



STEMlab

Test & Measurement applications running
on a credit card sized SoC (FPGA+CPU)
based Open SW source DAQ platform

STEM is an acronym of “science, technology, engineering and mathematics” and is often used in the educational sector to designate the scientific and engineering disciplines



PA3ANG - Dutch Ham Radio Station - Weblog

Radiozendamateurisme op het snijvlak van radiotechniek en internet.

[ABOUT](#) [PORTAL](#) [SPECIALS](#) [WSPR](#) [RED PITAYA](#) [SDR](#) [RPI](#) [ARDUINO](#) [DIGITAL VOICE](#) [QRP](#) [GENERAL](#) [🔍](#)

NL4196 - PA2112 - PD0CJH - PE1BQP - PA3ANG



Ten-Tec RX320D, 100kHz-30MHz. | Zwolle - Netherlands.

Frequency in kHz:	747	↑ ↓	Enter
Modulation:	AM		
Bandwidth:	8000Hz		
S: 9+25dB	Agc:	Medium	Refresh
Online: 1 user(s) Last tuning by: PA3ANG at: 11:43 UTC PA3ANG Logged ip: 83.163.23.129 - Your time online is: 46:14			

10:04 120:00
|| PAUSE MUTE

LOGGED IN
PA3ANG

[Profile](#) [Logout](#)

1850 3604 3630 3692 3705 7077 7087 6635 LLS 5450 747 1008

28/03@04:03 UTC SWL-Ron hee johan via linux helemaal nix...
28/03@07:41 UTC SWL-Ron en in windows met ie 2 seconden
28/03@09:18 UTC PA3ANG ja android, ff, chrome prima... geen idee waarom ie niet
28/03@09:54 UTC SWL-Rolf oh met mozilla firefox werkt die goed swl ron

shoutbox



Red Pitaya is a privately owned company established in 2013 as a result of a spin off from Instrumentation Technologies LLC, the leading company in designing and building high performance instruments for particle accelerators.

With the help of a successful Kickstarter campaign, deep engineering background and passionate young individuals with innovations in their heart we are constantly growing and changing the test and measurement market.

As a confirmation of our innovative approach we were awarded the prestigious Frost & Sullivan Global Electronic Test & Measurement Tools New Product Innovation Award in 2014.



Science, Technology, Engineering and Math

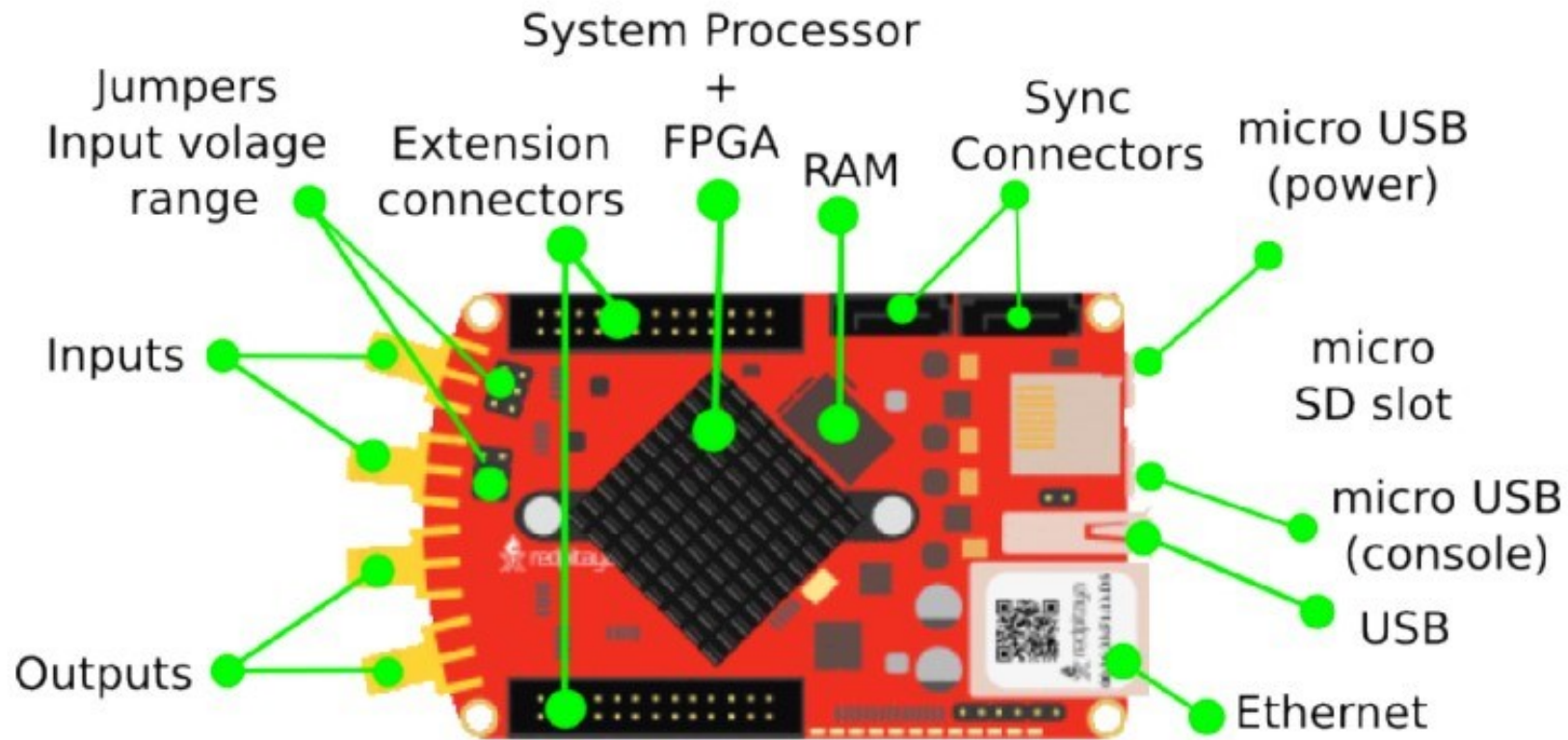
The ultimate FPGA/SoC technology, coupled with very accurate high-end ADCs represents the core of the STEMLab circuit.

Together with the experienced Red Pitaya design team and thorough testing it makes STEMLab a very unique technology solution on the market.

Open source development **DAQ platform**



redpitaya



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Open-Source-Messlabor, 50 MHz
Mit dem Red Pitaya verwandeln Sie Ihr Smartphone, Tablet oder Ihren PC in ein umfangreiches Messinstrument!

