



## Position paper for the EU Spectrum Summit Brussels, Belgium, 22-23 March 2010

Open Spectrum Alliance (OSA)  
<http://www.openspectrum.eu/>

### Executive Summary

- The EC's commitment to "applying the least burdensome regulatory access to spectrum", and its preference for general authorizations rather than exclusive rights, exactly matches OSA's thinking.
- OSA supports the recommendation of ECC Report 132 (June 2009) about avoiding the terms *licensed* and *license-exempt* in favour of *individual* and *general authorisations*.
- To prevent conflict with the vocabulary still used in the ITU, Europe should try to update Article 18 of the International Radio Regulations which says "no transmitting station may be established or operated by a private person or by any enterprise *without a licence...*"
- We are not convinced of the need -- at this stage -- to have all CEPT members convey exactly the same rights when they grant a "light license" or "register" an authorised user, etc. It is still early enough in the development of new authorisation modes to allow for diversity and experimentation.
- We are also not convinced of the need -- at this stage -- to have each Member State use the same criteria to decide whether a specific radio service should be subject to general or individual authorisation. However, services successfully de-licensed by one or more Member States could be proposed for de-licensing by *all* Member States.
- Because the task is especially difficult, CEPT should be given a mandate to help Member States' regulatory agencies to anticipate the risk of congestion in license-exempt spectrum, using methods respectful of citizens' privacy and consistent across the Union to maintain harmonisation.
- With the Commission still not sure if it will require the 800 MHz band to be cleared of broadcasting stations, hopes for a "digital dividend" now rest on the availability of "white spaces". But the project team drafting rules for "white space" devices (WSDs) was told that their priority should be protecting incumbent services. So geo-location database lookup is likely to emerge as the preferred technique for selecting WSD operating frequencies. This technique has potentially valuable uses beyond WSDs -- enabling higher power output for 2.4 and 5 GHz band devices in rural areas, for example. Before regulators finish writing rules for geo-database lookup systems for

WSDs, OSA recommend a study of the database's impact on user privacy, as well as their potential use by devices other than WSDs.

- OSA call for a debate similar to the one launched in the US about whether TV broadcasters should give back some or all of the UHF frequencies now assigned to them for reassignment to more productive uses.
- OSA also call for the early development of clear rules at the EU level for using state aid to help broadcasters migrate to Single Frequency Networks.
- It is time to ask if the best use of mediumwave (526.5 kHz - 1606.5 kHz) and longwave (148.5 - 283.5 kHz) is still licensed narrowband audio broadcasting? We suggest that this part of the spectrum be opened to experimenters, either Amateur Radio Operators or hobbyists operating under a general authorisation regime, with the lowest frequencies reserved for military communication and scientific research.
- Similarly, developing a new vision for the future of the VHF band (30 - 300 MHz) should be on the Commission's agenda.
- A study might be commissioned to explore principles for blending various forms of efficiency so as to maximise the overall net benefit to society.
- Another study might be commissioned to identify situations in which EU-level harmonisation in spectrum policy has proved to be inefficient and expensive (*e.g.*, denying citizens access to broadband services implemented on "white space" frequencies, in order to protect a much smaller number of television viewers in other countries). The point is not to discredit harmonisation but to achieve a better understanding of the best way to allot regulatory responsibilities from the regional to the national administrative levels. Explicit reference to the continuing need to rationalise responsibilities for spectrum management across the European Union should be on the long-term agenda, and further studies of the principles that should be used to structure and allot these responsibilities are appropriate.
- The ITU's definition of "radio" has expanded repeatedly during the past decade, and WRC-12 will consider procedures for regulating free-space optical frequencies over 3000 GHz – the domain of visible light. We ask Europe's representatives to oppose the expansion of ITU and national regulatory authority jurisdiction to visible light and encourage a rollback of the upper frequency limit to 1000 or 3000 GHz.

