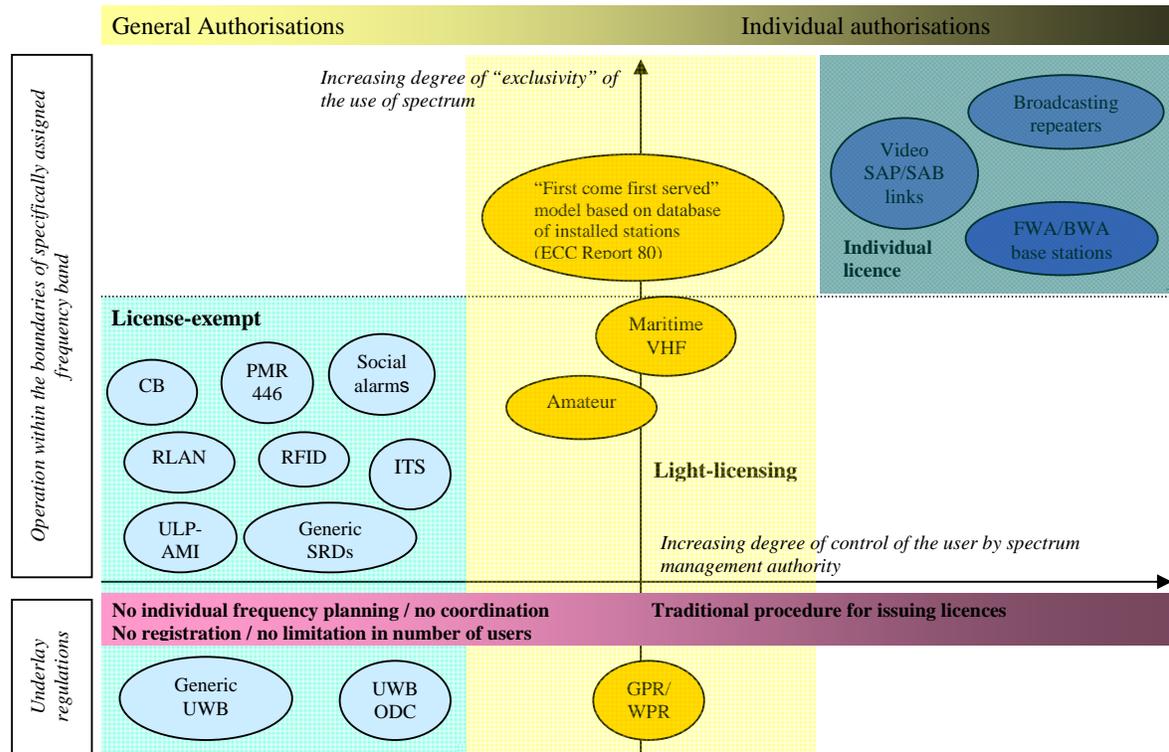
#### **4 CONCLUSIONS**

Some administrations have underlined that the term “light licensing” is not recognized in their legal framework but that conditions for use of radio equipment can be defined on a case by case basis and that the legislation enables very flexible solutions from licence exemption to “traditional” licensing with frequency planning and everything between these procedures.

This observation, which may be true for all EU administrations, may actually also apply to the term “licence-exempt” as the baseline distinction within EU between various licensing regimes is precisely whether the use of radio frequencies is subject or not to the grant of “individual rights of use”. In other words, EU member states may only distinguish between “individual authorisation” and “general authorisation”.

The consideration of implementation of various regulatory regimes applying to different types of application suggests actually that the split between “individual authorisation” and “general authorisation” may not be so obvious in all cases; for instance in situations where there is an obligation for some kind of registration or coordination prior to use without any limitation in the number of users.

The use of the terminologies like “licence-exempt”, “light licensing” and “individual licence” seems in this context quite convenient as a way to better qualify the “licensing regime” and associated spectrum management approach and to reflect various levels of control of the deployment and/or use of transmitters by the administration. The diagram shown in the Figure below is proposed to illustrate possible variations in this regard:



Figure

Applications located towards the top of this diagram benefit from a more “exclusive” status: frequencies are assigned in certain areas to individual station or operator. Conversely, applications located towards the bottom of this diagram would expectedly have to bear a higher degree of sharing with other spectrum users.