RED PITAYA
446,00

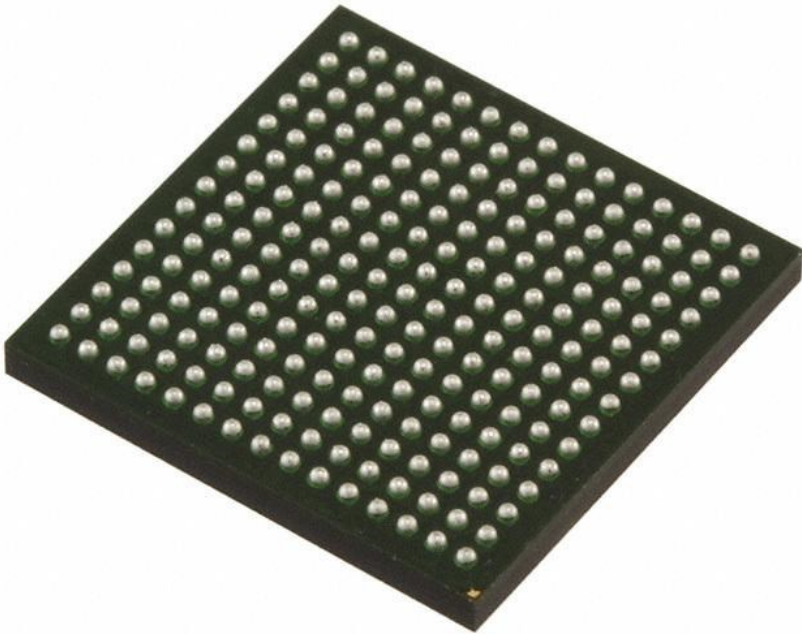
- CPU/FPGA: Xilinx Zynq 7010 SoC, Dual ARM® Cortex™-A9
- 16 digitale Ein- und Ausgangsports
- je zwei HF-Ein-/Ausgänge, 50 MHz, 125 MS/s
- je vier analoge Hilfs-Ein-/Ausgangskanäle

Produktabbildung & Zubehör ab Seite 103

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Bestellhotline: +49 (0)4422 955-333 **01 | 2015**



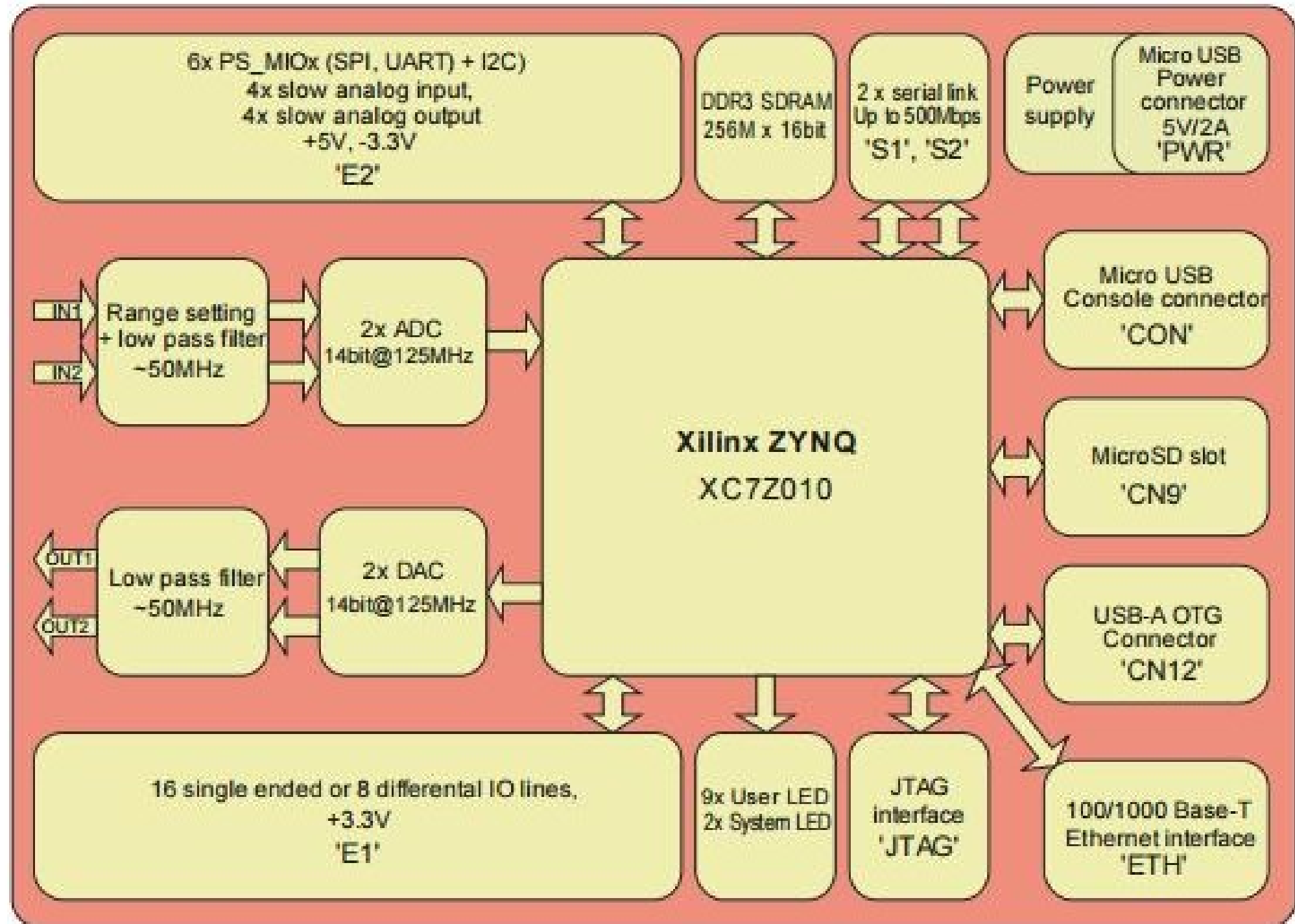
XC7Z010 – 1CLG400C

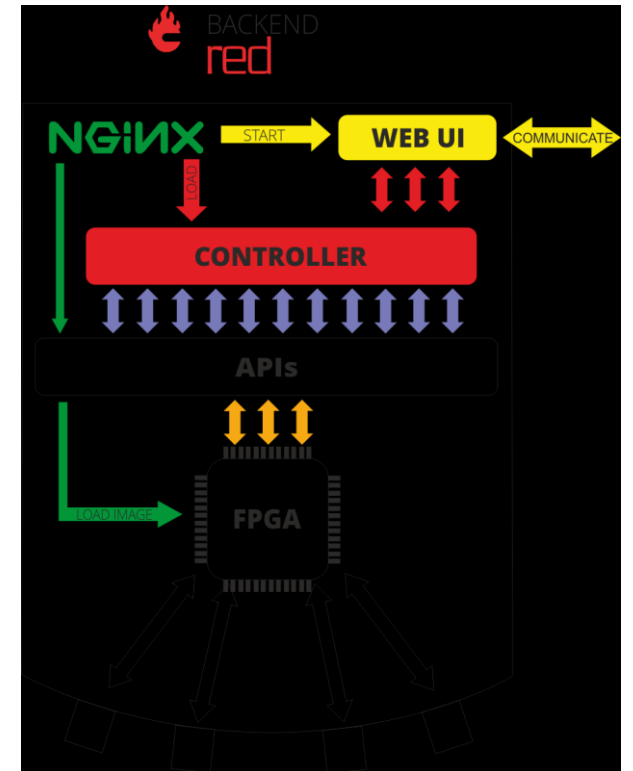
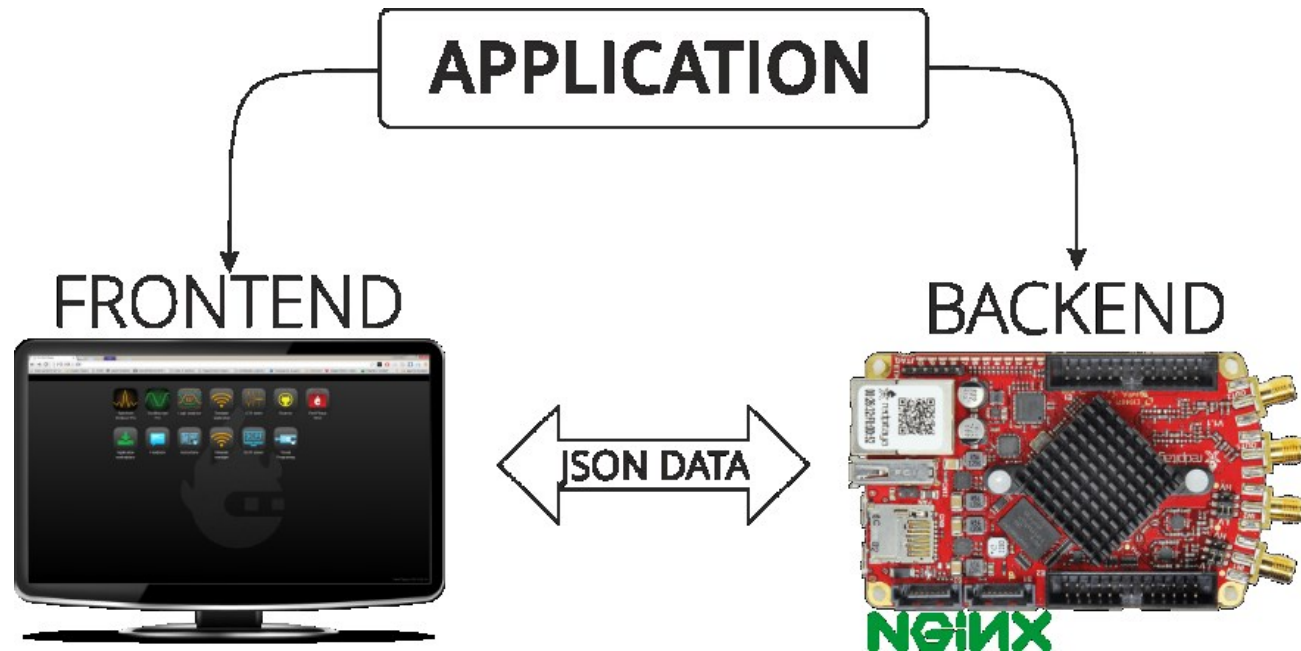


