RADIO SOCIETY
of Great Britain

3 Abbey Court,
Fraser Road,
Priory Business Park,
Bedford MK44 3WH

31st July 2009

Mr Robert Thelen-Bartholmew
Head of Field Operations
Ofcom
2A Southwark Bridge Road
London SE1 9HA

Dear Robert,

EMC COMPLIANCE OF POWER LINE ADAPTERS

The Radio Society of Great Britain wishes to formally complain about the non-compliance to the EMC Essential Requirements of Power Line Adapters (PLAs) manufactured by Comtrend. The devices concerned are models DH10 and PG902

You will be aware that these Comtrend devices are supplied for use as part of a BT Vision package. You will also be aware that these devices have been the subject of many interference complaints and that members of the UKQRM group have recently discussed this problem with your staff. The RSGB contends that these PLAs should not have been placed on the market or taken into service, since they do not meet the Essential Requirements of the EMC or RTTE Directives as regards emissions, as transposed into UK laws. The reasoning is as follows -

According to Comtrend's web site, both devices have been declared compliant through a technical assessment consisting of meeting EN55022 and CISPR/I/89CD. for emissions.

The document known as CISPR/I/89CD is not a valid one. It was a committee draft ("CD") of proceedings of the Project Team that was working on a draft standard for PLT being produced by CISPR/I, the sub-committee of CISPR responsible for producing international standards for IT equipment. The CD is described as an "Amendment to CISPR22: clarification of its application to telecommunications systems on the method of disturbance at ports used for Power Line Communications" However, the methods proposed were unacceptable to CISPR/I as they did not provide an adequate level of protection to radio services. Committee Draft 89 was thus withdrawn at a CISPR/I meeting in Geneva in 2007. The chairman, Martin Wright, advised members that the draft could not be used. The RSGB is a member of CISPR/I and our representative was present at this meeting.

CISPR/I/89CD is therefore not an amendment to CISPR22. Indeed the document itself makes it clear that it was a study document and was not intended for reference. The RSGB therefore contends that it is not a valid document upon which to rely for an EMC technical assessment. That leaves the emissions measured against EN55022. This standard is the EU transposition of CISPR22.

The RSGB has access to EMC test equipment at the University of Hertfordshire. This can carry out tests of a pre-compliance standard. In the case of the Comtrend device model PG902, Figure 1 in Annex 1 shows the conducted emission levels measured against the EN55022 Class B quasi peak (QP) limits. These clearly show that the levels are between 20 and 30 dB above the levels in the standard and at lower frequencies are over 40dB above the Standard's limits. Although there is notching evident at certain amateur bands, not all of these notches reduce the levels below the limits in EN55022 Class B. It is only at the lower and higher extremes of the bandwidth used by the device that the limits in the Harmonised Standard are met.

Tests have also been performed where radiated emissions were measured at a distance of 10 metres from a house where a pair of Comtrend PG902 devices was operating. Figure 2 in Annex 1 shows the radiated field strength from the PLAs in dB above 1 microvolt per metre measured in 9 kHz bandwidth with a peak responding detector. Figure 2 also shows an ITU-R residential man-made noise curve plus 10dB, as an approximation to the man-made noise curve when measured with a peak responding detector. This allows direct comparison with the PLA emission.

The trace in Figure 2 shows where sections of the PLA radiated emission spectrum are clearly identifiable above intentional signals such as broadcasting. The gaps are either where the PLA emissions are notched or where there were a significant number of broadcast signals. From approximately 8 – 26 MHz, broadband emissions from the PLAs are at a level of approximately 35 – 50dB(μV/m), except in amateur bands that are notched. Below 8 MHz, there were many ambient signals but spot frequency measurements made on frequencies that were relatively free of ambient signals showed that the field strength of the PLA emission was approx. 35 – 45 dB(μV/m), except in bands that are notched.

Figure 2 clearly shows that even at an optimistic separation distance of 10 metres, the PLAs raise the noise floor over a substantial portion of the HF spectrum by 20 - 25 dB. This shows that they clearly do not meet the Essential Requirements of Section 4 of the EMC Regulations SI 2006 No 3418/

As regards Comtrend model DH10, Figure 3 in Annex 2 shows a similar plot with the QP conducted emissions typically 25 dB above the EN55022 class B QP limit between 2.2 – 28 MHz. Although notches are evident in various amateur bands, some of these do not appear to be sufficiently deep to meet the QP limits, particularly in the 3.5 - 3.8 MHz amateur band. Furthermore, the

QP emissions also appear to exceed the EN55022 class B QP limit between 300 kHz and 2 MHz.