However, due to the fact that the term light licensing can have a broad meaning, it is recommended that when a reference to this term is used, the associated conditions of use should be clearly defined.

**ANNEX 1: REVIEW OF THE DIFFERENT CATEGORIES OF COLLECTIVE USE OF THE SPECTRUM IDENTIFIED IN THE STUDY ON LEGAL, ECONOMIC & TECHNICAL ASPECTS OF “COLLECTIVE USE” OF SPECTRUM IN THE EUROPEAN COMMUNITY**

Table 4 below clarifies the applicable “licensing regime” for each of the categories of collective use identified in the study on CUS:

<b>Types of Collective Spectrum Use (as described in section 2.2 of the Final Report on CUS)</b>	<b>Licensing regime</b>
<p>■ <b>Licence-Exempt (commons) – non-specific applications:</b> No individual authorisation or co-ordination is required and no fee payable for using the spectrum. Access is regulated solely by adherence to pre-defined regulatory conditions (typically specified in the national frequency allocation table (NFAT) and/or national legislation, which may be based on EU or CEPT harmonisation measures). Any application is permitted so long as the regulatory conditions are adhered to, which are typically low power, short range devices and applications.</p>	Licence-exempt
<p>■ <b>Licence-Exempt (commons) – specific applications:</b> No individual authorisation or co-ordination is required and no fee payable for using the spectrum. The equipment must comply with specific standard(s), either harmonised standards or national interface standards which relate to specific applications that are typically low power short range devices.</p>	Licence-exempt
<p>■ <b>Light licensing – few restrictions:</b> Registration or notification is required. No limits on the number of users but use may be application-specific. Typically, light licensing permits greater power than licence-exempt bands. A small fee may be payable to cover the costs of the registration / notification scheme. Light licensing is typically applied in situations where there is no immediate concern about interference but where there may be a need to make changes to the use of the spectrum in future, hence there is a need to maintain a record of those who are using the spectrum. For example, some European countries allow the use of the 5.8 GHz band for fixed wireless access services on a light licensing basis without the need to apply for an exclusive licence or right of use.</p>	General authorisation / Light licensing
<p>■ <b>Light licensing – with restrictions:</b> Registration or notification is required, and there are limits on the number of users and/or requirements for coordination permits greater power than licence-exempt bands. A small fee may be payable to cover the costs of the registration/notification scheme. Recent examples include: 1) a registration scheme proposed in the U.S for use of the 3650 – 3700MHz band on a collective basis for fixed wireless access where the risk of interference is mitigated by technical means, and where licensees are mutually obliged “to cooperate and avoid harmful interference to one another”; 2) the UK regulator Ofcom recently awarded through auction, twelve low power concurrent rights of use through auction for the frequencies 1781.7-1785MHz paired with 1876.7-1880MHz.6 Licensees are expected to co-ordinate their use of the spectrum to avoid harmful interference.</p>	Individual authorisation / Light licensing
<p>■ <b>Private Commons:</b> An individual right of use is required but access to spectrum may be “sub-let” to third parties on an unlicensed basis without the need for co-ordination, so long as pre-defined regulatory conditions are adhered to. Responsibility for avoiding interference with users outside the spectrum band rests with the right of use holder. In the U.S., the Federal Communications Commission (FCC) recently introduced rules permitting spectrum leasing under which a licensee may acquire a block of spectrum to create a private commons for use by thousands or even millions of new users. The FCC speculated that this type of private commons could be used by innovative equipment vendors to roll out a new service such as a private Wi-Fi business. This could offer a higher quality of services than Wi-Fi and other users must now accept in existing licence-exempt bands.</p>	Individual authorisation

