DIGITALEUROPE

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DIGITALEUROPE'S POSITION PAPER ON EN 50561-1

1- INTRODUCTION

Electromagnetic Compatibility (EMC) of Power Line Communication (PLC) has been a controversial topic for about 15 years. During all that time, CISPR tried, without success, to address the issue of emissions from PLC modems below 30 MHz in an international standard, which would supplement CISPR 22 (EN 55022).

In 2010, upon request of the Commission, CENELEC TC210 started the development of a European standard, taking in consideration innovative approaches in Radio Services protection. After difficult negotiations between all stakeholders, a draft EN has been proposed to the National Committees. The first ballot, failed more by lack of support than by real opposition, many countries – especially the large ones – having difficulties defining a national position. A second ballot, organized after some text adjustments, received massive support (92 %).

Despite this positive vote, the EMC consultant seems to persist in his negative assessment.

DIGITALEUROPE Member companies, like most industry players, would be very concerned if that single opinion would prevent the citation of EN 50561-1 in the Official Journal of the European Union as "Harmonised Standard" under the EMC Directive, and respectfully requests the Commission to take all possible measures to make this citation possible as soon as possible.

2- REGULATORY STATUS OF PLC TODAY

Despite several positions and clarifications of various bodies, there is currently no EMC standard specific to PLC; this opens the door to multiple alternative routes to CE-marking, resulting in variable level of compliance, generally poor protection of radio services, and difficulties for surveillance authorities to perform any kind of enforcement.

Achieving a consensus on PLC has been challenging, given the nature of the technology. Traditional approaches in EMC standardization could not be successful, given the incompatible requirements expressed by the various stakeholders. Therefore, an innovative approach combining existing limits, static notching and dynamic notching, was the only way to move forward.

3- HOW EN 50561-1 WILL HELP THE CURRENT DEAD-LOCK

After many years of unproductive discussions, where even industry players were not aligned, the best possible compromise has been reached between all relevant stakeholders:

- PLC manufacturers
- Global industry players
- Telephone operators
- Local regulators
- Radio amateur organizations
- European Broadcast Union (EBU)

Therefore, it is urgent and important to have such a citation without further delay. Rationale for it are well known, but are briefly reminded below:

- Commission has requested that work and is supportive of the approach taken in the new standard
- CENELEC has reached the best possible compromise
- We now have a positive vote from the countries
- Industry (not just PLC manufacturers) needs a resolution for the legal uncertainty created during the last 15 years
- Regulators need a realistic base for market surveillance

Technical aspects in reply to explanations to the EMC consultant's and Radio-amateurs' concerns are detailed in the annexes to this letter.

4- CONCLUSION

DIGITALEUROPE strongly recommends the European Commission and CENELEC to proceed with the citation of EN 50561-1 in the Official Journal of the European Union under the EMC Directive. European Industry is very concerned about the fact that a single opinion from the EMC consultant would deprive all European stakeholders from the added value brought by EN 50561-1.

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ANNEX I

Reply to the Assessment of the EMC-Consultant (Anton Kohling)
from 2012-04-20 on Document FprEN 50561-1:2012

The Consultant says in his assessment (*in black*):

Consultant:
A Well protected Frequency Bands
Radio services within the so called "permanently excluded frequency ranges" (Table A1 of the draft) are well protected in accordance with the established requirements. That means the protection requirements of the EMC-Directive are fulfilled in these frequency bands.

Comment:
Table A1 are Amateur, Aeronautical and CB Radio services. In the past, PLC industry voluntarily protected Amateur radio services. Now there is an EN guaranteeing these frequencies (plus Aeronautical and CB) to be protected.

Consultant:
B Partly Protected Frequency Bands
Radio services within the so called "permanent or dynamically excluded frequency ranges" are well protected if these frequencies are permanently excluded from the PLT Signals.

But the draft standard allows the so called "dynamic frequency exclusion". This approach is based on the idea: "A radio service not present cannot be disturbed!"

Actually that approach is proposed for Broadcasting Services only (see Table A2 of the draft). The allowed disturbance level is up to 43 dB above the well-established protection level if no broadcast service is identified in the dedicated frequency band. But nevertheless a radio reception is allowed to be disturbed up to 25 seconds after being present the first time! Such a new approach needs a broad acceptance by the parties concerned like CEPT/ECC, EBU, radio broadcast listener etc.

Comment:
Actually this approach has the acceptance of Radio Broadcast community. The concept was tested and validated in 2007 in an ETSI plugtest under the critical supervision of the EBU. Since this plugtest the EBU published several statements where they recommend a positive vote on this approach. This led to the approval, in 2008, of ETSI TS 102578, specifying the concept for the first time.

Consultant:
But actually the identification of broadcast signals is related to the noise level present on the low voltage power supply network the PLC equipment is connected on. That means the relationship to the so called "valid' radio broadcast service" is ignored. Because the field strength level to be protected is 40 dBµV/m corresponding to a voltage level of 15 dBµV on the power supply network according to the draft standard.