## Who We Are

The Open Spectrum Alliance (<http://www.openspectrum.eu>) was founded in May 2009 in Vienna, Austria, by a group of individuals engaged in radio spectrum policy reform efforts and in the creation of community networks. As declared in our mission statement, OSA's aim is to "unlock the potential benefits of bandwidth for all... by promoting innovative public policies." A current list of Alliance members and affiliates is found at the end of this document.

## Open Spectrum: A Preamble

In the early 1960s, Paul Baran developed the notion of "packet switching"-- a highly efficient and flexible way to optimise data throughput between any nodes in a network. A remarkable feature of packet switching is that it enables networks to resist disruption without any control centre.

The Internet is the best known implementation of packet switching. Everyone recognizes that its efficiency, flexibility, resilience and lack of need for centralized control are transforming

communications -- and the way business is conducted, entertainment is delivered, knowledge is shared, etc.

Less known than his role in packet switching and the origins of the Internet is the fact that Paul Baran was among the first to see the logic of “open spectrum”. His research had shown that the same principles which make packet switching resilient and efficient apply whether the network links are wired or wireless. That led him to consider the possibility of regulating radio under Internet-like rules. Might Internet-like benefits come from decontrolling radio communication? Concluding that this would indeed be practical, he first presented his argument for “open spectrum” in 1995, at the Marconi Centennial in Bologna, Italy. His speech was so prescient that it is worth quoting at length:

“It is my belief that public policy might be better served if we moved to an environment of near zero regulation. In such an environment anyone and everyone would be allowed to use the spectrum, without the barriers to entry that keep out the true innovators. Of course, there will be some minimal rules necessary, such as maximum allowable transmitted power and power densities. The micro-managed regulatory approach of today, such as who can use any single frequency is neither necessary nor desirable...

“Would this *laissez faire* form of regulation lead to chaos? Possibly, but most likely not. Consider the many millions of cordless telephones, burglar alarms, wireless house controllers and other appliances now operating within a minuscule portion of the spectrum and with limited interference to one another. These early units are very low power ‘dumb devices’ compared to equipment being developed, able to change their frequencies and minimize radiated power to better avoid interference to themselves and to others. Of course that means that there will have to be enough frequency spectrum set aside to do so. But, once having done so, we would have created a communications environment able to handle orders of magnitude more communications than today...

“The Internet provides an instructive model for the future of telecommunications regulations... In the Internet, there is no central node, and only a minimal centralized management structure, limited to a few housekeeping functions... This lack of a limiting centralized structure has permitted the Internet to be responsive to a very large unregulated constituency and allowing explosive growth and with increasing usefulness to its users...

“Will [this approach] work for regulating the radio spectrum? ...Which frequency to use and when, or which form of modulation to use would be left to each user... Inexpensive microcontrollers would be used that first listen and then automatically choose preferred frequencies to avoid other signals in the band. It is really a matter of being a good neighbor. The smart transmitter reduces its power level to that needed to produce an error free signal and no more. A pristine pure slice of spectrum to have error-free performance is not required when using digital modulation. Digital logic on a chip implements error correcting codes to convert a small amount of redundancy in transmission enabling even highly corrupted signals to be cleaned up to emerge error free...”<sup>1</sup>

These insights -- supplemented with ideas from law and economics, and reinforced by trends in the evolution of radio technology -- form the core of “open spectrum” today. The mostly positive experience of regulators with bands requiring only general authorisations for access, and the marketplace’s extraordinarily fast and creative response to opportunities to develop new wireless applications and devices, shows that regulating radio under Internet-like rules can indeed produce Internet-like benefits, just as Baran thought.

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<sup>1</sup> “Is the UHF Frequency Shortage a Self Made Problem?” by Paul Baran, Marconi Centennial Symposium, Bologna, Italy (23 June 1995 - available online at <http://wireless.oldcolo.com/course/baran2.txt>. In this speech, Baran also proposed shifting all TV broadcasting from the UHF band to cable so the TV frequencies could all be redeployed under technology- and service-neutral rules.