<p>■ <b>Experimental Commons:</b> Experimental licenses are intended for use on an experimental basis for some predefined and limited period of time. Licensing, registration or notification is dependent on the specific allocation, but there are generally no limits on the number of users, and there may be no restriction on the application. Operation is on a non-interference, nonprotected provision of third party services). Technical constraints may apply generally or may be specifically negotiated. A small fee may be payable to cover the costs of the registration/notification scheme.</p>	Individual authorisation
<p>■ <b>Underlay:</b> Underlay technologies operate in spectrum that is used for other licensed or licence-exempt use but at very low power levels. This allows the underlay use to share or collectively use the spectrum. Underlay use is not licensed. Ultra Wide Band (UWB) is an example of an underlay technology.</p>	Licence-exempt
<p>■ <b>Overlay:</b> An overlay approach permits higher powers that could cause interference to existing users, but overcomes this risk by only permitting transmissions at times or locations where the spectrum is not currently in use. This can be achieved either using technology (e.g. cognitive radio) or by regulatory means (e.g. only permitting use in certain geographic regions). Here we are concerned with overlay use that is not licensed.</p>	Licence-exempt

Table 4

**ANNEX 2: QUESTIONNAIRE ON THE IMPLEMENTATION OF LIGHT LICENSING REGIMES  
(TEMPLATE)**

Administrations were invited to fill the template below for a proposed list of applications.

<b>Application</b>	
<b>Main technical and operational requirements</b>	
Frequency band:	
Max. radiated power:	
Other requirements:	
<b>Type of licensing regime</b>	
What licensing regime do you consider you have implemented for the application in question?	Licence exemption [ ] Light licensing [ ] “Traditional” licensing [ ]
	Remarks:
If you have not implemented a light licensing regime for this application, do you foresee to do so in the future?	Light licensing regime foreseen [ ]
	Remarks:
What authorisation regime in the sense of EU legislation do you consider you have implemented for the application in question?	Individual authorisation [ ] General authorisation [ ]
	Remarks:
Other remarks:	
<b>Description of Light licensing regulatory provisions (if you consider that a light licensing regime has been implemented for the application in question)</b>	
Use of Internet and IT systems for user applications and licensing?	Internet user application possible [ ] IT systems used for processing of user applications [ ]
	Remarks:
Limitation on the number of users?	Number of users limited [ ] No limit on number of users [ ]
	Remarks:
Individual frequency planning / coordination of use?	No frequency planning performed – registration only [ ] Requirement on user coordination with other users of the same application and/or other users [ ] Frequency planning performed by licensing authority [ ]
	Remarks:
Protection of users?	Users considered protected [ ] No protection for users [ ]
	Remarks:
Administrative fees?	Allow collecting administrative fees [ ] No fees [ ]
	Remarks:

Other remarks:	
<b>Benefits and/or drawbacks resulting from having implemented a Light licensing regime</b>	
Interference management and enforcement?	Benefits:
	Drawbacks:
Costs for administration:	Benefits:
	Drawbacks:
Other remarks:	
<b>Future changes in light licensing regime</b>	
Do you foresee changes of the light licensing regime for this application?	Evolution towards licence exemption foreseen [ ]
	Restoration of traditional licensing foreseen [ ]
	Remarks:

**ANNEX 3: OVERVIEW OF CURRENTLY APPLICABLE LICENSING REGIMES OVER APPLICATIONS, AS PROVIDED IN THE RESPONSES TO THE QUESTIONNAIRE ON THE IMPLEMENTATION OF LIGHT LICENSING REGIMES**

