A simple CW skimmer

user's guide *

Revised edition of the plugin

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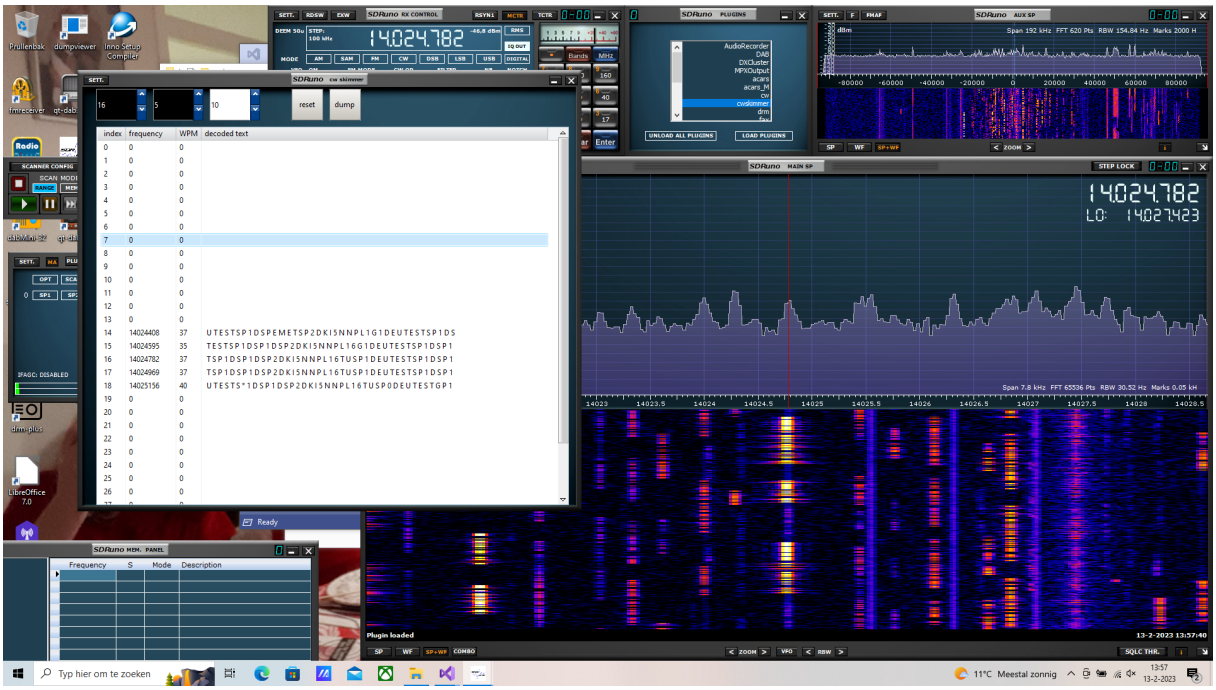

1 Background

The biggest problem I have when using the CW decoder plugin is *tuning in time*. After all, tuning shoud be very accurate and manually tuning is not easy with all the flickerings on the screen of signals "of" and "off"

While the CW decoder plugin provided some support for tuning correction, I was not very happy with it.

Therefore a completely different approach was taken in this "skimmer" type plugin. Basically it is simple, the incoming samples, rate 192000, are per timeslot of 2 milliseconds, i.e. 2 * 192 samples, fed into an FFT processor with 2048 "bin"s. Each bin then shows the "energy" of the signal in a frequency band with a width of 192000 / 2048, i.e. slightly less than 100 Hz.

Then from a set of selected bins the data is sent to a decoder, one decoder for each stream. The samplerate of that data is then obviously app 500 samples a second. Note that a 30 WPM signal takes app 40 mseconds per dot, so that is covered by app 20 samples.

The decoding process is changed as well, a sequence of messages, each message encoded as a number telling the amount of samples with either a low or high amplitude, are passed on to an actual decoder. In this decoder an estimate is made of the length of the dots and spaces, after which an attempt is made to extract a symbol.

2 The plugin

The plugin itself is straightforward; its controls are in the top line. That line contains two selectors and a button. The text part of the widget contains 32 lines. The area of interest is a user selected region of 3 or more bins, with one line for each bin. The user may select the center bin and a number of bins.

Each line contains 4 elements

- a line number, i.e. one in the range of 1 .. 32;
- a frequency indicator. If data in the bin is decoded, the frequency indicator gives the precise frequency for the data in that bin;
- a WPM indicator. If data in the bin is decoded, the WPM indicator gives an estimate of the Words per Minute of the decoded data;
- the text, the last 85 characters of the text.

The indicators tell which bins are selected for data decoding:

- the right selector, with as default value 3, tells how many bins are selected for decoding the data (always an odd number);
- the left selector, with as default value 6, tells the line number of the bin that is central in the selected bins.

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