## Response to EU Spectrum Summit Discussion Paper

We commend the Commission for organising this timely Summit. Europe's leadership in the reinvention of spectrum policy has grown steadily during the past 20 years and recent adjustments in the institutional framework (the creation of BEREC, a larger role for the European Parliament) bode well for the future.

The Discussion Paper released before the Summit identified "four topics on which discussion and guidance is required" now. Here is OSA's initial written response, structured according to the headers used in the Discussion Paper. Our members attending the Summit will be glad to address these and other relevant issues in person.

### 1. Flexible approach to the Authorisation of Spectrum Use

The EC's commitment to "applying the least burdensome regulatory access to spectrum" and preference "for general authorisations (or so-called 'license-exempt') rather than individual exclusive rights" whenever the risk of harmful interference so allows, matches OSA's thinking exactly. When talking with legislators and regulators in other regions, we constantly cite these European policy positions as the best model. So we were pleased last year when the Parliament and Council both affirmed the need to continue facilitating the implementation of these policies.

We were also pleased to see the Discussion Paper begin to apply the recommendation of ECC Report 132 ("Light Licensing, Licence-Exempt and Commons", June 2009)<sup>2</sup> -- deprecating the terms *licensed* and *unlicensed* and speaking instead of *general* and *individual authorisation*. We believe the newer terminology is superior: more direct and at the same time more accurate and flexible: licensing is one kind of authorization, but there are others. Consistent reference in future to *authorisation* rather than *licensing* in Europe's official documentation concerning radio would do much to discourage the confusing and hypocritical use of "class licenses" to approximate "license exemption" and similar abuses of language.

But to avoid conflict with the older vocabulary still used in the ITU, it would be desirable for Europe to work for the updating of Article 18 of the International Radio Regulations, which still stipulates that "*no transmitting station may be established or operated by a private person or by any enterprise without a licence...*" (we reiterate this below at **3. Coordination of EU interests in international negotiations**).

On the other hand, we are still not convinced of the need -- at this stage -- to have all CEPT members convey exactly the same rights when they grant a "light license", "register" an authorised user, etc. It is still early enough in the development of new authorisation modes to allow for diversity and experimentation at the national level.

We are also not convinced of the need -- at this stage -- to have each Member State use the same criteria to decide whether a specific radio service should be subject to general or individual authorisation. Some states have moved quicker than others to de-license certain aeronautical or maritime mobile radio communication systems; certain types of fixed microwave links; some classes of the Amateur Radio Service; Citizens Band; etc. But *all* such de-licensing decisions would have been blocked or at least delayed if all Member States had been obliged to negotiate a Union-wide or CEPT-wide agreement on authorization criteria and act only in conformance to that agreement. Even now, not all States seem to

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<sup>2</sup> <http://www.erodocdb.dk/Docs/doc98/official/pdf/ECCREP132.PDF>

agree with the early de-licensors or are ready to follow them. Additional work is clearly needed to form a viable consensus and it still might not even be possible.

However, it might not be necessary, either. A practical alternative would be to construct a matrix showing which States de-licensed which services in which year and how many license-holders were affected. This data should be simple enough to convert into a quantitative estimate of acceptance for de-licensing those particular services. Ranking the acceptance by service could then be used to determine the order in which those same services are considered for de-licensing by all Member States. Going through this exercise might increase insight into the basis for the acceptability of various services' de-licensing so that, *later in the strategic planning cycle*, the general criteria mentioned on page 3 of the Spectrum Summit's Discussion Paper might become extractable.

## Early Warning of Congestion in License-Exempt Bands

One more topic we would like to see on the list of areas proposed for examination to identify appropriate means for approximation, coordination or harmonisation at the EU level is *the development of reliable methods and procedures for gaining early warnings of an imminent risk of congestion in specific license-exempt bands*.