- Dual ARM® Cortex®-A9 MPCore™ with CoreSight™
- System On Chip (SOC)
- IC Zynq®-7000 Artix™-7 FPGA (28nm)
- 28K Logic Cells
- 256KB MCU RAM
- 667MHz
- 225-CSPBGA (13x13) (0,8mm pitch)

[Field-Programmable Gate Array \(FPGA\)](#)

[System-on-Chip \(SoC\)](#)

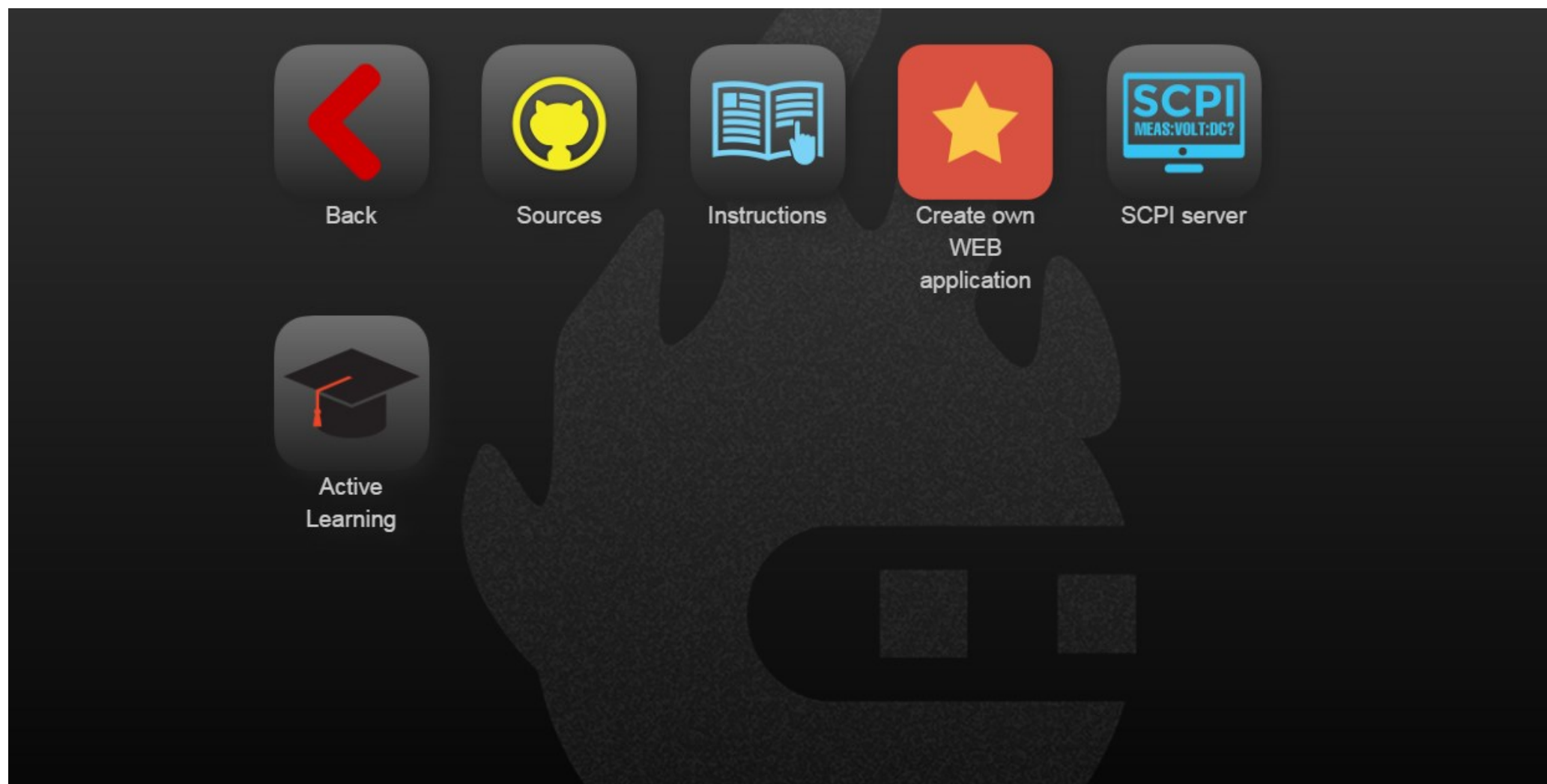






STEMlab

Science, Technology, Engineering and Math



45.56kB/s



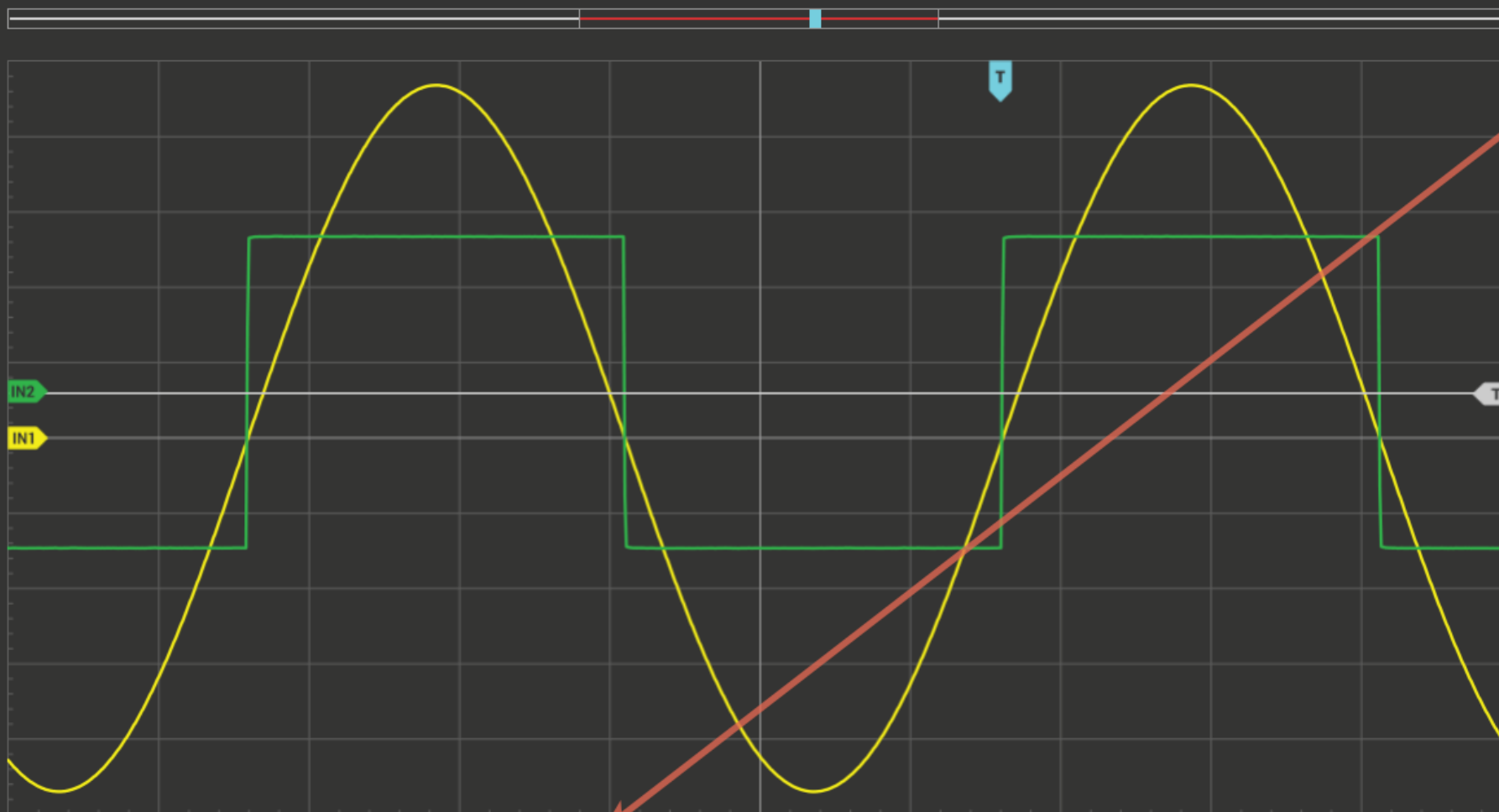
redpitaya

SETTINGS

EXPORT

AUTO SCALE

STOP



IN1 200 mV/div
IN2 100 mV/div

P2P(IN1) 1.866 V
RMS(IN2) 205.4 mV
DUTY CYCLE(IN2) 50.0 %
FREQ(IN1) 1.00 kHz

TRIG'D

Time 200 μ s/div
