



# International Amateur Radio Union Region 1

## Interim Meeting – Vienna Austria

### 27-28 April 2019



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**Subject:** EMC Status Report

**Committee:** C7

#### 1 The E.M.C. Purpose: activity definition:

*"The E.M.C: A scientific, ecological and community approach with the aim of maintaining the use of the radio bands in good condition whereas the electromagnetic spectrum is subjected to multiple pollutants, whose origins are due to the human activities".*

A \_ it is an ecological approach because E.M.C. fights against the radio frequency spectrum pollution: studies, measurements, and processes aim to reduce radio noise levels. The goal is to neutralize all types of disruptions. It permits keeping the radio bands clean, to satisfy all users as much as possible. One group of users is the "Amateurs service". Let's remember that generally speaking this service is supported by National and International Administrations: ITU, for instance, could be interested in the results for "the noise campaign".

B\_ The approach is scientific because it remains deeply committed to the known principles of physics. For topics under exploration, the scientific research approach remains: hypothesis / validation / confirmation.

This guarantees the durability and sincerity of the C7 activity.

C\_ The approach is community-based: IARU R1 C7 group allows sharing of analysis, reports and experience in order to solve the problems in the frame of electromagnetic disturbances.

This takes place during the teleconferences ("go to meeting" application)

#### 2 Main topics in progress reported by REF:

1\_ The C.P.L.: Line Carrier Currents: For many years, the C7 group paid a lot of attention to this topic: it was necessary to design efficient filters, but now the current deployment of optic fiber links for internet in France eliminates a large part of the CPL concerns.

REF C7 considers the situation as a good one for the future.

Here we should mention that the French smart meter "LINKY", which will not pass data through the fiber but through the power lines of the grid, is not a matter of concern: Radio radiation measurements in both anechoic chamber (laboratory measurements) and on site are in accordance with the expected specifications.

Unfortunately, it was not possible to get the specifications and measurements reports for the LINKY susceptibility behavior.

#### 2 Remote electric vehicle chargers:

The high power (~ 22kW) chargers for electric vehicles with a tuned frequency in the range of 79-90 kHz need to be taken seriously:

In fact, the French official service: "ANFR" <sup>1</sup> involved the REF for a common understanding of this topic:

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<sup>1</sup> ANFR : "Agence Nationale des Fréquences"

In November 2018, "ANFR" asked, from the REF point of view, does this new application need a modification of the Radio-Rules (R-R)?

The REF answered that no modification is necessary for the R-R, but this application has tremendous consequences due to the high level of harmonics spreading to HF/LF radio spectrum.

Even in the case where no drastic normalization for spurious emission and noise limits is needed, a lot of services could be seriously affected, including not only amateur, but also military, broadcast, aviation, and marine.

In addition, E.M.F. consideration has to be taken into account.

### 3 High power transfer between the British Isles and the mainland:

For renewable energy applications, the predicted exchanged power is rated at 1000 megawatts. New submarine cables are already installed in the Channel, powered by direct current (due to parasitic capacitance, and slightly different frequency tolerances) from rectifiers and inverters on the coastal power plants.

Radio disturbances could occur in the area from these high power converters. Nevertheless, no report of perturbations has been detected by REF at this date.

### 4 Monitoring the noise level on our frequency bands:

A data collection and processing system will be developed in the frame of IARU. Input data will be provided by members. The noise measurement campaign will include the following points:

- Collect information from pre-existing draft measures
  - Understand and examine the different methods used
  - Find ways to align the methodology in order to compare results
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- Cover the necessary financial support; it is being planned but we do not have details yet.

NOTA: the database will be very reliable, thus, the process will be fully validated, and tested before application.

For REF C7, it seems more realistic to start with the VHF and UHF bands, where the distinction between a noise signal and the signal from a radio station (unexpected or not) is easier than the HF bands.

### 5 Wind turbines:

REF C7 noted no specific claims for wind turbines, but C7 requested French REF members be aware of this topic: France is building more and more wind turbines.

### 6 Photovoltaic panels:

REF noted no specific issues for photovoltaic panel devices.

### 7 LEDs, and especially their power supplies:

In the frame of the radio club of Versailles F6KFV, we had an instructive experience: It was decided to replace the incandescent bulbs with LED light panels whose supply voltage is about 70 volts. (AC power supply 220v / DC 70v)

The radio receiver became totally unusable due to the noise perturbation on all LF and HF bands, up to the 50 MHz band.

After replacement of the obviously disruptive power supply units, tests and measurements were carried out on other versions of panels made available: Some CE labeled, but with very poor results; and other ones, not CE, and yet correct.

Conclusion for this topic:

- The CE label, (true CE label, or false CE label) is not a guarantee of compliance with E.M.C.
- A huge discrepancy exists between these power supply units, ranging from quite acceptable to intolerable.

The reference of the culprit device was DOLIGHT 6032BC; its replacement allows an acceptable situation for the F6KFV club in terms of reception disturbances.

#### 8\_ Other EMC critical devices:

- Lifts,
- Public lighting,
- Air conditioning systems with heat pumps
  - Lighting of LED windows, or lighting of pet shops, some designed to grow tropical plants indoors...

**Proposal:**

**Financial Implications:**