Since most of the occupants of license-exempt bands are short-range devices, congestion is a highly localised phenomenon, hard to detect with the monitoring systems normally used by regulators and even harder to predict. Yet prediction is necessary, given the high value to society of the services now deployed in license-exempt spectrum and the long lead-times needed for spectrum refarming and band re-allocation. Currently used monitoring methods are costly, labour intensive and frankly inadequate.

A mandate to CEPT to develop recommendations and protocols helping the Member States' regulatory agencies to generate early warnings and correctly anticipate the risk of near-future congestion in license-exempt spectrum, using methods respectful of citizens' privacy and consistent across the Union to maintain harmonisation -- such a mandate would be highly desirable.

## 2. Maximising potential benefits of the Digital Dividend

European institutions seem to have been surprised by the failure of the 2006 Regional Radio Conference (RRC-06) to completely clear any sub-band within 470-854 MHz for nonbroadcast uses, even though those involved in RRC-06 had said it was not their aim to do that. Even at this late date, the Summit's Discussion Paper admits it has not been decided to make "the opening of the 800 MHz band mandatory..."

Without an agreement on or deadline for spectrum clearance, a great deal of hope now rests on the availability of "white spaces" (interleaved spectrum) -- even though the mandate given to the ECC's project team made protecting incumbent services the only priority in formulating rules for spectrum access by cognitive radios.<sup>3</sup> As a result, it appears that

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<sup>3</sup> SE43 is the project team tasked by the ECC to develop harmonised rules for the use of TV "white spaces" by cognitive radio systems. Its main term of reference is to "define technical and operational requirements for the operation of cognitive radio systems in the white spaces of the UHF broadcasting band (470-790 MHz) to ensure the protection of incumbent radio services/systems and investigate the consequential amount of spectrum potentially available as 'white space' ..." -- see <http://www.cept.org/02203784-16E4-4E51-82C0-F5CEA3AD9D08.W5Doc?frames=no&#se43> It would have been much

incumbent services - particularly TV broadcasters, but even unlicensed wireless microphones -- will be amply protected, even amply *over*protected, thus making large geographic areas and most UHF frequencies unexploitable by “white space” devices (WSDs). As a result, the potential market for WSDs could be so limited that European manufacturers won't see any profit potential in serving it.

## Sensing vs. Geo-Location Database Lookup

Two main options have been identified for managing the frequency use of WSDs operating under a general authorisation regime: *sensing* (detecting signals in the local radio spectrum in order to avoid causing interference to them) and/or *database lookup* (checking a database which contains the geographic locations, priority rights, and other information about known users of the band). These two options are usually considered mutual substitutes, but many people seem to have less confidence in sensing, mainly because of the so-called “hidden node” problem, in which shadowing by obstacles in the environment (buildings, hills, etc.) reduce the detectability of a nearby transmitter so that a WSD mistakenly thinks a channel is available when it is not (“false negative”). Because of the “hidden node” problem, discussions within CEPT have been tending toward severe, even unrealistic sensitivity requirements for the sensing option, combined with uncritical acceptance of database look-up's superiority. That suggests database lookup will emerge as the preferred technique.

Without commenting on their respective reliabilities, we would point out that the political implications of these two options are very different. Sensing is a big step toward device self-regulation, and thus promotes liberalisation. Database lookup, on the other hand, is an extension of control into the field and into real-time behaviors. If the database simply provided location information enabling WSDs to decide what frequencies can be used – that is, if it supported their “cognitive” function -- it would simply be useful. But as presently described in SE43's draft report, the database would have to know where every active WSD is located, and WSDs would not have any opportunity to exercise independent judgment about usable frequencies. Imagine if the national regulator could reach in to your WiFi network and say, “No, you can't use channels 1 to 8 or number 10. At your address, you can only use channel 9.” Is any flexibility gained from license-exemption under such conditions?