Trig \uparrow IN2 0 V
-317.85 μ s
1.953MS/s

Measurement

Operator
FREQ

Signal
IN1 IN2 MATH

DONE

List (click to clear meas.)

P2P (IN1)

RMS (IN2)

DUTY CYCLE (IN2)

FREQ (IN1)

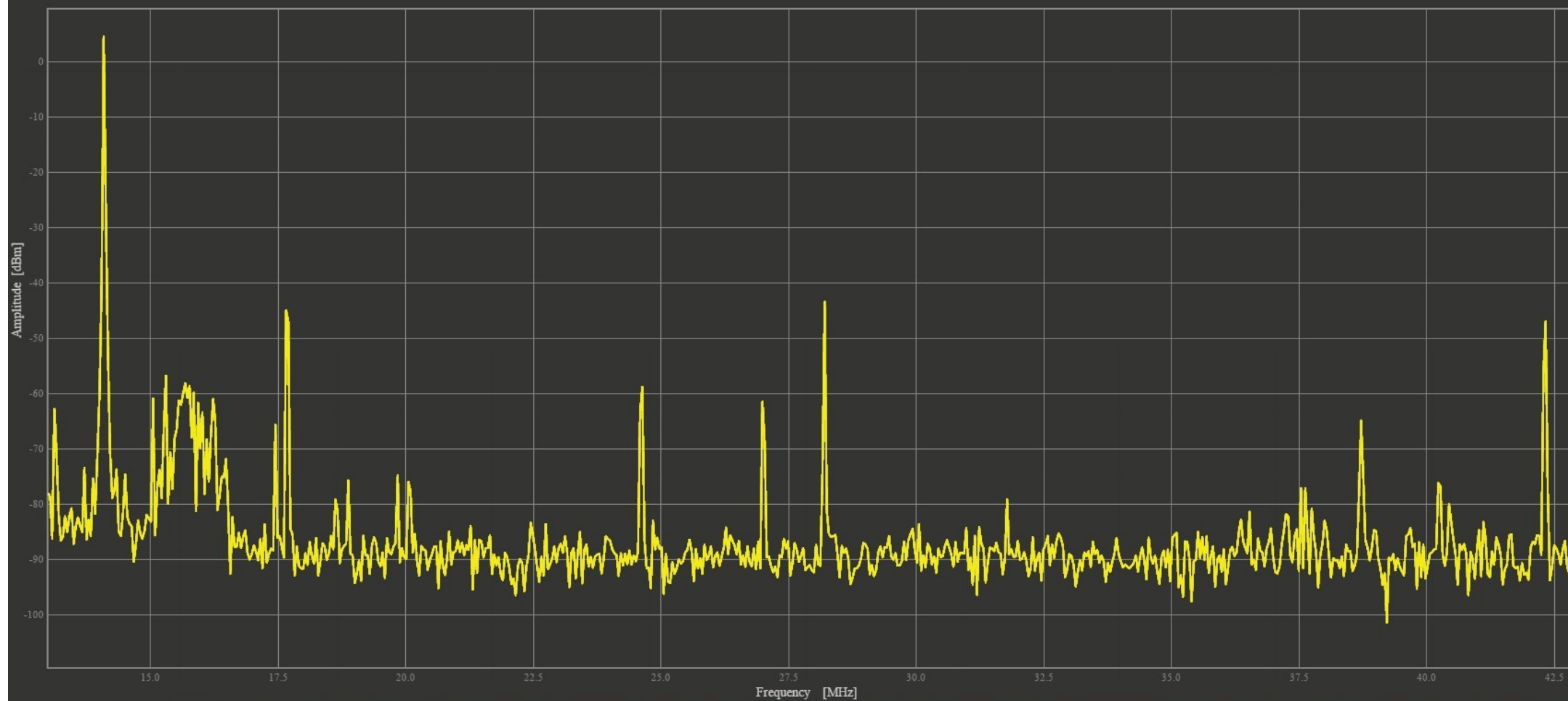


Oscilloscope

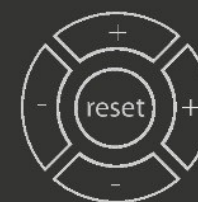
	STEMlab 125 - 10	STEMlab 125 - 14
Input channels	2	2
Bandwidth	40MHz	50MHz
Resolution	10bit	14bit
Memory depth	16k samples	16k samples
Input range	± 1V (LV) and ± 20V (HV)	± 1V (LV) and ± 20V (HV)
Input coupling	DC	DC
Minimal Voltage Sensitivity	± 1.95mV / ± 39mV	± 0.122mV / ± 2.44mV
External Trigger	Yes	Yes