Source: Annex 2 to doc RA(08)058 rev 1

	<b>Licence exempt</b>	<b>Light licensing</b>	<b>Traditional licensing</b>	<b>Not implemented/authorised</b>
Amateur stations	3	7	12	
CB Radio (PR 27), (PMR27) (equipment)	25	3	7	
DVB-T, DVB-H Repeaters	0	2	14	2
EPIRBs (COSPAS-SARSAT) radio beacons	5	9	8	
FM (road tunnels, repeaters)	2	2	8	5
FS links 64-66 GHz (High Density Fixed Ra. Systems)	1	2	9	4
FWA/BWA 3.5 GHz +(CS)	3	4	18	1
FWA/BWA 5.8 GHz	5	2	2	10
GPR/WPR	3	3	4	11
GSM onboard aircraft base stations	5	2	5	8
GSM / UMTS Repeaters (base stations)	3	4	17	2
Maritime VHF	2**	8	14**	
Non-specific SRD's			1	
On-site paging			1	
Radio microphones (Broadcasting band) +(prof)	10	3	9	
RNSS (GPS) Repeaters	1			1
SAP/SAB and ENG(SNG)/OB (mobile audio / video link, Cordless camera)***	11	11	33	1
Wireless local information systems in 70 MHz		1		
VSAT 11 GHz	10	1	9	1
VSAT 14 GHz (HEST)	15	2	10	

**Table 5**

\* **Note:** Figures in cells correspond to total numbers of CEPT countries (out of those 27 responded to the questionnaire) indicated that they implement (or plan to implement) a particular licensing regime for an application.

\*\* For Denmark: Licence-exempt on board ships. Traditional licensing on land.

\*\*\* In case of SAP/SAB, several types of SAP/SAB applications were counted for some countries.

**ANNEX 4: SUMMARY OF COMMENTS RELATED TO BENEFITS/DRAWBACKS OF LIGHT LICENSING REGIME, AS PROVIDED IN THE RESPONSES TO THE QUESTIONNAIRE ON THE IMPLEMENTATION OF LIGHT LICENSING REGIMES**

Source: Annex 3 to doc RA(08)058 rev 1

<b>Benefits</b>		<b>Drawbacks</b>	
<b>Interference management and enforcement</b>	<b>Costs for administrations</b>	<b>Interference management and enforcement</b>	<b>Costs for administrations</b>
<ul style="list-style-type: none"> <li>- fast, efficient; gives overview of the market;</li> <li>- simplification of procedures;</li> <li>- general frequency assignment;</li> <li>- some level of guarantee for operators and users (BWA);</li> <li>- permits to keep track of equipment, especially important for maritime mobile equipment;</li> <li>- helps to protect sensitive services (radars, radio astronomy) in adjacent bands;</li> <li>- helps to ensure a minimum level of skill in maritime safety related applications (COSPAS-SARSAT);</li> <li>- helps to control interference in border areas;</li> <li>- the growth of deployment is much higher than in case of individual licencing (Wireless local information systems in the 70 MHz band);</li> <li>- interference is managed by operators (GSM/UMTS repeaters, GPR/WPR);</li> <li>- registration of SNG systems can be used to investigate interference cases to satellite systems</li> </ul>	<ul style="list-style-type: none"> <li>- revenue from fees;</li> <li>- registration service is in place;</li> <li>- costs and efforts are lower than in traditional licencing;</li> <li>- less administrative work, benefits also for users;</li> <li>- prevents “paper“ FWA/BWA stations</li> </ul>	<ul style="list-style-type: none"> <li>- single users/locations are not always known;</li> <li>- no protection for users;</li> <li>- for FWA/BWA frequency planning and border coordination is required;</li> <li>- interference probability with other services (especially for SNG &amp; VSATs)</li> <li>- difficult to identify a source in case of interference to the licensed services (GPR/WPR)</li> </ul>	<ul style="list-style-type: none"> <li>- no fees collected;</li> <li>- big volume of work for small NRAs</li> <li>- expenses for registration</li> <li>- regular monitoring is needed</li> </ul>

**Table 6**

**\*Note:** in some cases comments on benefits/drawbacks are general; in others they are application/service specific.

**ANNEX 5: OVERVIEWS OF RESPONSES FROM INDIVIDUAL ADMINISTRATION PER APPLICATION**

*Note: the description of the licensing regimes given in the attached files is based on the responses to the questionnaire issued in February 2008. It is given for information purpose only. Please contact national administrations for further information.*



Responses from the  
administrations