On the other hand, potential advantages of geo-database lookup are profound. Suggestions have already been made to extend the service beyond WSDs to help RFID readers coexist with railway communication systems like E-GSM-R.<sup>4</sup> Some researchers argue that geolocation databases can provide many useful services beyond interference prevention: maintaining an archive of sensing data from multiple WSDs, helping them build up maps of “radio shadows”, providing downloadable software, etc.<sup>5</sup>

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better for WSD developers if SE43's mandate had been “to develop the *least restrictive technical conditions*”, as stated in SE42's mandate (SE42 is looking at harmonised technical conditions for cleared spectrum).

<sup>4</sup> “Terms of Reference for Specialist Task Force STF 397 (ERM/TG34) -- “Methods, parameters and test procedures for cognitive interference mitigation for use by UHF RFID using Detect-And-Avoid (DAA) or other similar techniques”, by Thomas J. Weber -- [http://portal.etsi.org/stfs/ToR/ToR397v06/ERM\\_TG34\\_RFID\\_Detect-And-Avoid.doc](http://portal.etsi.org/stfs/ToR/ToR397v06/ERM_TG34_RFID_Detect-And-Avoid.doc).

<sup>5</sup> See, for example, “Radio Environment Map Enabled Situation-Aware Cognitive Radio Learning Algorithms”, by Youping Zhao, Joseph Gaeddert, Kyung K. Bae, and Jeffery H. Reed, paper presented at the SDR-06 Technical Conference and Product Exposition, Orlando, Florida USA, 13-17 November 2006 - [http://www.sdrforum.org/pages/sdr06/sdr06\\_papers/3.1/3.1-3.pdf](http://www.sdrforum.org/pages/sdr06/sdr06_papers/3.1/3.1-3.pdf)

Perhaps most usefully, geo-location lookup could be used to allow higher power limits for license-exempt broadband access networks in rural areas. Right now regulators must set power limits for bands like 2.4 and 5 GHz on a nationwide basis while planning for the worst-case scenario – *i.e.*, crowded urban areas. This is because they cannot control where individual devices will be deployed. That unnecessarily restricts the power of systems in low-density areas where congestion is not a problem. If regulators could set different power limits for urban and rural zones, trusting the geo-database to control the output power since it knows what zone each node is in -- spectrum could be used far more intensively, with no additional risk of interference and with much lower capital costs.

Therefore, before national regulators finish writing rules that require geo-database lookup systems for WSDs, OSA recommend a study of the potential impairment of user privacy rights as well as the potential benefits of geo-location lookup for devices operating under a general authorization regime other than WSDs. It is important to intervene early because the rules for creating and operating geo-database lookup systems are being drafted solely to prevent interference by WSDs, even though it is already clear that such systems could have more diverse and important uses.

## **Best Future Use of UHF**

Across the Atlantic, the US Federal Communication Commission has sparked a vigorous public debate on the future use of UHF – should digital television or broadband Internet get most of the frequencies? *Incumbency has not been allowed to pre-empt the consideration of new options or to pre-determine the balance between these alternatives, as has been the case in Europe.* In the US it is fully appreciated that this is a policy choice of the utmost importance, which must be based on a fair weighing of the social and economic costs and benefits. Europe's verbal commitment to "broadband for all" is getting louder without an admission that fulfilling such a promise requires either much more efficient use of resources (spectrum, for example) or the redeployment of resources currently used by less productive media.

OSA call for a debate similar to the one launched in the US about whether TV broadcasters should give back some or all of the UHF frequencies now assigned to them for reassignment to more productive uses.

## **State Aid to Help Broadcasters Migrate to SFNs**

Along these lines, we call for the early development of clear rules at the EU level for using state aid to help broadcasters migrate to Single Frequency Networks.

At the same time, the Commission and Parliament must recognise that television is becoming less clearly defined as a medium. Not only is it splitting into different screen resolutions (standard and high-definition), dimensionalities (2D and 3D), delivery modes (over-the-air, cable, satellite, IP-broadband, free-to-air, subscription, on-demand, etc.), and structured according to many different technical standards, but it is merging into services that feed displays in public and private transport vehicles, subway stations, airports, shopping centres and store fronts. The home television screen has separated from its tuner and now shows family photos, rented movies, Internet content and "screen saver" images. Traditional television is simply the non-interactive, not-on-demand subset of a much larger and very rapidly growing family of video channels. In future there will be less and less reason to treat it as a privileged medium subject to special rules and requirements and dedicated regulatory treatment.

