Partner für internationalen Rundfunkempfang

ADDX e.V.
Assoziation deutschsprachiger Kurzwellenhörer
Postfach 130 124
40551 Düsseldorf

Tel.: 02 11 - 79 06 36
Fax: 02 11 - 79 32 72

Internet: www.addx.de
eMail: kurier@addx.de

Erkki Liikanen
European Commission
SC 15 06 / 146
B-1049 Bruxelles

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Dear Sir,

Powerline Communications – ENTR/G/3/TB/mm/D(2003)835613

Thank you for your letter of 13 November 2003 responding to our submission dated 30 September 2003.

Let us say first of all, how disappointed we are that you have limited your response to reiterating the Commission's already well-known claims regarding the technological and economic potential of PLC, the need for further levelling of the European telecommunications 'playing field', the societal and 'broader' economic interests of Europe and so on.

We deplore the fact that the Commission continues to rehash its position without ever presenting proof of the claimed benefits of PLC and despite mounting evidence that the technology is simply not fit for purpose. PLC's manifest capacity to prevent other telecommunications equipment from operating as intended, is but one of its most conspicuous shortcomings – albeit the one of greatest concern to the traditional, legitimate users of the high frequency spectrum. Other limitations result from the technology's inherent data rate constraint that is exacerbated with increasing subscriber usage and the proper application of interference protection standards that are fully in line, inter alia, with the requirements (Article 4) of the European EMC Directive.

Moreover, PLC has already, for all intents and purposes, reached the end of its evolutionary life span. Contrary to your claim, it has not – as you put it – 'significantly evolved with resultant better controls with respect to interference'. Whatever evolution may have taken place has most certainly not managed to overcome the interference and other inherent problems. PLC therefore remains seriously disadvantaged relative to more innovative existing and emerging technologies, many of which are at the very beginning of their life cycle.

A number of operators and equipment suppliers (e.g. E.On, RWE, NOR.WEB, NUON, Siemens) that have attempted to commercialise PLC in the European Union are recognising these limitations and have either abandoned their respective PLC (ad)ventures or are considering doing so. Even those few providers that claim technical success have quietly

(presumably so as not to alienate their shareholders and to disenchant the general investment community whom, in the days of telecomms exuberance, they had led to believe that endless riches awaited at the end of the PLC rainbow) buried any expansion investment plans they might once have had. It is not unreasonable to assume that they have chosen this course of action because of their ventures' unexciting economic performance although it is perhaps a characteristic of this development that one of these operators felt the need to somewhat disingenuously blame its decision to end its PLC involvement on the aftermath of the attack on the World Trade Center.

The manner in which you appear to attempt to trivialise the legitimate and technically well-founded concerns of the users of the high frequency spectrum by overstating the economic and societal benefits of PLC and by consistently ignoring the mounting evidence of harmful interference from PLC is causing us considerable disquiet. Evidence of this most worrisome of PLC problems includes, significantly, this statement from the German contribution on working document RCCOMO3-12: '*because Germany has a lot of negative experience with the compatibility of radio networks and line-bound networks. Initial findings about PLC applications suggest that, despite contrary assurances by the manufacturers, the ceilings in force nationally* ***cannot*** *(emphasis by the undersigned) be adhered to'*.

It is worthy of note that the 'ceilings in force' referred to are, of course, the German NB30 which in themselves do not afford HF users adequate protection, as has been confirmed, inter alia, by the results of the Crieff tests reported by the BBC. Working group SE35 papers, reporting to the Commission in detail, confirm the Crieff test reports. They make it clear that NB30 levels do **not** protect radio services adequately and **will allow, not prevent, harmful interference** (defined in ITU regulations as 'interferences ... that seriously impair or even disrupt communications by radio altogether').

We have great concern at the palpable intent, as signalled by both the Commission's words and actions, to marginalize all users of the high frequency spectrum, not just the providers and users of broadcast services. You should know that we will continue to resist any efforts to curtail HF users' rights by all legitimate means at our disposal.

