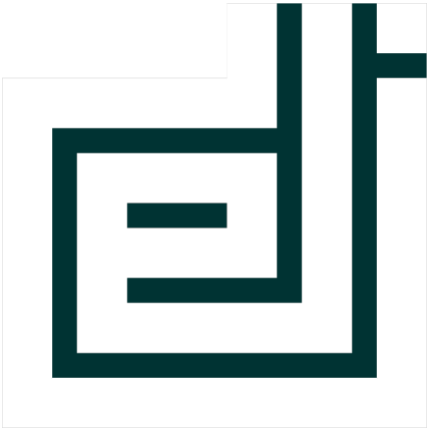

Modernization of Event Timer RTS 2006

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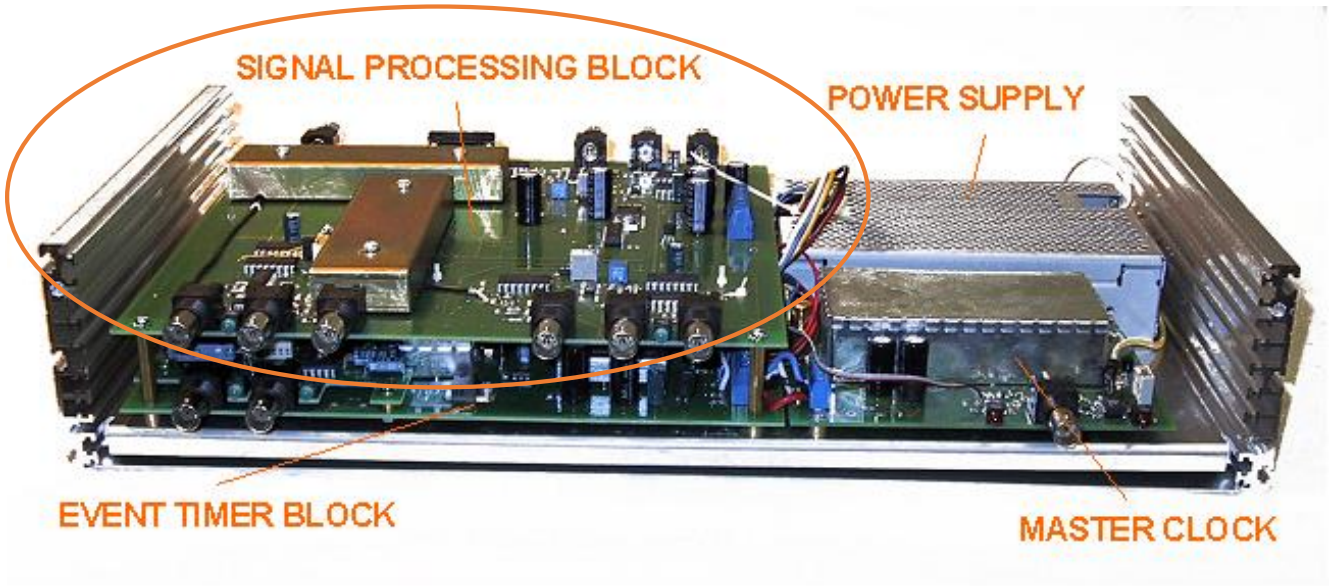
[1]Institute of Electronics and Computer Science
[2]University Of Latvia Institute of Astronomy

A Brief History of RTS 2006

Y. Artyukh, V. Bespalko, K. Lapushka, A. Rybakov, Event Timing System for Riga SLR Station, 15th International Workshop on Laser Ranging, Canberra, Australia, October 15-20, 2006.

Signal Processor Block



3 to 7 ns pulse width range; -0.1 to -3.0 V amplitude range

RTS - 2006 processing Version 1.1

Load Data (*.txt)

New AT function

AT-Disabled

Denoising:

File

Delay

Amplitude

Fill Color

View AT function

Data Correction

Amp. Zero-OUT

Uniform X-axis

Save Data (*.tat)

Mean Amplitude:

