

5 May, 2009.

"I don't think ADSL2+ will be of any advantage in download speeds to most members of our group. In fact it will increase the divide between us and those living close to the exchange."

Is Bob's conclusion correct? We hope not.

A major telephone exchange in Milton Keynes has just been upgraded to ADSL2+ and 21CN. It doesn't appear to have helped Bob. (He has a long phone line of 5km - like many folk in Milton Keynes.)

Here is Bob's account:

"Below are my experiences after I was transferred to the 21CN [DSLAM](#). The high Line Attenuation (~55dB) and high level of crosstalk generated by the pub opposite my house in Loughton have made this part of Milton Keynes a difficult area to enjoy high speed broadband, so after BT Openreach's sterling efforts to improve my signal level last October and the replacement of my router, I consider myself lucky to have enjoyed a very stable 3 Mbps connection for the last 7 months.

"As part of my ISPs (Andrews and Arnold) planned system upgrade I was moved to the TI 21CN DSLAM on 22nd April and onto ADSL2+ on the 30th April. With 55dB Line Attenuation I realise that any speed improvement with ADSL2+ would be marginal but my stable sync speed on "20CN" was around 3800 kbps so it is just possible that I could achieve the 4000 kbps required for a 3.5 Mbps BRAS which would be a useful upgrade.

"The initial impressions were good as I was connected at about the same down speed as before the upgrade; and the up speed increased from 448 to 800 kbps (my current up speed is 695 kbps).

"What was not initially apparent was that during the upgrade the Target Noise was increased from 6dB to 9dB and when combined with the high levels of crosstalk caused my signal to noise margin to vary between 9 and 12dB on a modem that has been demonstrated to be fully stable down to at least 3dB.

"Today this has been exacerbated when a telephone line fault caused the modem to be reset during high a level of crosstalk and has resulted in my connection speed falling to 3229 kbps and my BRAS to 2.5 Mbps.

"I have spoken to my ISP regarding the target noise level, but have been informed that it is almost impossible to get BT to set it back to 6dB. So it looks like that, for long lines such as ourselves, 21CN ADSL2+ will result in degraded performance. (This, incidentally, has negated all the excellent work that Openreach carried out for me last October.)

"I still have some further testing without interleaving to complete, and have the option to change back to ADSL(Max) (G.DMT Annex A) as well as selectively resetting the modem when the crosstalk generated by the pub opposite is at a minimum, so I may be able to recover a 3 Mbps BRAS. **But I don't think ADSL2+ will be of any advantage in download speeds to most members of our group. In fact it will increase the divide between ourselves and those living close to the exchange.**"

"The involvement of BT's team has significantly overcome my original reservations and improved my broadband speed."

Bob's update, 21st May 2009

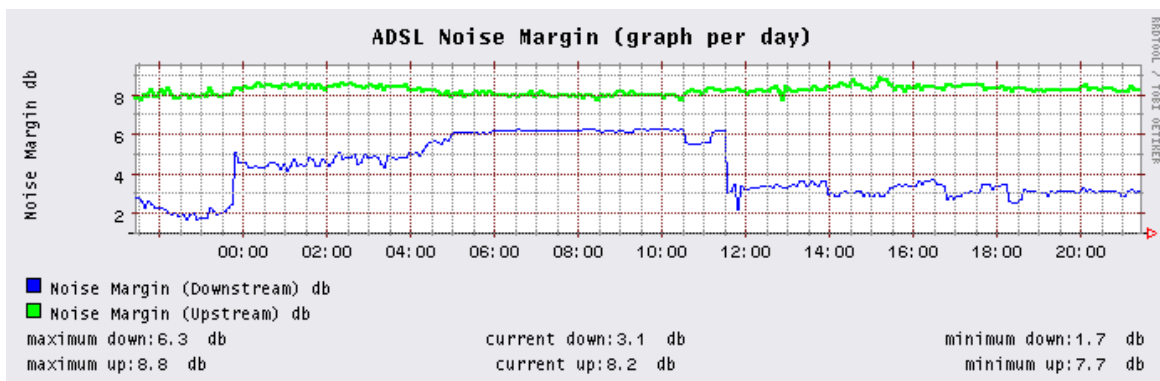
"Following on from my original comments on ADSL2+, the involvement of BT's team has significantly overcome my original reservations and improved my broadband speed.

"BT were able to reduce the Target Noise back to the original 6dB and **I now have a stable connection** with rates of 4097 kbps down and 784 kbps up. This is an improvement of about 330 kbps in both down and up speed from the previously stable ADSL1 and **my BRAS has increased from 3 to 3.5 Mbps** accordingly.