We take particular issue with your assertion that any additional radio interference caused by PLC will not be discernible due to the allegedly high level of spectrum pollution said to already exist in urban areas. This is an argument that the Commission and the proponents of PLC have used consistently in an effort to mask PLC's inherent technical shortcomings. The argument is flawed. It is not corroborated by a sufficiently large sample of representative noise level measurements and ignores the fact that the ITU has not to date recognised a need to amend noise level assumptions in its Recommendation ITU-R Rec. P.372. The Commission is no doubt aware that the ITU attaches great importance to the accurate delineation of ambient noise levels for engineering purposes. It updates the information data base underlying ITU-R Rec. P.372 promptly when necessary. To date no discrepancies have been formally reported to exist between current ITU-R Rec. P.372 assumptions and actual, real-life conditions.

A growing number of interference cases attributed to PLC are now being reported from urban environments as a result of users of the HF-spectrum having been apprised of the nature and potential magnitude of the problem. It is this greater awareness that has now also – contrary to the claims contained in the Spanish submission on working document RCCOMO3-12 – resulted in Spanish PLC trial operations being implicated (www.ure.es/plc/).

The noise alibi is therefore – once more – strongly refuted. Here are some of the reasons:

- Claims that urban noise levels consistently exceed the interference levels generated by PLC are incorrect. There is ample evidence that the opposite is true. Some of this evidence was submitted to the Commission in advance of the 16 October workshop (e.g. BBC White Paper WHP013, Nov. 2001; NATO submission 2001 to SE35 working group).

- There is a suspicion that the measurements on which the argument is based are flawed in that the measuring equipment used is inherently incapable of discerning true ambient noise levels below typical PLC field strength levels. Also, measurement procedures currently recommended and used by a number of national telecommunications administrations disregard physical theories of electromagnetic fields. This is done not out of ignorance, but to accommodate the inherent limitations of the measuring equipment available to those administrations. A case in point would appear to be the German RegTP's Measurement Specification RegTP 322MV05, 'Radio Monitoring and Inspection Service Measurement Specification for Disturbance Field, Measurements on Telecommunications Equipment and Lines in the Frequency Range from 9 kHz - 3 Ghz'. Proof of the foregoing will be made available to the Commission in due course.

- Radio interference in an urban environment, even at levels near or significantly above PLC signals from, say, electric contacts, automobile ignition systems, trains, trams and the like is invariably of a temporary short-term nature. Such interference is not normally allowed to persist to routinely disrupt the operation of telecommunication systems for extended periods. Also, this type of radio noise can in most cases be dealt with by suitable noise cancelling circuitry implemented in advanced radio receivers. Moreover, broadcast listeners will tolerate such noise as it is of a random and sporadic nature. The same is not true for PLC signals that are ‘always on’ and that are present even at the places of residence or work of those who do not subscribe to the service and who would be forced to suffer the interference unless the PLC service was terminated.

- The proponents of PLC, in arguing for its large-scale adoption, claim that it is the technology of choice to provide broadband access, particularly for rural communities that are said to be ‘deprived’ of this facility for lack of competing technologies and providers. The logic of this argument appears compelling at first inspection. Indeed, given the ubiquity of the telephone network and broadcast cable systems and the multitude of competing service providers already present in urban environments, it makes little, if any, sense to attempt to compete with these existing networks by supplementing them with another, technically inferior system (PLC). It appears logical, therefore, for the Commission and potential PLC providers to attempt to justify the wide-scale introduction of PLC by using the rural community alibi. However, accepting this argument immediately raises the question why, if the main driver is the broadband needs of the rural communities, the impact of PLC on urban noise levels should assume such prominence. Instead, it would appear both logical and necessary to examine the effects of PLC on rural noise levels. These are, of course, even lower than urban levels and orders of magnitude below typical PLC interference field strengths. It follows, that PLC interference would be even more conspicuous in the rural environment, something that the proponents of PLC, understandably, wish to conceal. In this context it is worth remembering that the power network topology in

rural – and more so in remote – areas is such that it forms the least technically suitable part of the network for the delivery of PLC services. However, the economic imperatives leave little room for addressing these shortcomings in the foreseeable future, certainly not just for the purpose of distributing PLC. As only short distances can be bridged by PLC (not more than a few hundred metres, so long as maximum allowable emission limits consistent with existing legislation protecting radio services from harmful interference are adhered to), broadband data delivery to the 'entry point' of the restricted PLC-based local area network has to rely on other, more advanced technologies. It must appear patently absurd, even to the uninitiated, to terminate such advanced services and switch to the technically inferior PLC a few hundred meters shy of the ultimate destination, the customer.