1049.6

Autocorrection

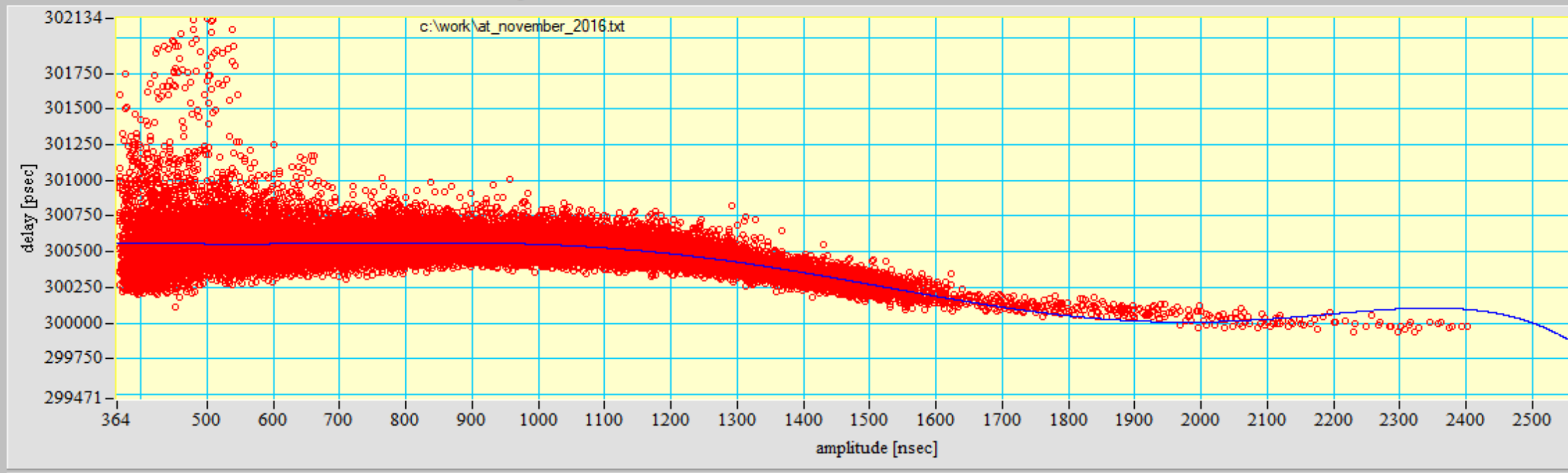
Cycles Number:

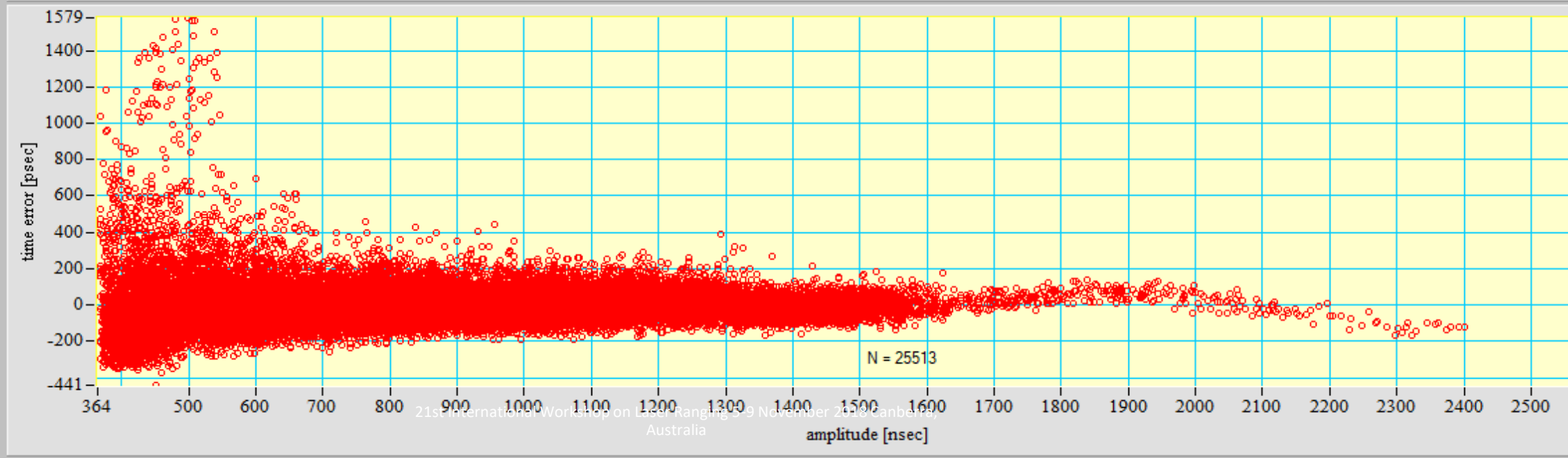
1

Copy Files

Quit

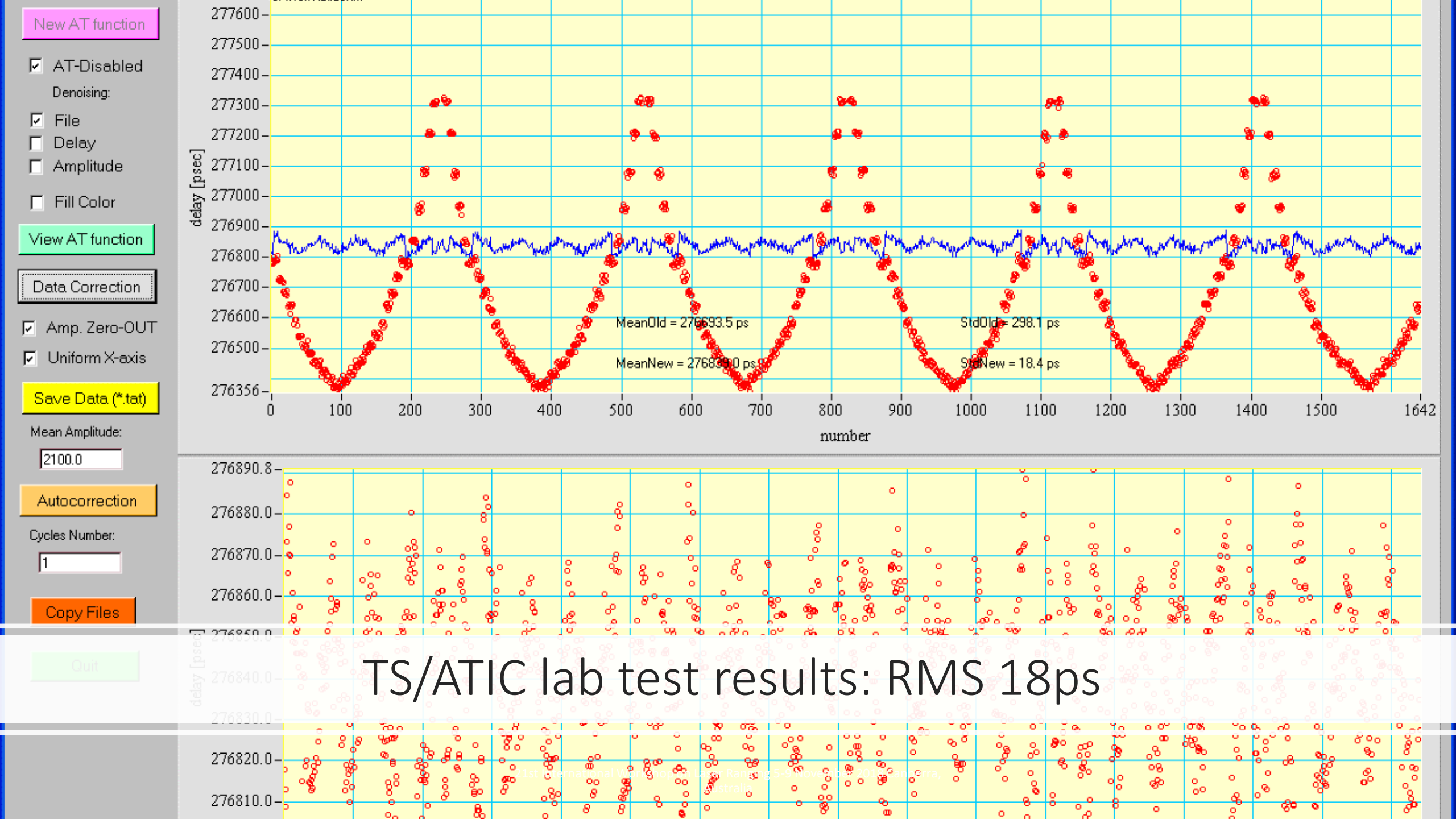
Day AT-function Night AT-function



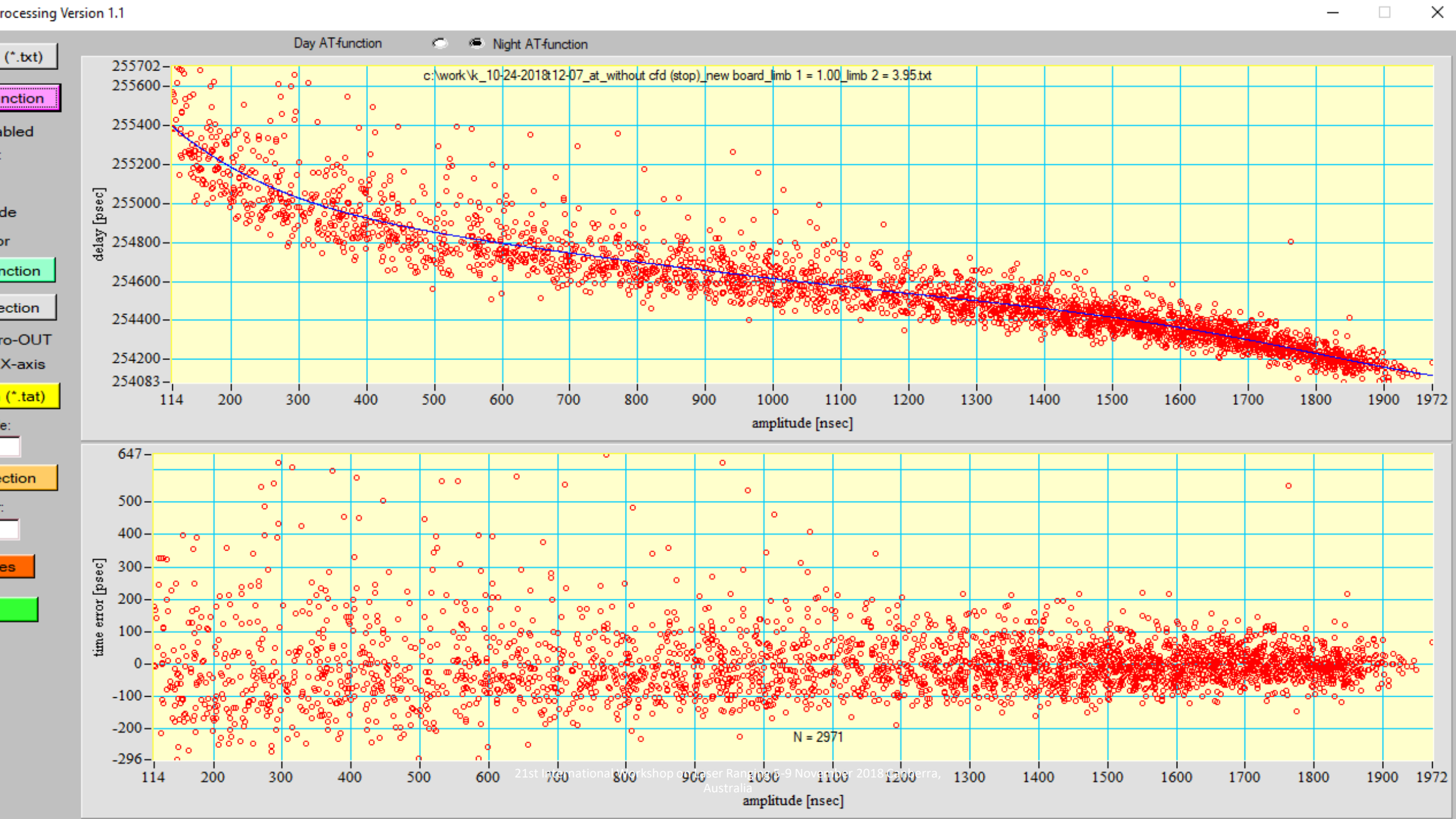


New development - TS/ATIC

Testing TS/ATIC with Tektronix AFG 3252C and Tabor WS58352



TS/ATIC lab test results: RMS 18ps


rocessing Version 1.1
(*.txt)
nction
abled
de
or
nction
ection
ro-OUT
X-axis
(*.tat)
e:
ection
es
Day AT-function
Night AT-function
c:\work\k_10-24-2018t12-07_at_without cfd (stop)_new board_limb 1 = 1.00_limb 2 = 3.95.txt
delay [psec]
255702
255600
255400
255200
255000
254800
254600
254400
254200
254083
114 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 1972
amplitude [nsec]
time error [psec]
647
500
400
300
200
100
0
-100
-200
-296
N = 2971
114 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 1972
amplitude [nsec]
21st International Workshop on Laser Ranging 5-9 November 2018 Canberra, Australia