Signal generator

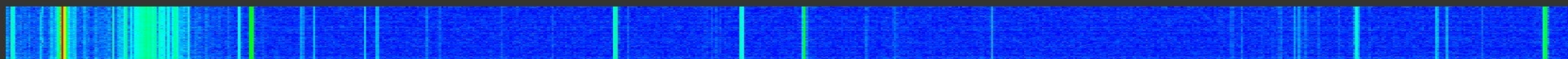
	STEMlab 125 - 10	STEMlab 125 - 14
Output channels	2	2
Frequency Range	0-50MHz	0-50MHz
Resolution	10bit	14bit
Signal buffer	16k samples	16k samples
Output range	± 1V	± 1V
Input coupling	DC	DC
External Trigger	Yes	Yes
Output load	50 Ω	50 Ω



Cursor	
X1	X2
Y1	Y2
Peak Ch1: 4,557 dBm @ 14,10 MHz	
Peak Ch2: OVER RANGE	

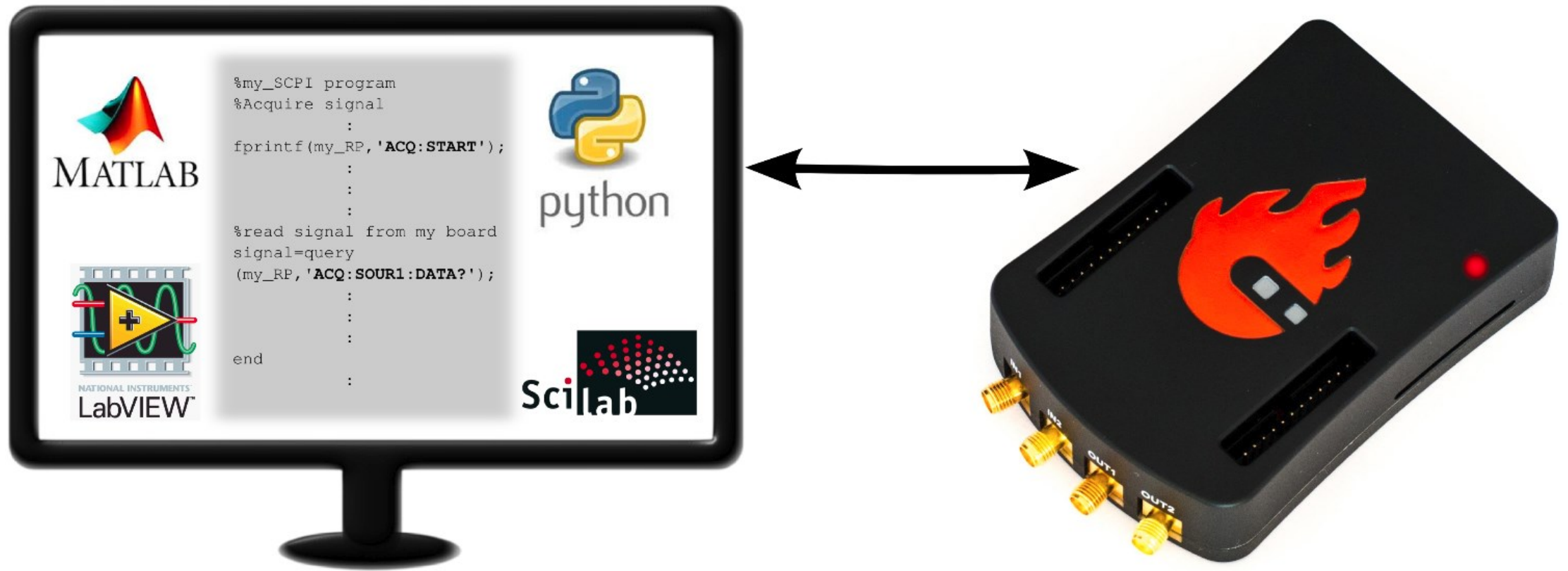


IN1



Spectrum Analyzer

	STEMlab 125 - 10	STEMlab 125 - 14
Input channels	2	2
Bandwidth	0 - 50MHz	0 - 62MHz
Resolution	10 bit	14 bit
DFT buffer	16384	16384
Dynamic Range	<ul style="list-style-type: none">• 70 dBm	<ul style="list-style-type: none">• 80 dBm
Input noise level	< -100 dBm/Hz	< -119 dBm/Hz
Input range	10dBm	10dBm
Input impedance	1 M Ω / 10 pF	1 M Ω / 10 pF
Input coupling	DC	DC
Spurious frequency components	< -70 dBFS Typically	< -90 dBFS Typically



STEMlab board can be controlled remotely over LAN or wireless interface using Matlab, Labview, Scilab or Python via Red Pitaya **SCPI** (**S**tandard **C**ommands for **P**rogrammable **I**nstrumentation) list of commands.

SCPI interface/environment is commonly used to control T&M instruments for development, research or test automation purposes.

