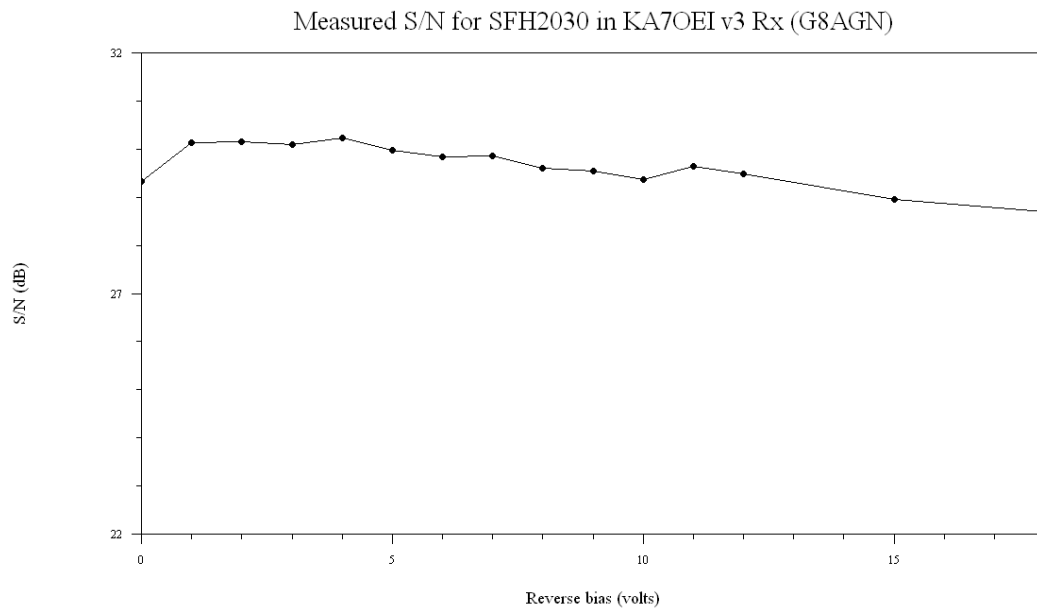


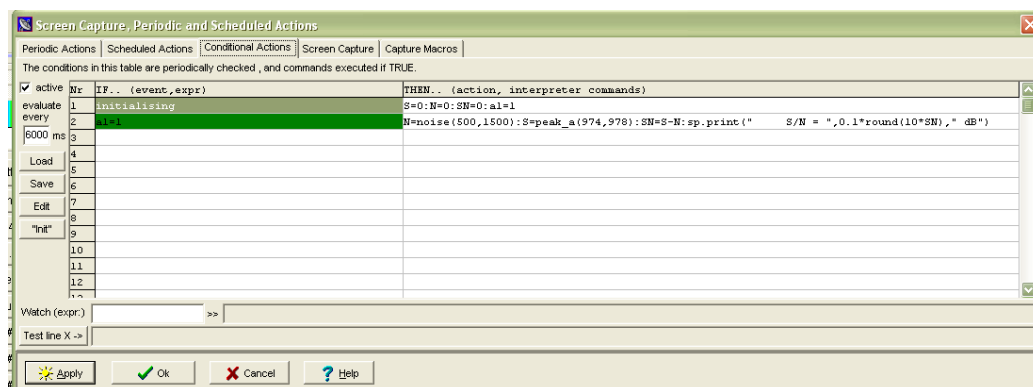
## Measuring optical receiver S/N performance using a photon range G8AGN 27 Feb 2012

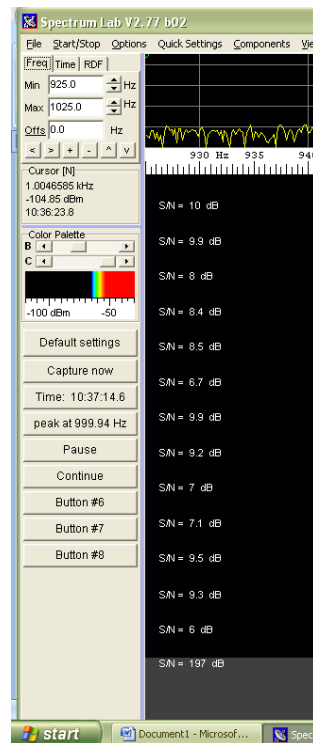


The graph shows a typical result obtained using my 2m long pipe photon range. The walls of the pipe are lined with black flock non-reflecting paper. The test source is a 625nm red LED modulated with a crystal controlled, variable amplitude, 976Hz square wave.

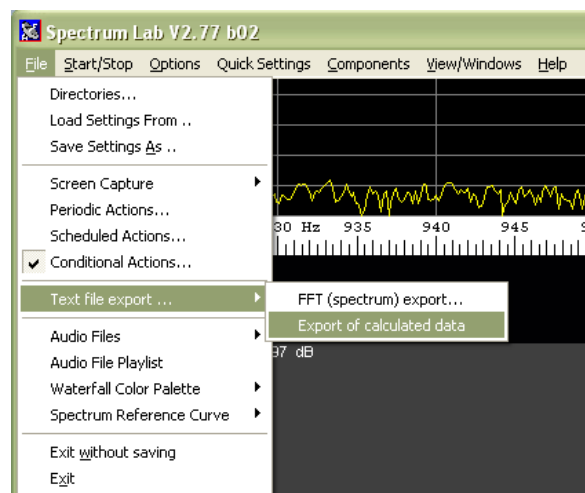
The S/N values are only indicative since they depend on the day to day stability of my LED light source. They do, however, give an indication of the variation of S/N with diode reverse bias.

Each data point on the graph is the average of 20 readings, taken 6 seconds apart using Spectrum Lab and the Conditional Actions option to write data to the waterfall display. Spectrum Lab was set to use a 64K point FFT.





The measured values of S/N (dB) were noted from the waterfall display and recorded by hand for subsequent calculation of the average value and standard deviation of a data set. This process can, however, be made less tedious by using another of Spectrum Lab's facilities, that of Text File Export.



Spectrum Lab - File Export Format

File Contents | Filename & Activation | Export of FFT results

Column Separator (ASCII) 9 Number of columns: 3

Column	Title	Numeric Expression	Format	Flags	Formatted Results
1	Signal	peak_a(974,978)	##0.0#	0	-103.12
2	Noise	noise(500,1500)	##0.0#	0	-106.79
3	S/N	peak_a(974,978)-noise(500,1500)	##0.0#	0	3.67

Test #1 -> -103.12 -106.79 3.67  
Test #2 ->

Menu... Apply OK Cancel Help

Spectrum Lab - File Export Format

File Contents | Filename & Activation | Export of FFT results

Export File #1: c:\ftn\sndata.dat ☐ Active Size:0  
Export File #2: ☐ Active Size:0

☒ power-fail safe  
☒ Use write interval: 6.0 seconds, next write at: 08:47:58.6 Synchronize!

Whenever a spectrum has been calculated, execute these commands:  Test

Before writing a line to the export file, execute these commands:  Test

After writing a line to the export file, execute these commands:  Test

<click TEST and watch the result here>

Menu... Apply OK Cancel Help

When set up as shown, readings of S, N and S/N in dB are saved every 6 seconds to a file called sndata.dat in the directory \ftn\. The format of the saved data is compatible with Excel.