A brief comparision

	RTS 2006 signal processing unit	TS/ATIC
Input signal range	350mV-3V	120mV-2V
Amplitude meas. precision	?	1ns
Can work without CFD	No	Yes
Can work with newer timer models	No	Yes
Selector output rise time	3-4ns	1ns

RTS 2006 + TS/ATIC + ETSC

Conclusions and things to do

- We can now replace CFD with the new signal processing module and software solution
- Better precision – preliminary tests shows up to two times better calibration RMS
- Start to use in routine tracking
- Develop new software to fully utilize TS/ATIC capabilities
- Better amplitude calibration device

Acknowledgments

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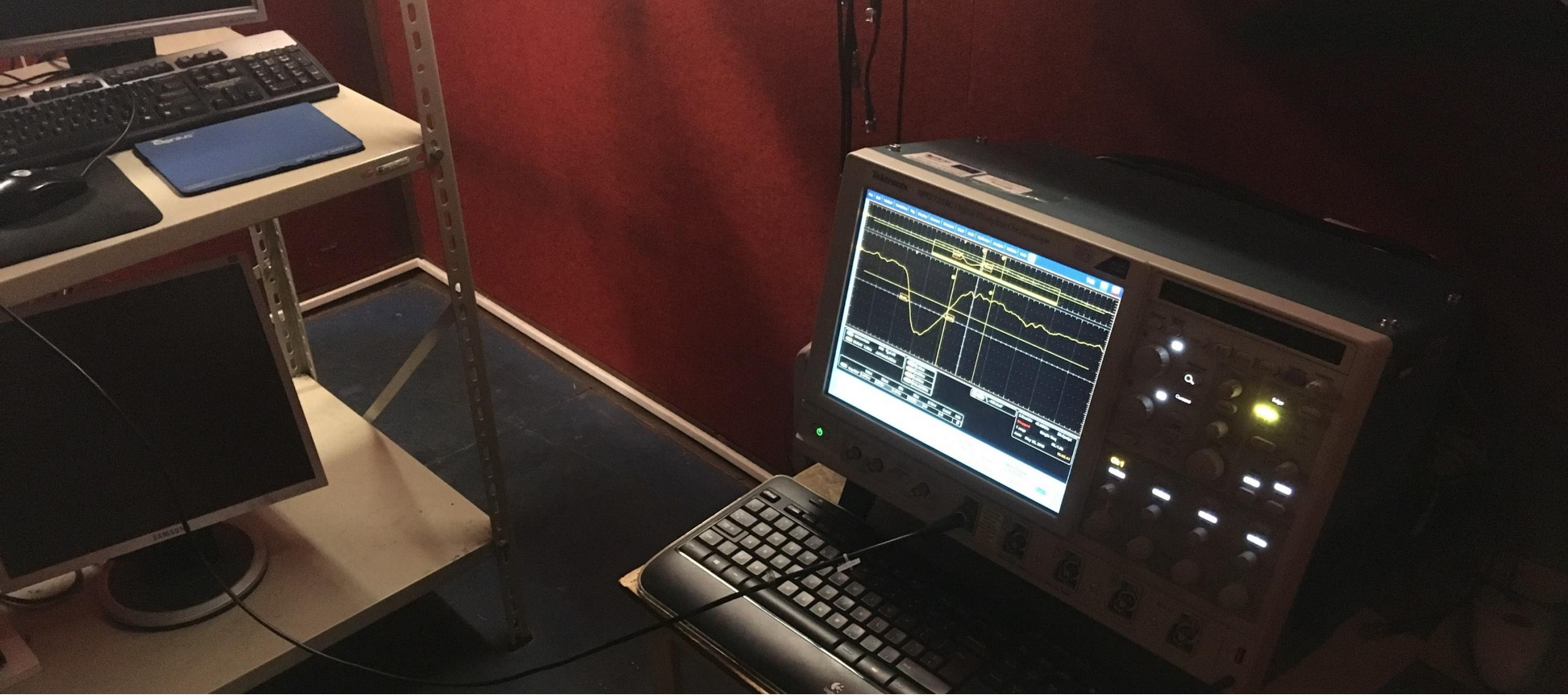

Thank you for your attention!