↑ Autoscale

↺ Reset zoom



Channel 1

Channel 2

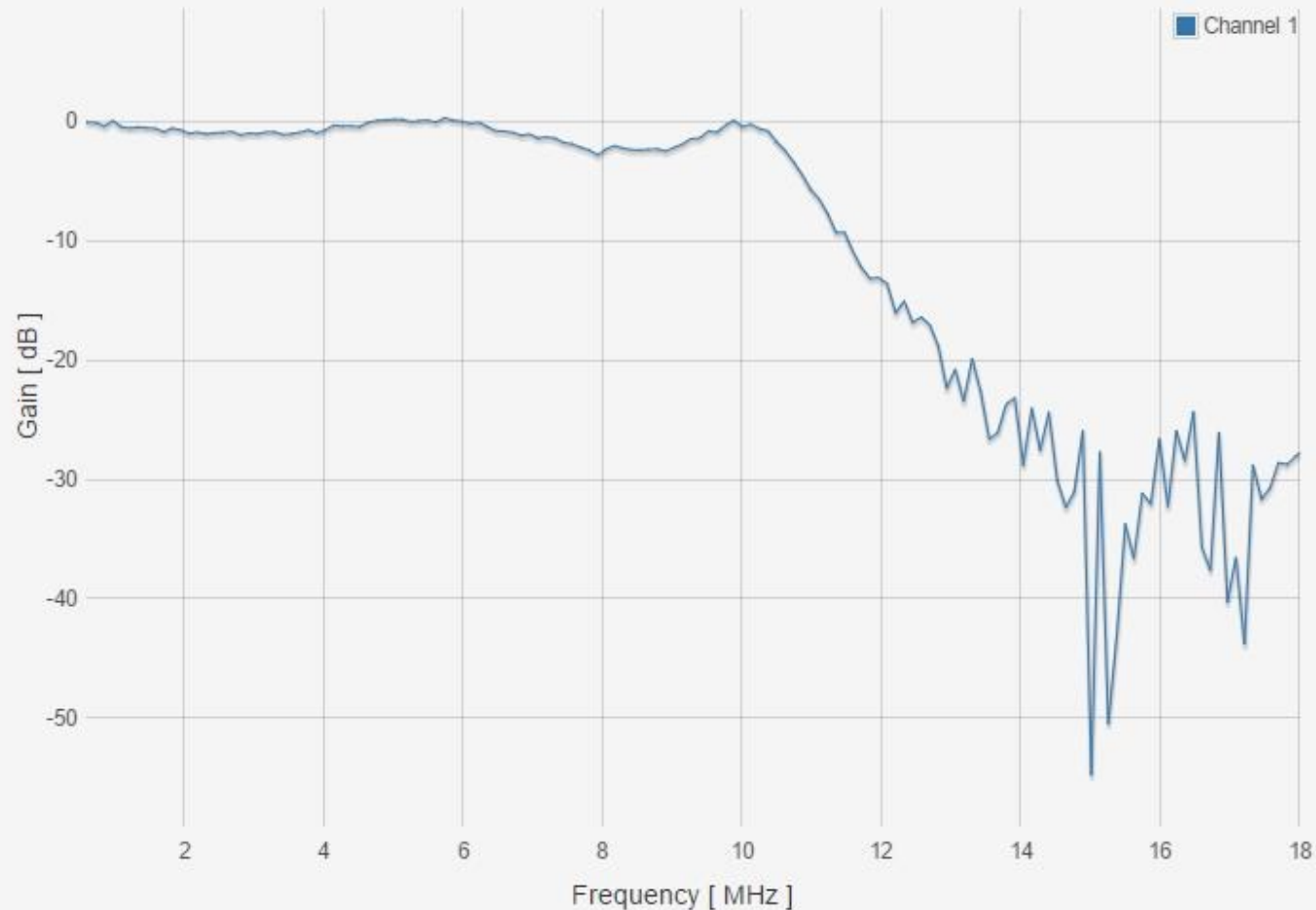
Freeze Ch1

Freeze Ch2

Controls

Calibrate Ch1

Calibrate Ch2



Vector Network Analyzer

Disconnect

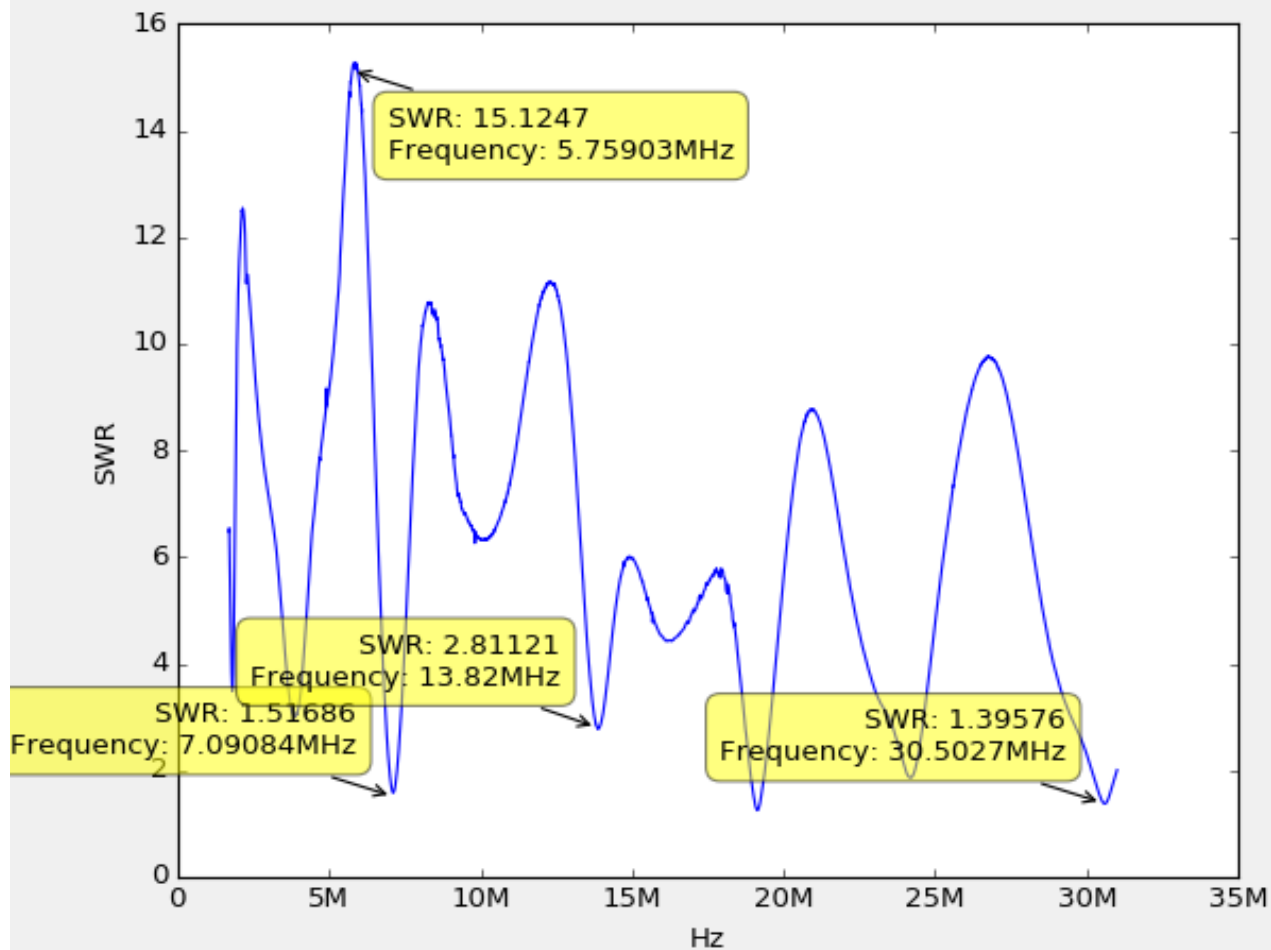
Write cfg.

Read cfg.

Freq. corr., ppb
Start, kHz
Open

Bandwidth, Hz
Stop, kHz
Short

Level, dB
Points
Load



- DUT
- Write csv
- Write s1p
- Write s2p
- Open data
- Short data
- Load data
- DUT data
- Smith chart
- Impedance
- Ref. coeff.
- SWR
- Return loss
- Gain