- Even if the high urban noise levels claimed by the PLC proponents were confirmed to exist, then we would assert that it is incumbent upon the Commission and member states' administrations to undertake diligent efforts to reduce the same to as low a level as is reasonably practicable, rather than allow any system or device to increase it. It is perhaps helpful in this context to remind the Commission of the old adage: 'Two Wrongs Don't Make A Right'.

- Furthermore, if the noise level claims were proven to be true, then we would argue that the Commission – contrary to its often-declared intentions – as well as national administrations, would appear to have failed in its legal duty to protect the spectrum from harmful interference. In that case it would be necessary and proper to rectify this omission forthwith.

We also take issue with your further assertion that modern powerline communications systems are comparable with other broadband systems in respect of the modulation techniques, intrinsic radiation properties of wires, measured radiation characteristics and so on. With the possible exception of modulation techniques, none of these claims have any foundation in fact. None of the existing wire-bound broadband technologies use communication networks having characteristics as undefined as those of the ordinary power distribution system. Instead, they employ twisted pair wiring or coaxial cabling whose radiation suppression characteristics are infinitely superior. None of the existing broadband systems rely on co-utilization of substantial and expanding segments of the high frequency spectrum and none of these systems' operators consider it necessary to not only countenance, but **demand (!),** the erosion of the rights of the traditional, legitimate spectrum users in violation of existing legislation and international treaties.

We are, of course, aware of the desire of some telecommunication companies to introduce new systems, such as VDSL, that exhibit interference characteristics similar to Powerline systems. Their introduction would, again, not be possible without a breach of existing legislation and subordinating the protected rights of the legitimate spectrum users to some obscure 'societal interest' and mythical 'level playing field'. It is for this reason that proponents of such systems promote a 'Trojan Horse' solution in the form of NB 30 as a 'reasonable' compromise between the conflicting positions of the PLC and HF users.

In closing we would like to put into perspective the somewhat worn 'societal interest' argument. Recent survey data from Britain suggests that four out of every five new broadband connections are established for the almost exclusive purpose of playing games over the internet. On the assumption that the remaining fifth connection is used extensively for the pirating of films and music (involving large-scale breach of copyright), and the distribution of pornographic material, one may conclude that the 'broader economic and societal interests' are already well served by the existing broadband infrastructure. In the

light of such illuminating information, the introduction of PLC in whatever form to the detriment of the high frequency spectrum users is clearly unnecessary and simply cannot be justified. This is also borne out by a recent study by the respected international consultancy firm Arthur D Little. It shows that countries possessing some of the world's most highly advanced broadband infrastructures have achieved this status relying solely on proven non-PLC technologies. Many of these countries' telecommunications administrations are, incidentally, critical of the technology and in some cases even disallow it (e. g. Scandinavia, Japan).

It is a well established fact that the great majority of internet subscribers choosing the broad band, high speed option do so chiefly because most providers of such services offer affordable 'flat rate' access that is not time-limited. If 'flat rate' tariffs were also more widely available to narrow-band lower speed internet access users, they would likely choose those over the 'standard' charge structure. It is not unreasonable to assume that vastly increased internet uptake would ensue from such a simple step. The Commission's goal of popularising internet use for the benefit of Europe's citizens – not only in urban but also in rural/remote areas – and to facilitate economic development could therefore be expedited using currently available networks and without resorting – if only for the limited ten-year period asserted by the Commission – to technologies that do not pass the test of prudent resource husbandry and sustainability. The networks are within reach; what is needed is a different approach to regulating access to them and thus to 'levelling the playing field'.

We believe it is high time that the Commission took cognizance of all the facts militating against the introduction of currently available PLC systems. The Commission could usefully remind itself of the experience gained from previous attempts to push through unsuitable technologies, such as D2MAC/MAC-based HDTV. These, too, were promoted with great fanfare but eventually, and not surprisingly to those in the know, turned out to be the proverbial horse that had died long before the flogging stopped.

We would appreciate hearing from you should you wish to take issue with any of the points we have raised. It is our standard practice to inform members of important developments and the activities of the ADDX board by publishing relevant information on the ADDX website as soon as practicable. We therefore intend to post copies of your letter of 13 November 2003 and this reply on our website in the expectation that you will find this acceptable.

Yours sincerely

Uwe Bräutigam
President, ADDX, Germany

Michael Schmitz
Editor-in-chief, ADDX, Germany