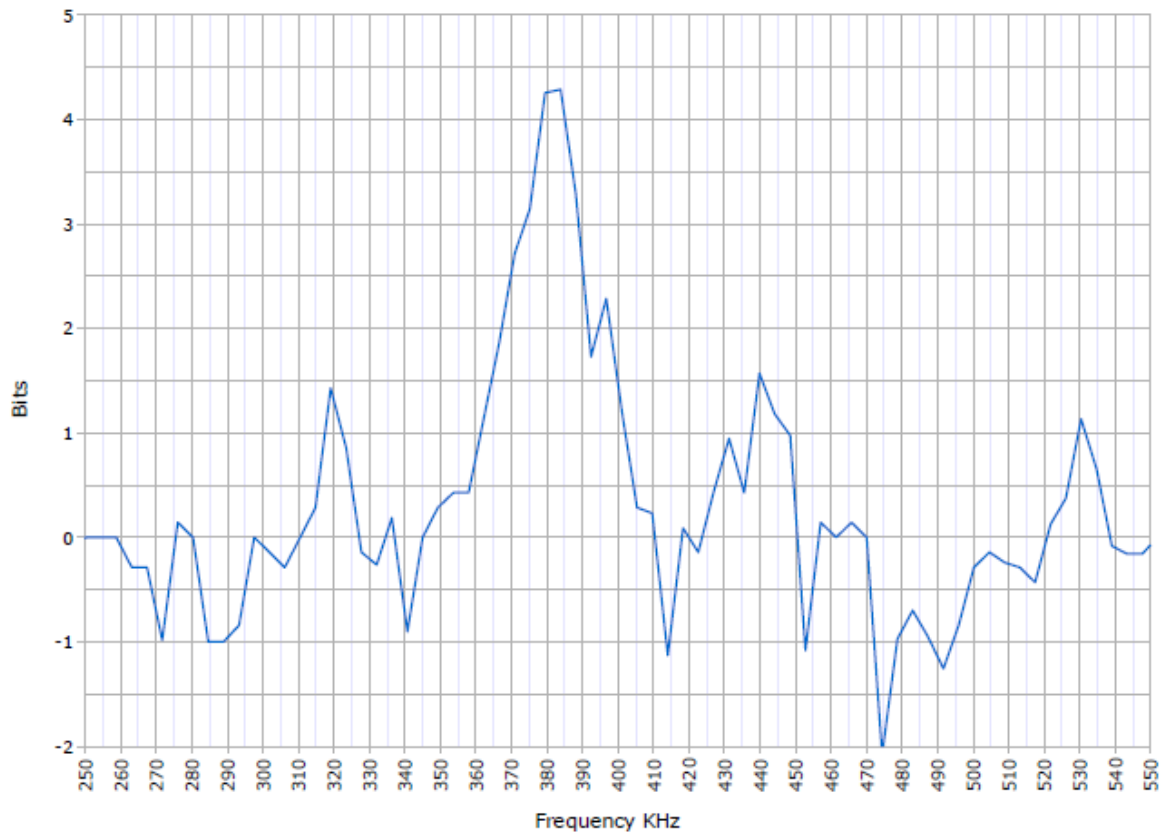
"Over the last week I have monitored the modem Bitloading data and have recorded, as anticipated, only data up to bin 197 (850 kHz) so that the ADSL2+ part of the spectrum remains out of range. (This would apply to most members of this group where their line attenuations are in excess of 50dB).

"(Note: For downloads, ADSL1 uses the 224 bins from 32 to 255 (138 to 1100 kHz), and ADSL2+ uses the ADSL1 range plus an additional 256 bins (138 to 2200 kHz). These additional bins suffer higher line losses than the lower ADSL1 frequencies so that only those with low exchange distances can expect to benefit from the higher download speeds (up to 24 Mbps) with ADSL2+).

"At my higher downstream rate the variation in Noise Margin has increased to about 5dB depending upon time of day. The minimum Noise Margin I have measured is 0.7dB which surprisingly the router seems to cope with without any signs of packet loss. Before the upgrade, I would be aware of packet loss when the Noise Margin fell below about 2dB so perhaps ADSL2 is more resilient to low Noise Margins or perhaps the new TI DSLAM performs better than the Alcatel version. My typical Noise Margin daily variation is shown below.



"Using my modem I have also been able to extract the spectrum of my neighbouring pub's ISDN connection. The induced crosstalk can be seen to consists of a carrier at 384 kHz with 60 kHz sidebands.



The amplitude is the number of bits the spectrum is reduced when the crosstalk is present.

"Finally, as part of my investigation, I requested Interleave to be turned off. This has significantly improved my latency and I have not seen any degradation in data rates."