## Don't Forget Longwave, Mediumwave and VHF

It is also time to ask if the best use of mediumwave (526.5 kHz - 1606.5 kHz) and longwave (148.5 - 283.5 kHz) is still licensed narrowband audio broadcasting? Audiences for stations in these bands are getting too small to measure, and will shrink faster as more places are blanketed by RF noise emitted by powerlines carrying digital data. Giving CEPT a mandate to explore options for the future of all bands below 1606.5 kHz would be appropriate. (We suggest that this part of the spectrum be opened to experimenters, either Amateur Radio Operators or hobbyists operating under a general authorisation regime, with the lowest frequencies reserved for military communication and scientific research.)

Similarly, developing a new vision for the future of the VHF band (30 - 300 MHz) should be on the Commission's agenda. This often overlooked part of the spectrum has very interesting -- if not always predictable -- long range propagation characteristics making it especially appropriate for transnational services and regionwide coordination.

### 2. (ii) Minimum objectives for efficient use of spectrum in the digital dividend

Efficient use of spectrum is important, obviously, but there are several ways to define efficiency which lead to different optimisations. Some common definitions of efficiency include

- **Functional efficiency** -- the extent to which the use of radio spectrum meets a user's specific needs, enabling a task to be carried out more effectively.
- **Economic efficiency** -- creating the most value with the least (or least costly) inputs.
- **Spectral efficiency** -- using the least amount of spectrum to transmit the greatest amount of information.

Early in its multiyear workplan, a study might be commissioned to explore principles for blending these efficiencies – and others – so as to maximise the overall net benefit to society.

As noted above, the project team developing rules for WSDs is well on its way to ensuring the efficient delivery of wireless audio from portable UHF microphones to the associated base stations by denying spectrum access rights to large numbers of potential broadband users in the surrounding neighborhood. Furthermore, in the interest of harmonisation, they may unduly limit “white space” based broadband access networks in all of the Member States because a majority of viewers in 4 Member States still depend on UHF for their access to television.<sup>6</sup> In this instance, harmonization is both unfair and inefficient.

Therefore, a study might be commissioned to identify situations in which EU-level harmonisation in spectrum policy proved to be especially inefficient and expensive, in terms of social benefits forgone (*e.g.*, denying citizens access to broadband services implemented on

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<sup>6</sup> According to *OECD Communications Outlook 2009*, only about 1 percent of households in Belgium, Luxembourg and the Netherlands still depend on over-the-air UHF transmissions for access to television. The figure is about 5% for Germany -- <http://browse.oecdbookshop.org/oecd/pdfs/browseit/9309031E.PDF> But those countries cannot adopt more relaxed rules for WSDs, despite the much lower risk of interference to DTV viewers there.

"white space" frequencies, in order to protect a much smaller number of television viewers in other countries). The point is not to discredit harmonisation but to achieve a better understanding of the best way to allot regulatory responsibilities from the regional to the national -- and potentially to the local or municipal -- administrative levels.

## Rationalising the Mesh of European Spectrum Bodies

A great deal of apprehension and controversy was provoked in 2006 when InfoSoc and Media Commissioner Reding proposed the creation of an EU-wide spectrum agency, as that would entail transferring regulatory responsibilities from the national to the regional level. Hardly anyone denied that this would be more efficient -- it would also be more efficient if everyone in the Union spoke one language! But the political costs of the proposal proved unsustainable. The organisation created instead -- BEREC -- is quite different in character, suggesting that the work of consolidating and rationalising the mesh of European institutions with overlapping members, identities, responsibilities and jurisdictions is far from over.