Moreover the RSGB has seen tests commissioned from a UKAS accredited test house on a Comtrend DH10 200 Mbps powerline adaptor. These tests were made against the Harmonised Standard EN55014. This is essentially the same as EN55022 but with slightly relaxed average limits, although this Standard is not intended to cover products that are IT products within the scope of EN55022. Nevertheless these broadly agree with the figures obtained at our own tests as they show the Comtrend unit to have conducted emissions greater than 20 dB above the QP limits. In this case the amateur band notching does appear to show the emissions fall just below the limits.

The notches give some protection to some amateur bands, but it is important to note that they are based on US amateur bands and do not include UK variations. Moreover the absence of notching for any other services leaves the broadcast bands exposed along with frequencies used by other professional services, low power uses and safety services. EN55022 contains no provision for notches and such reductions in emissions must be purely voluntary. We understand that it is possible to turn off the notches by accessing the device's software.

Naturally we expect Ofcom to undertake its own tests. However on the basis of the information above we do not see how these devices can be compliant to the Essential Requirements and be permitted to be placed on the market or taken into service. It is open to Ofcom to make a determination of non-compliance under the EU Guidance rules on market surveillance. In previous cases Ofcom has proposed that for action to be taken, non-compliance has to be shown alongside evidence of harmful interference. We contest that there is any requirement for harmful interference to be shown for non-radio devices under either the EMC or RTTE regulations. However it is quite clear to the RSGB that the numerous complaints that have been made are a direct consequence of permitting devices to be taken into service without meeting the Essential Requirements.

Would you please acknowledge this complaint and keep us informed as to progress.

I am copying this letter to Richard Harris at BIS.

Yours Sincerely

Colin J Thomas
President and Spectrum Director
Radio Society of Great Britain

Annex 1

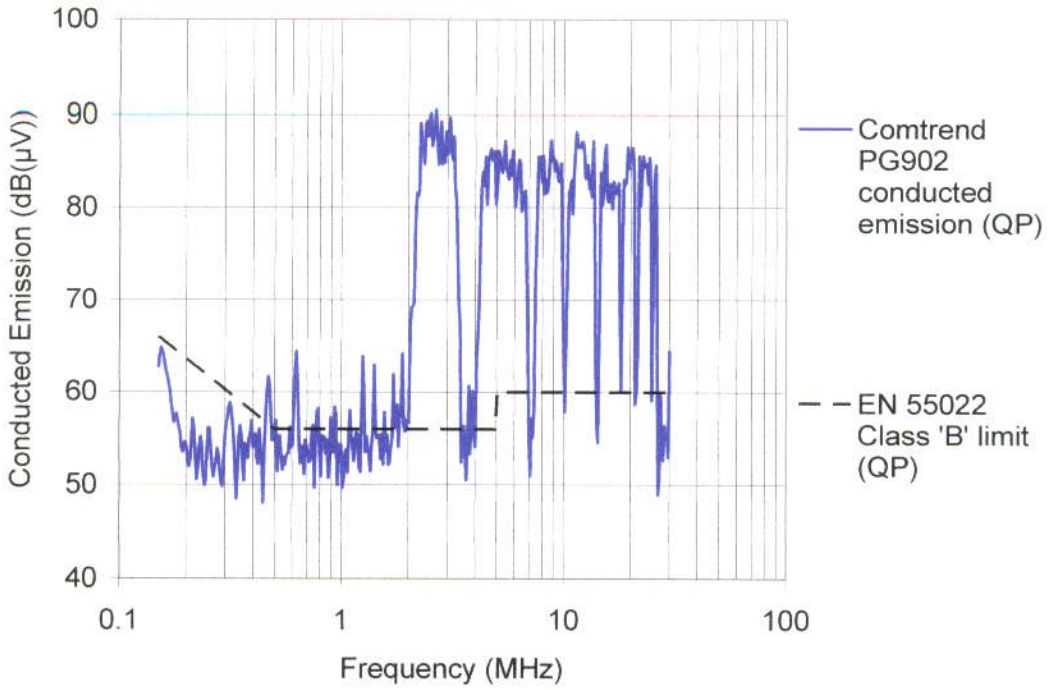

Figure 1. Conducted emission spectrum from a single Comtrend PG902 Powerline Ethernet Adaptor, 150 kHz - 30 MHz with 9 kHz measurement bandwidth and Quasi-Peak (QP) detection.

