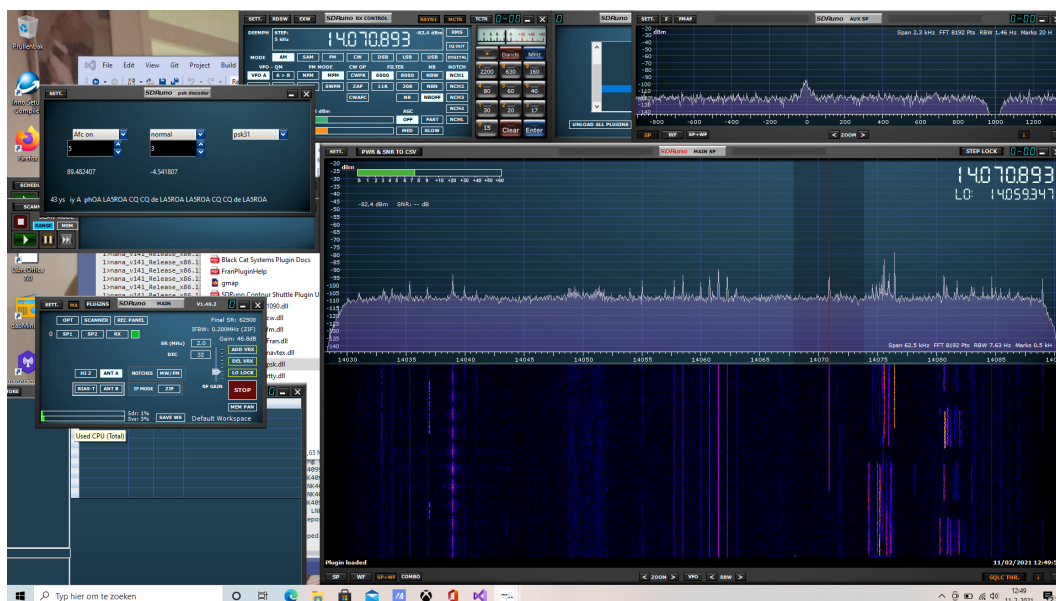# A simple PSK plugin for SDRuno

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February 14, 2021

1 Introduction

The SDRuno psk plugin is a simple plugin to decode a psk signal that is tuned to. The current version supports BPSK31, BPSK63, and BPSK125.

PSK is less popular than about 5 to 10 years ago, nevertheless, the region just above 14070 KHz usually contains quite some amateur calls using the mode.

2 Settings

psk is a signal with a small footprint, the width used on the band is less than 50 Hz. The decoder therefore works with an intermediate samplerate of 2000 samples/second. Since the

minimal samplerate for the SDRplay family is 2000000, a lot of decimation has to be done.

This implementation requires an input sample rate of 62500 samples/second, this requires the setting of the mainwidget to a samplerate of 2000000, and a decimation of 32, as shown in the picture One should realize that the SDRuno spectrum display shows a band of 62.5 KHz, the advantage is that one sees a lot of signals, the disadvantage is that precise tuning, based on the view on the spectrum is not easy.
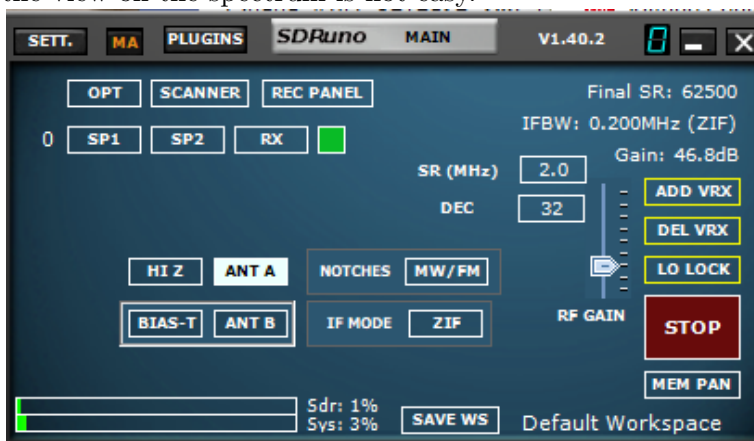

The plugin generates an audiotone of 800 Hz + the tuning offset, the sound is output with a rate of 48000, setting "AM" in the RX control window will set this rate.

3   Tuning

As said, psk is a signal with a small footprint, and since many of the amateur transmissions are brief messages (such as CQ CQ ...), tuning requires some training.

What is really helpful here is the auxiliary spectrum display, the widget can be enlarged, and one may zoom in such that one may view a spectrum with a width of app 1 KHz.
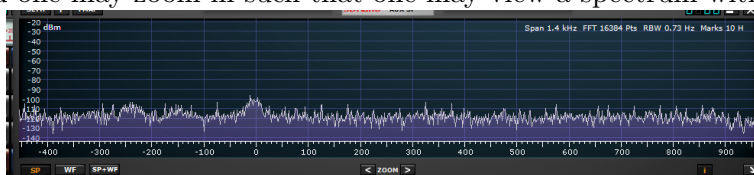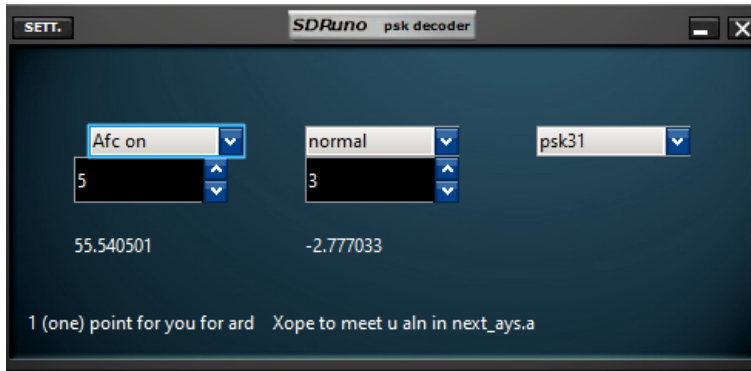

The way to tune is in two steps

- coarse tuning with the mouse on the main spectrum display;

- fine tuning with the mouse controlled numerical display until the psk signal is aboce the '0' in the auxiliary spectrum display.

4   The plugin

The plugin widget is shown in the picture

The widget has three control comboboxes, and two spinboxes.

- the combobox, with *Afc on* on the picture, controls the afc. It just has two options *Afc on*, or *Afc off*. If "on", the frequency offset used for correcting the measured frequency offset is in the right label, here -4.7... Hz;

- the combobox, with *normal* on the picture, let chose between normal and inverse decoding;

- the combobox, with *psk31* on the picture, controls the decoding mode. As said, current modes are restricted to bpsk modes, in a later stage the qpsk modes might be added.

- the spinbox to the left tells the filter depth used for eliminating the noise in the signal[1];

- the spinbox to the right sets a squelch level, below which there is no decoding.

The number label to the left, below the filter depth indicator, here with a value of 55..., shows the "quality" of the decoding of the signal. As usual with this kind of indicators, 100 is best.

The bottom line of the widget is reserved for the decoded signal. Note that bpsk does not provide an error correction mechanism, and garbage may be shown.

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[1]the filter is a low pass FIR filter with a degree that is twice the indicated number + 1. Of course a lot of filtering was already done to get a reasonable clean signal