Therefore, explicit reference to the continuing need to rationalise responsibilities for spectrum management across the European Union should be on the long-term agenda, and further studies of the principles which should be used to structure and allot these responsibilities are appropriate.

### 3. Coordination of EU interests in international negotiations

Earlier we commended the authors of the Spectrum Summit's Discussion Paper for trying to implement the recommendation of ECC Report 132 ("Light Licensing, Licence-Exempt and Commons") by referring to general and individual authorisations rather than to licensed and license-exempt. To avoid conflict with the International Telecommunication Union's terminology it would be desirable for Europe to work for updating of Article 18 of the International Radio Regulations, which still stipulates that "*no transmitting station may be established or operated by a private person or by any enterprise without a licence...*" Changing the phrase "a licence" to "authorization" is one obvious solution, but modifying the rest of the sentence -- and the rest of Article 18 -- must be carefully considered since so many national laws depend on the exact formulation of this part of the treaty. Nevertheless, it is very much in Europe's interest to have its policy on authorisation become the global norm for regulators.

While speaking of definitions, we bring up another potentially controversial issue. In 2000 the World Radiocommunication Conference (WRC) changed the definition of "radio" used by the ITU, raising the upper frequency limit from 400 GHz to 1000 GHz.<sup>7</sup> The next WRC in 2003 raised it again, to 3000 GHz.<sup>8</sup> And in November 2007, the latest WRC decided that the ITU should start exploring the need for procedures to regulate "free-space" optical frequencies above 3000 GHz.<sup>9</sup>

<sup>7</sup> "275+ GHz", by Hans Blondeel Timmerman, International Amateur Radio Union -- [http://www.iaru-r1.org/index.php?option=com\\_content&view=article&id=205&Itemid=159](http://www.iaru-r1.org/index.php?option=com_content&view=article&id=205&Itemid=159)

<sup>8</sup> Article 1 of the International Radio Regulations' 2004 revision defined "radio waves" as "Electromagnetic waves of frequencies arbitrarily lower than 3 000 GHz, propagated in space without artificial guide." -- <http://life.itu.int/radioclub/rr/art01.htm>

<sup>9</sup> In Resolution 118, the ITU Plenipotentiary Conference decided in 2002 -- to extend the ITU's administrative mandate into the realm of visible light by allowing future WRCs to include in their agendas items dealing with the regulation of frequencies above 3000 GHz. WRC-07's resolution on the regulation of optical frequencies is an early and direct result of that decision. See "Resolution

Frequent raising of the upper limit in “radio’s” definition is a sign of rapid progress in developing means for exploiting spectrum regions which had previously been inaccessible or unusable. That holds the promise of meeting some of our burgeoning demand for bandwidth which is proving increasingly hard to satisfy in lower bands. But we need to start asking: *is there no limit to the jurisdictional claims of national governments and the ITU with regard to electromagnetism?* When the ITU decides that the frequencies of visible light are subject to regulation, will we need government authorisation to light a candle? Will lasers be brought within the scope of the R&TTE directive?

These are farfetched considerations, admittedly, but we are distressed that so little public debate has accompanied these moves to expand the legal definition of radio -- and thus governmental authority -- far beyond what most people consider as “radio”.

While we support the use of “individual authorisation” in place of the word “license”, we must note the persisting assumption that *all private uses of radio must be government authorized*. We have no tradition of requiring government authorisation for people who wish to generate, transmit or detect light -- nor is that desirable. And yet we are already on a “slippery slope” toward that end -- unless Europe takes a principled stand against that in the ITU. We would even encourage a rollback of ITU and national regulatory authority to 1000 or 3000 GHz.

Procedures for regulating optical frequencies above 3000 GHz in free space will be considered and possibly recommended at WRC-12 under Agenda Item 1.6. We urge Europe’s representatives at that event -- and those involved in preparatory work conducted by the ITU Study Groups in the years leading up to that event -- *to leave light unregulated*.

## THE OPEN SPECTRUM ALLIANCE

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