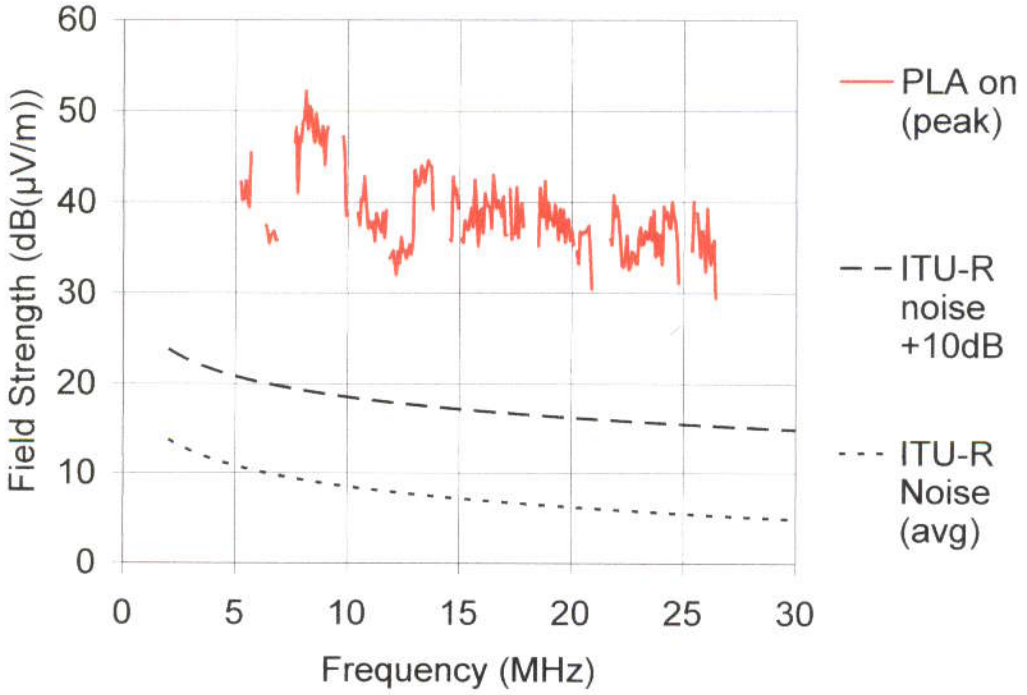

Figure 2. Radiated emission spectrum from a pair of Comtrend PG902 PLAs, 5 MHz - 30 MHz with 9 kHz measurement bandwidth and Peak detection. ITU-R residential noise levels are shown for comparison.

Annex 2

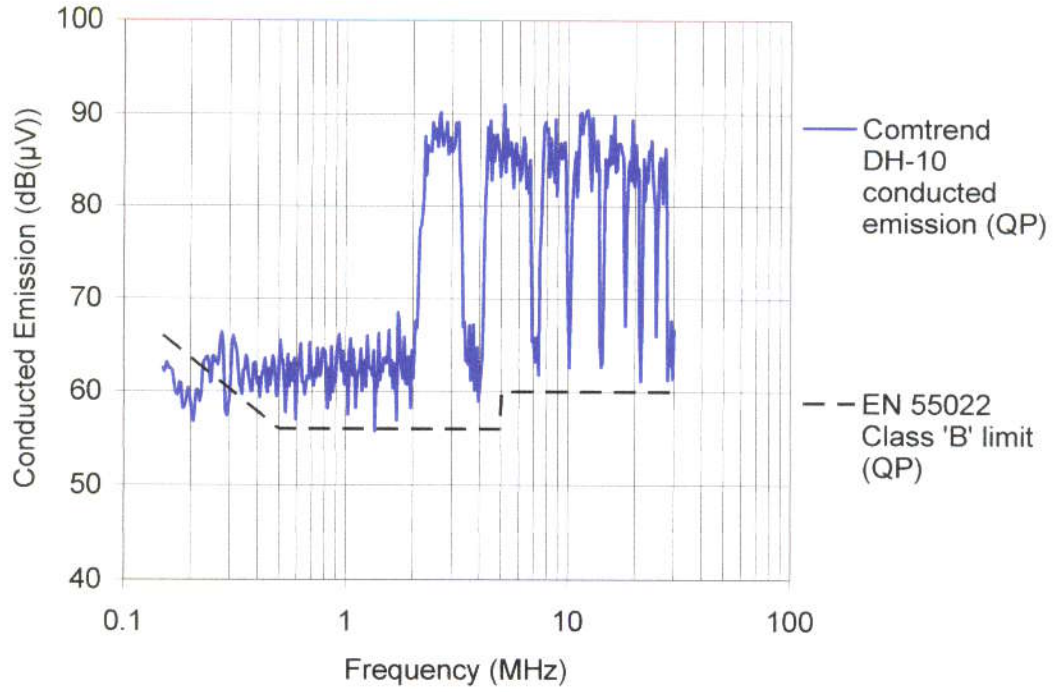

Figure 3. Conducted emission spectrum from a single Comtrend DH-10 Powerline Ethernet Adaptor, 150 kHz - 30 MHz with 9 kHz measurement bandwidth and Quasi-Peak (QP) detection.