HAMlab

80-10 10W -- OpenHPSDR mRX PS



HAMlab

80-10 10W -- OpenHPSDR mRX PS



Oscilloscope &
Signal
Generator



Logic analyser

((SDR))
HPSDR

SDR
transceiver
compatible with
HPSDR



DFT Spectrum
Analyser



HAMLAB Store



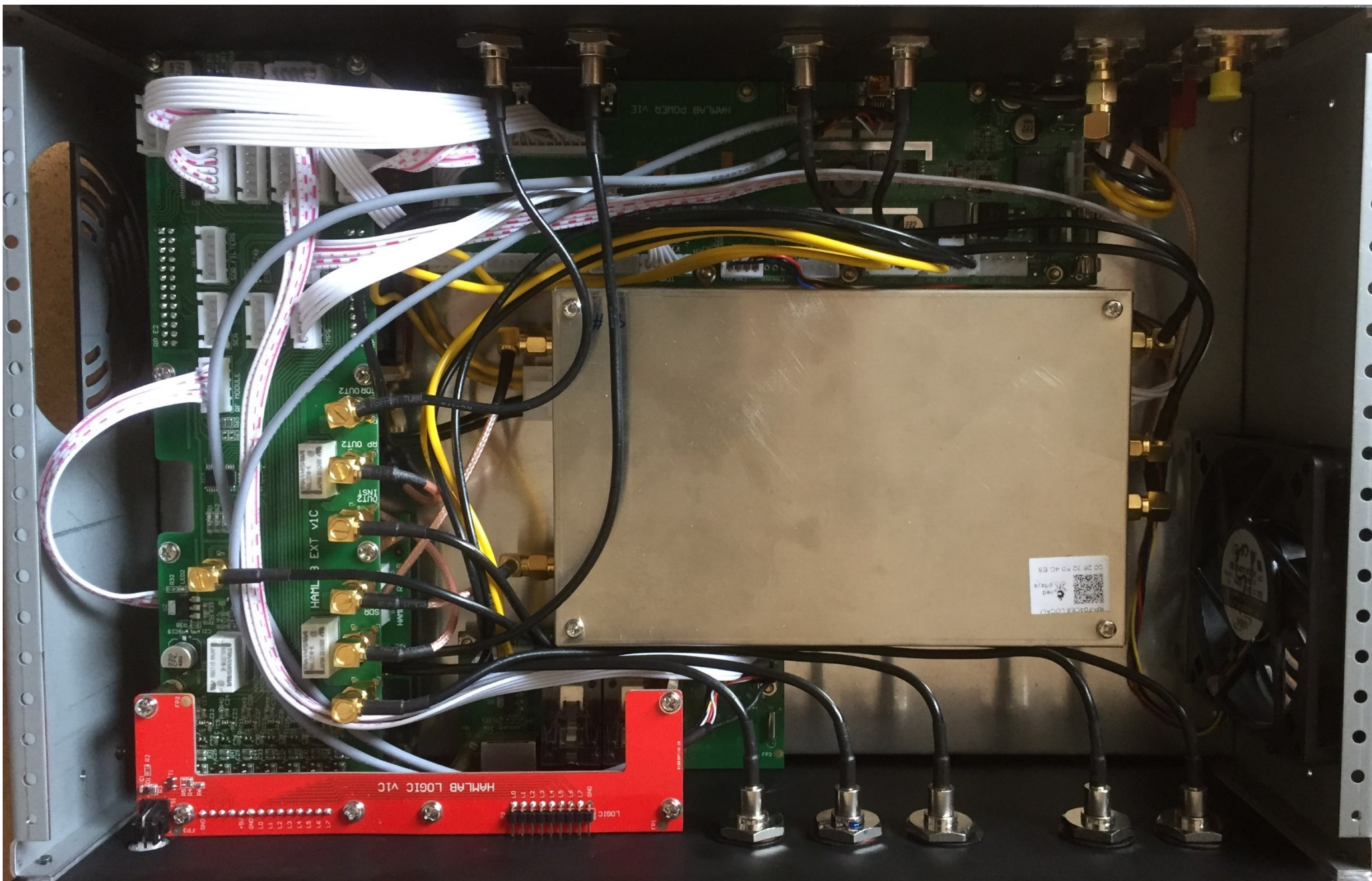
Feedback



User Manual



System



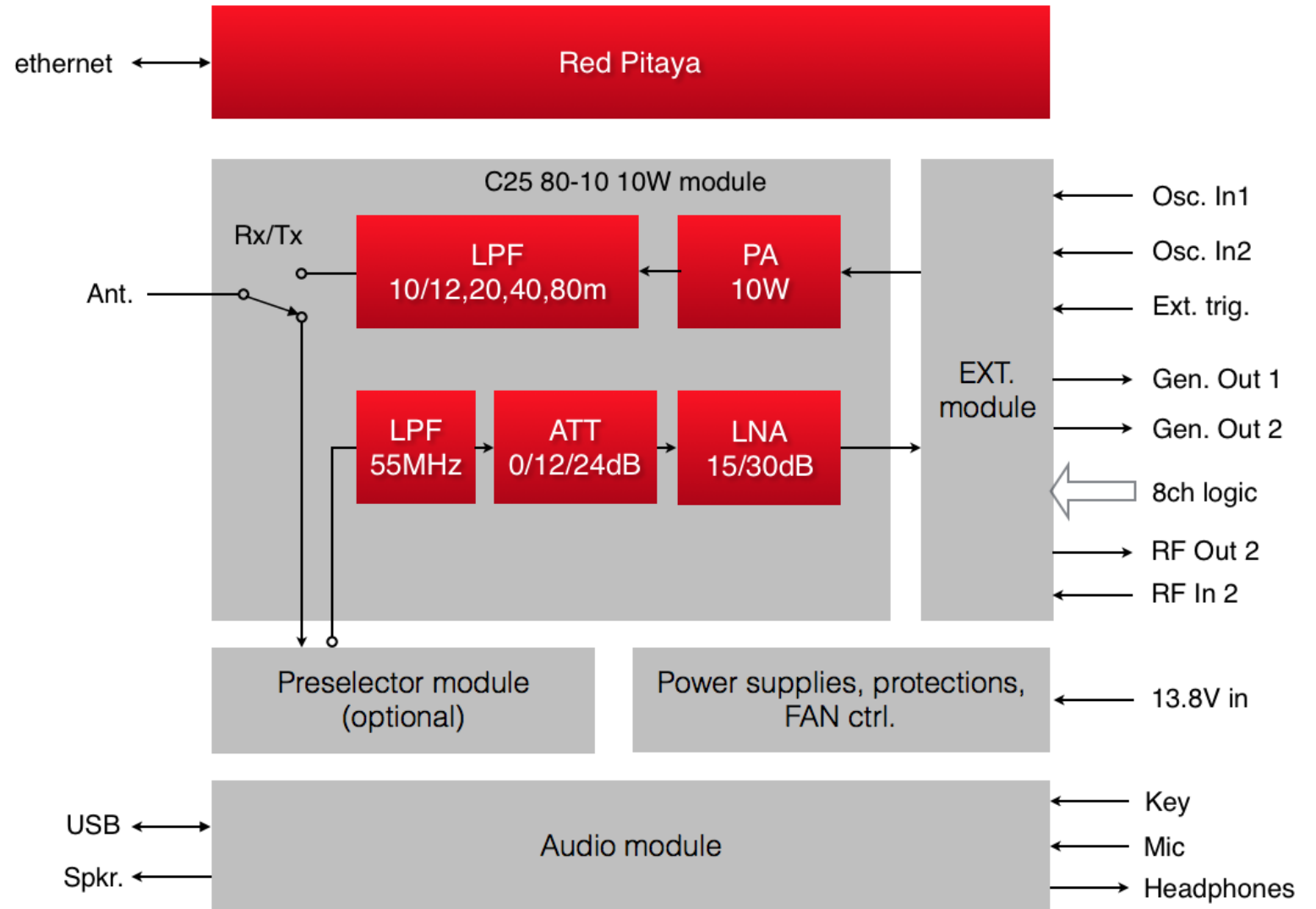
HAMlab

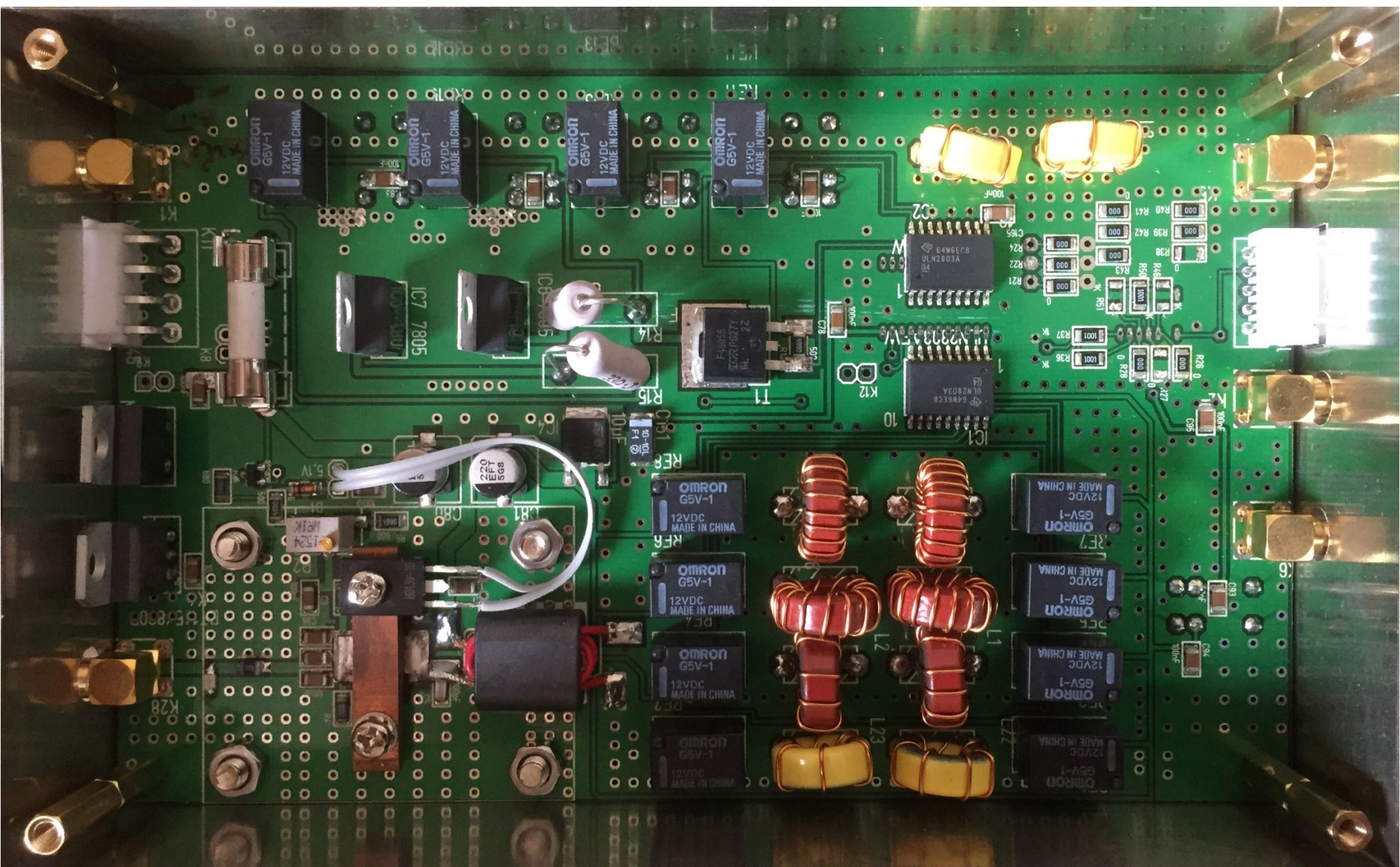
Mercury receivers (2x)
PennyLane transmitter

Alex TX board (80,40,20,10)
Alex RX LPF/ATT/LNA

USB sound card

IN1 & IN2 transformers





Setup Memory Wave Equalizer XVTRs CWX Diversity Collapse Linearity RA

Power RX2

MON TUN
MOX **ALLX**
DUP

Master AF: 0
RX1 AF: 13
RX2 AF: 24
AGC Gain: 80
Drive: 100
AGC ATT
Med QdB

SQL: -121
24-2-2017
UTC 21:26:30
CPU% 66

VFO A

3,748 000

80M All Modes TX

VFO Sync
VFO Lock 7.000000
Tune Step: - 1kHz +
Save Restore

VFO B

1,626 034

TX Broadcast AM Med Wave

RX1 Meter TX Meter
Signal ALC
-53 dBm
1 3 5 7 9 +20 +40 +60

160	80	60
40	30	20
17	15	12
10	6	LFMF
VHF+	WWV	GEN

LSB	USB	DSB
CWL	CWU	FM
AM	SAM	SPEC
DIGL	DIGU	DRM

5.0k	4.4k	3.8k
3.3k	2.9k	2.7k
2.4k	2.1k	1.8k
1.0k	Var 1	Var 2

Width: Shift: Low -2850 High -150

3,740 3,745 3,750 3,755 3,760 3,765 3,770 3,775

-40 -60 -80 -100 -120

3,740 3,745 3,750 3,755 3,760 3,765 3,770 3,775

-309.4Hz -72.5dBm 3,747 691 MHz

Pan: Center Zoom: 0.5x 1x 2x 4x

SPLT A > B
0 Beat A < B
IF->V A <> B

NR ANF
NB2 SNB
MUT BIN
MNF

Panafall
AVG Peak
CTUN

MIC 32 dB
COMP 14 dB
VOX 100
DEXP -40

Transmit Profile: Default
RX EQ TX EQ
TX FL

XIT 0 RIT 0
0 0
VAC1 VAC2

Vol Pan Vol
MultiRX
Swap



