

# **SoDiRa – Software-Radio**

## **Specification**

Version of this document and SoDiRa software: 0.100 preview

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## Supported receiver

### ***Internal direct supported receiver:***

soundcard as real data based VLF receiver	tested
soundcard as real or IQ data based IF stage receiver	tested
soundcard with Elektor DRM 03/2004	not tested since version 0.099
soundcard with DRT1	not tested since version 0.099
soundcard with DRB30/DRB32	not tested since version 0.099
soundcard with Elektor USB IQ 05/2007	not tested since version 0.099
soundcard with HCJB Pappradio Version 1	not tested since version 0.099

### ***Extio supported receiver:***

RSP1	tested
RTLSDR USB Stick	tested
Perseus SDR	tested with ExtIO_perseus2v4a

If you can use SoDiRa with your receiver, please send me a message.

# Tuning

Tuning resolution accuracy and resolution	exactly to 1 Hz only be possible if receiver support correct feedback of tuned frequency receiver tuning offset will be automatically corrected by an software tuning offset some ExtIO receiver will give incorrect feedback
Tuning range	0 Hz to 999,999,999,999 Hz (1 Thz minus 1 Hz) plus an offset caused by the ADC bandwidth The tuning range is depend on used receiver hardware
Manuell mode	frequency is choosed by user action
Auto IF tuning	frequency is chossed by an automatic spectrum peak detection tuning speed depends on receiver
receiver tuning	receiver frequency will be changed
Soft tuning	Software frequency will be changed within the RF/IF stage tuning range 10 steps per second speed
Shift tuning	Receiver and software frequency will be changed together the sum of booth is constant Turing station will be halted but some interferences will be shift out
Search tuning	Receiver frequency will be decreased or increased by a choosing step until a new station will be found stop point is detected by a spectrum band power detection
Direct enter tuning	Frequency can be direct entered by keyboard buttons
Digit tuning	Frequency digit can be choosed
Database tuning	Frequenca changig by chossing an item of the frequency manager

## RF stage processing

Samplerates

min 44100 Hz  
max samplerate is depend on host CPU power  
5 Mhz samplerate at 2 Ghz Intel CPU is tested  
all real values between min and max are allowed

processing modules

Decimation and samplerate conversion to IF stage samplerate  
frequency shifting  
Impulse noise supression  
IQ balance controlling  
DC filtering  
spectrum calculation

## IF processing

Samplerates	48k, 96k, 192k, 384k, manually chooseable or automatically chosen by demodulation bandwidth and lowest CPU consumption
Processing modules	bandpass filtering demodulation level calculation spectrum calculation

## Audio processing

Samplerates                    48k, 96k, 192k, 384k,  
manually chooseable or automatically choosed by audio bandwidth and  
lowest CPU consumption

Processing modules            low pass filtering  
DC filtering  
white noise suppression  
impulse noise suppression  
automatic gain control (AGC)  
manually gain control

## **Version history:**

0.100          Completely new internaly and GUI designed version