



# International Amateur Radio Union Region 1

Europe, Middle East, Africa and Northern Asia

Founded 1950

## Committee C4 (HF Matters) Interim Meeting 24-25 February 2007 InterCity Hotel, Vienna

<b>SUBJECT</b>	<b>Preserving the HF Noise Floor</b>		
<b>Society</b>	<b>RSGB</b>	<b>Country:</b>	<b>U.K.</b>
<b>Committee:</b>	<b>C4</b>	<b>Paper number:</b>	<b>VIE07/C4/07</b>
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European Commissioner for Information Society and Media, Vivienne Redings, delivered the following proposals at the European Leadership Forum in London on 22<sup>nd</sup> November 2006:

1. Encourage licence-exempt use of spectrum to make room for innovative services with fewer interference problems;
2. Technology and service neutrality should be the basis of all new spectrum decisions: this means that right holders will be free to deploy any technology or service they wish;
3. Secondary trading should be progressively introduced in a range of agreed bands in all Member States.

These fine words are not new to us within the UK as our telecoms regulator, Ofcom, broadly espouses these elements in its own vision for spectrum management. However, this is not so in many other CEPT countries and wider afield within IARU Region 1.

Whilst we need all to understand and respect the benefits to our standard of living gained from services that depend on the radio spectrum, we ought to take a more proactive role in firstly articulating our vast experience in managing multi-mode, ad-hoc networks, and secondly, in protecting the radio spectrum for the Amateur service through attention to preservation of its noise floor. This is necessary to help balance the economic/political drive with knowledge from those within our Amateur community with the necessary engineering and scientific knowledge.

As an example of how the above vision might impact on the use of the radio spectrum, some recent amendments to standards, implemented on 1<sup>st</sup> January 2007 within CEPT countries, make licence-exempt access to large parts of the radio spectrum both easier and at higher "powers". This potentially could have an undesirable effect on the noise floor. These changes in part became introduced on account of national administrations not having received any complaints over a period when these new levels may have been allowed to operate.

### Discussion

The immediate threats to the HF noise floor are numerous. Internet access technologies such as PLT, and its latest incarnation - the digital distribution over household mains of multimedia – are already with us in varying degrees. Older technologies such as LORAN-C, with its poor sidelobe suppression specification, agreed at a time when spectrum harmonisation was perhaps less of an issue than it is today, has already wiped out the use of 136kHz in parts of the UK. The spectrum issues related to Euroloop is also potentially a problem for those living relatively close to a railway line in parts of Europe and, if the system is deployed wider than envisaged, could even cause the noise floor to increase over large parts of Region 1 through the combination of ionospheric propagation and signal aggregation.

In the last year ETSI has updated its standards concerning HF radio systems that relate to devices that operate over short ranges [1, 2], and through CEPT implementation has been mandated in member countries including the UK. The whole subject is technically challenging, large in scope given the range of different applications, and complex on account of the policy formulation and decision-making working group and committee structure. A recent consultative document in the UK details the levels and conditions for licence exempt inductive SRDs (IR2030 specification, table 2.12 [3]). Of particular concern are decisions to allow a higher level of H field over some HF sub-bands and the removal of a restriction that external aerials had to be of the form of a closed loop. If we take the Euroloop example, the aerial is a length of leaky coax and can be up to 1km in length – it needs to be this long on account of the train's speed and the time to transmit the data. However, there is a potential for this non-loop H-field radiating element to radiate significant energy further than is intended for the SRD device.

Our limited ability to track and influence changes in this general area of spectrum management needs to be addressed. It will become more important that we take more action as the change to a more liberal attitude on spectrum management develops. Apart from continuing to represent the hobby at bodies such as CEPT, ETSI, etc, we need more hard data with which to challenge the steady march of progress, which if not otherwise checked will gradually erode our hobby by the very nature of allowing the noise floor across the radio spectrum to rise. The spectrum is not as some political leaders like to think a limitless resource; though it perhaps is so if you gradually work at higher energy levels. Increasing entropy is perhaps the single most characteristic aspect of human activity on natural phenomena!

**Recommendation** that Conference agrees that:

a) More effort should to be made to find and support volunteers who can address the general trend of liberalisation in spectrum management through:

1. Technically competent input and advice on HF radio propagation to professional groups who are sometime only versed in short-range EMC matters;
2. Setting up of a scientifically valid long-term assessment of the noise floor on Amateur Bands below 30MHz with the intent to raise complaint over general loss of spectrum effectiveness for the Amateur service,

and,

b) that the HF Committee suggest to the other spectrum committees that a similar proposal and recommendation be considered for their spectrum areas.

## References

[1] Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9kHz to 25MHz and inductive loop systems in the frequency range 9kHz to 20MHz; Part 1: Technical Characteristics and test methods.

[2] Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9kHz to 25MHz and inductive loop systems in the frequency range 9kHz to 20MHz; Part 2: Harmonisation EN under article 3.2 of the R&TTE Directive.

[3] IR2030 page 48-89 of Ofcom's consultative document Wireless Telegraphy Licence Exemption, <http://www.ofcom.org.uk/consult/condocs/wtexemption/exemption.pdf>