Red Pitaya

Slovenia

<http://www.redpitaya.com>

Repositories

People 0

Search repositories...

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red-pitaya-notes

Forked from pavel-demin/red-pitaya-notes

Notes on the Red Pitaya Open Source Instrument

C 3 57 Updated 13 hours ago



linux-xlnx

Forked from Xilinx/linux-xlnx

The official Linux kernel from Xilinx

C 448 Updated 2 days ago



RedPitaya

Red Pitaya Ecosystem and Applications

C 168 462 Updated 8 days ago



PowerSDR_HPSPDR_mRX_PS

C# 2 Updated 11 days ago



HAMlab-doc

Forked from amike80/documentation

This repository contains the manual for HAMlab.



Top languages

C Python C++ Haskell
C#

People

0 >

This organization has no public members.
You must be a member to see who's a part of this organization.

1. List of components
2. Links
3. Development machine
4. LED blinker
5. SDR receiver
6. SDR transceiver
7. SDR transceiver compatible with HPSPDR
8. SDR receiver compatible with HPSPDR
9. SDR transceiver with FFT
10. Embedded SDR transceiver
11. Wideband SDR transceiver
12. Multiband WSPR transceiver
13. Pulsed Nuclear Magnetic Resonance
14. Multichannel Pulse Height Analyzer
15. Scanning system
16. Vector Network Analyzer
17. Debian with Red Pitaya ecosystem

<http://redpitaya.readthedocs.io>



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- Telling your friends, co-workers, managers about us
- Writing a blog about how you used Red Pitaya and send it to us

If you have feedback to share with us, contact us at:

support@redpitaya.com

We will be more than happy to discuss.