Comment:
The field strength to be protected is 22 dBµV/m (not 40dBµV/m). The relationship between this field levels is given in ETSI TR 102616. (But probably this is only technical detail.)

Consultant:
Based on that procedure the following requirement is missing: "**The broadcast frequencies shall be notched on frequencies where the noise level is above 15 dBµV**" because the level of a broadcast station is independent from the man-made-noise produced by electric or electronic apparatus connected to the power-supply network.

Comment:
The voltage level of 15dBµV corresponds to the power level of -95 dBm on a network with 100Ohm impedance (like power line communication). The -95 dBm level is specified in the new EN. The conducted interference path is dominant from the mains to an HF radio receiver (and not the radiated path). (This is caused due to HF radio receivers also use the power network grid as an antenna (dipole).) This relationship is also described in ETSI TR 102616. So there is a close correlation between the level of an HF broadcast station and the man-made-noise on the power-supply network.

Consultant:
C Unprotected Frequency Bands
A disturbance level up to 43 dB above the well-established protection level is allowed in all the frequency bands not mentioned in Table A1 and A2 of the draft standard (see ANNEX B of the assessment). 43 dB means an increased level of disturbance voltage by factor 140, and an increased disturbance power by factor 20 thousand. Consequently that means: The protection requirements of the EMC-Directive are not fulfilled concerning radio services using these frequency bands.

Comment:
The consultant already identified the principle of this EN above: "A radio service not present cannot be disturbed!". At these "unprotected frequency bands" there is no radio service present in homes. The title of the document is for "Apparatus for in-home use". (Any other radio service using this frequency range is sufficiently isolated by distance from PLC modems.)

Consultant:
Summing-up: Consequently the draft standard does not fulfil the protection requirements of the EMC-Directive as they are!

Comment:
The EMC Directive says: "Equipment shall be so designed and manufactured, having regard to the state of the art, as to ensure that: (a) the electromagnetic disturbance generated does not exceed the level above which radio and telecommunications equipment or other equipment cannot operate as intended;…"
This is exactly the principle FprEN50561-1 follows: **A radio service not present at the location of operation cannot be disturbed!**

Consultant:
EMC-Forecast
Desirousness
*If the draft will be voted positive and based on a political decision ratified by CENELEC and listed in the OJ under the EMC-Directive similar relaxed protection requirements will be requested for nearly all products intended to be connected to the public low voltage power supply network (**level playing field**).*

Comment:
It is not expected, that other products request similar requirements, because FprEN50561-1 defined these requirements **only** for communication signals of user data. Other products than PLC emit noise or disturbance signals.

If the draft standard is listed in the OJ, the protection of radio services (Amateur Radio, Radio Broadcast and Aeronautical) affected by PLC interferences will definitely be improved! It allows market surveillance authorities to become active if a PLC modem causes interference!

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ANNEX II

Reply to RSGB EMC committee statement on FprEN 50561-1 (2012-08-01)

RSGB says in his statement (*in black*):

RSGB:
Despite a considerable number of comments received following the first vote, the new version of the draft standard contains few material changes.

Comment:
All change proposals improving the standard have been taken into account. Many comments were just a repetition of previous positions, and brought nothing new into the debate.

RSGB:
The CENELEC Working Group 11 (WG11) that wrote the proposed standard includes a large number of people who have a direct relationship with PLT interests. It is likely that PLT manufacturers have been lobbying to gain support for the standard, as it would provide a legal basis for high PLT emission levels.

Comment:
WG11 has a well-balanced representation of all stakeholder categories; there are of course PLC industry representatives, but also experts from industries not directly involved in PLC, national regulators, telecommunication operators, radio service providers, radio-amateurs, etc. For most PLC products, the new standard brings more constraints than the current situation.

RSGB:
Should prEN 50561-1 be supported by the National Committees, it risks manufacturers of virtually any new device or product wanting to use the very high radio pollution levels allowed by prEN 50561-1, claiming it as a precedent. An example case would be the invertors used to connect solar cells to the grid where a proposed standard could allow emission levels similar to PLT but at all frequencies with no amateur band notches (a "notch" is a range of frequencies where the transmit power of the PLT device is reduced).

Comment:
First of all, invertors operate in a different frequency range than the one considered by EN 50561-1.

Secondly, EN 50561-1 applies to PLC devices, i.e. products having an intentional transmission function; using the standard to allow relaxations on unintentional emissions would clearly be an abuse of it.

Finally, dynamic notching is a computing-intensive feature that does not make sense for unintentional emissions as the ones observed from household appliances.

RSGB:
In effect, the proposed PLT standard appears in direct contravention of the EMC Directive.

Comment:
At the EMC Working Party in December 2011, the Member States and the European Commission expressed a large support for the continuation of the work and the circulation of the prEN for a second vote. The existence of a harmonised standard like EN 50561-1 is key to allow proper market surveillance. Should the EN show failure to meet the protection requirements, then the standard can and will be revised; a procedure is therefore available to the National Authorities.

Actually, the sustained opposition of some people to prEN 50561-1 is detrimental to the protection of radio services in Europe, because it deprives local regulators and surveillances authorities from a usable enforcement tool.

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