USER MANUAL

Adash A4802
Sensor Simulator

Version September 17, 2019

Content:

# *Adash 4802 – Sensor simulator*

Application
- Generates sine test signal for systems checks
- Checks the function of the measuring system
- Checks the correct calibration of the measuring system
- Checks the correct function of cables (on-line systems)
- Checks ICP® powering

Characteristics
- Output sine signal for vibration analyzers testing (80Hz and 8kHz)
- BNC and MIL C5015 output connectors
- Micro USB TYPE B charging
- ICP® power color LED indication
- Powered by Li-Po battery
- 20 hours of continuous operation

Description
The A4802 device simulates a standard ICP® acceleration sensor with 100mV/g sensitivity. The output signal is a sum of 80Hz 51,2mV RMS (10mm/s RMS) and 8kHz 50mV RMS (0.5g RMS) sine wave signals. The A4802 enables to test online vibration monitoring systems, portable vibration meters, analyzers and cables in very simple way. The output signal is simultaneously connected to both output connectors. The device is battery powered and its proper function needs ICP® powering from 0.1 mA to 10mA (to get bias voltage level). The device shows ICP®power level (color led).

Unit description:
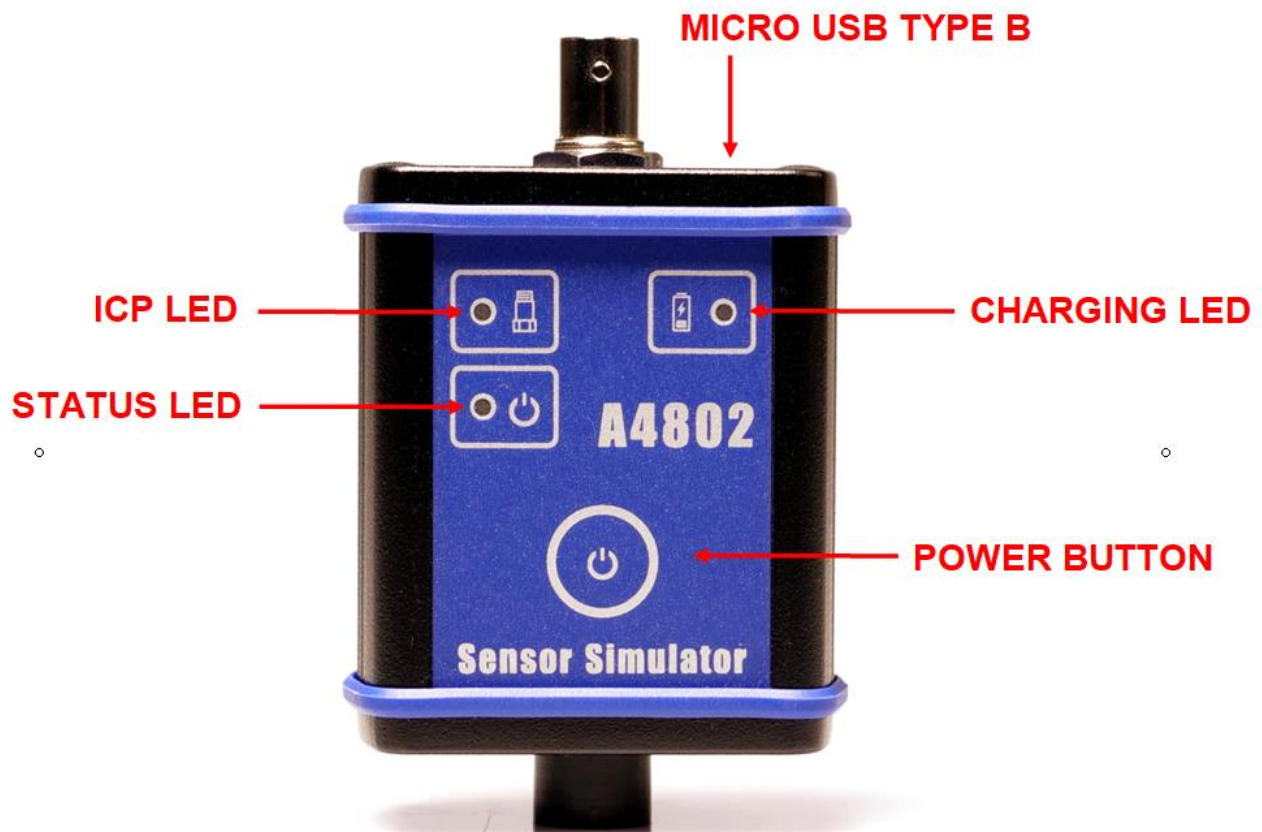
Power button – Hold the power button for about 2 seconds to turn the device ON. The status LED is orange during turning the device on and then the status LED becomes green to signalize that the device is turned ON. Hold the power button in order to turn the device OFF.

Status LED – ON/OFF status indication.
- None – device is off
- Green – charged on more than 20% of battery capacity
- Orange – around 20% of battery capacity remains
- Red – around 10% of battery capacity remains

ICP LED – indicates ICP® current level from tested device.
- None – ICP® current is less than 2mA
- Green – ICP® current is from 2 to 4mA
- Blue – ICP® current is from 4 to 10mA
- Red – ICP® current is more than 10mA

Charging LED – battery charging indication
- Red – charging
- Green – device is fully charged

The device is charged with Micro USB type B cable. You can charge device from PC, power bank or cell phone charger. Battery is charged to 80 percent in less than an hour. Battery is fully charged in 90 minutes.

Technical specification:

RMS Output:	51.2 mV / 80 Hz + 50 mV / 8 kHz
	5.02 m/s^2 / 80 Hz + 4.9 m/s^2 / 8 kHz
	0.51 g / 80 Hz + 0.50 g / 8 kHz
	10 mm/s / 80 Hz
	0.39 in/s / 80 Hz
Connectors:	BNC, MIL C5015
Indication:	ON/OFF , ICP®, charging
Supply:	Lithium polymer battery 320mAh 3.7V
Dimensions:	90 x 35 x 60 mm
Weigh:	135 g
Protection:	IP 20

This unit generates 80Hz & 8kHz.
The table shows the amplitudes to expect in various units.

unit	80Hz		8kHz		Overall
	RMS	PEAK	RMS	PEAK	RMS
mV	51.2	72.4	50.0	70.7	71.6
m/s^2*	5.02	7.10	4.90	6.93	7.01
g*	0.51	0.72	0.50	0.71	0.71
mm/s*	10.0	14.1	* - for input sensor		
ips*	0.39	0.56	sensitivity 100mV/g		

Nominal amplitudes: +/- 1% at 25°C (77°F)
Temp. Variation less than: 0.1%/°C (0.2%/°F)
ICP power: 14 - 36V, 0.1-10mA DC BIAS: 11V to 13V

Example of A4802 usage

Adash VA5Pro Analyzer test

Follow these steps in order to test your VA5Pro analyzer. You can test any other vibration analyzer but make sure to set up the same settings as below.

1. Set up the sensor sensitivity
- Choose Sensors → All AC Sensors
- Set followings: ICP: ON, Sensitivity [mV/g]: 100, Unit: g
- Save

2. Create new project
- Go to Analyzer mode → Project → New Set
- Enter the Set name. For example: Analyzer test
- Go to the Analyzer test project

3. Set new measurement
- Choose Meas → New Advanced →overall type
- Change frequency range as follows:
- Band fmin[Hz]: 1
- Band fmax[Hz]: 1600
- You can check the rest of parameters, but it should be as on the following picture.
- Save measurement

For further technical and contact information visit www.adash.com or email: info@adash.com
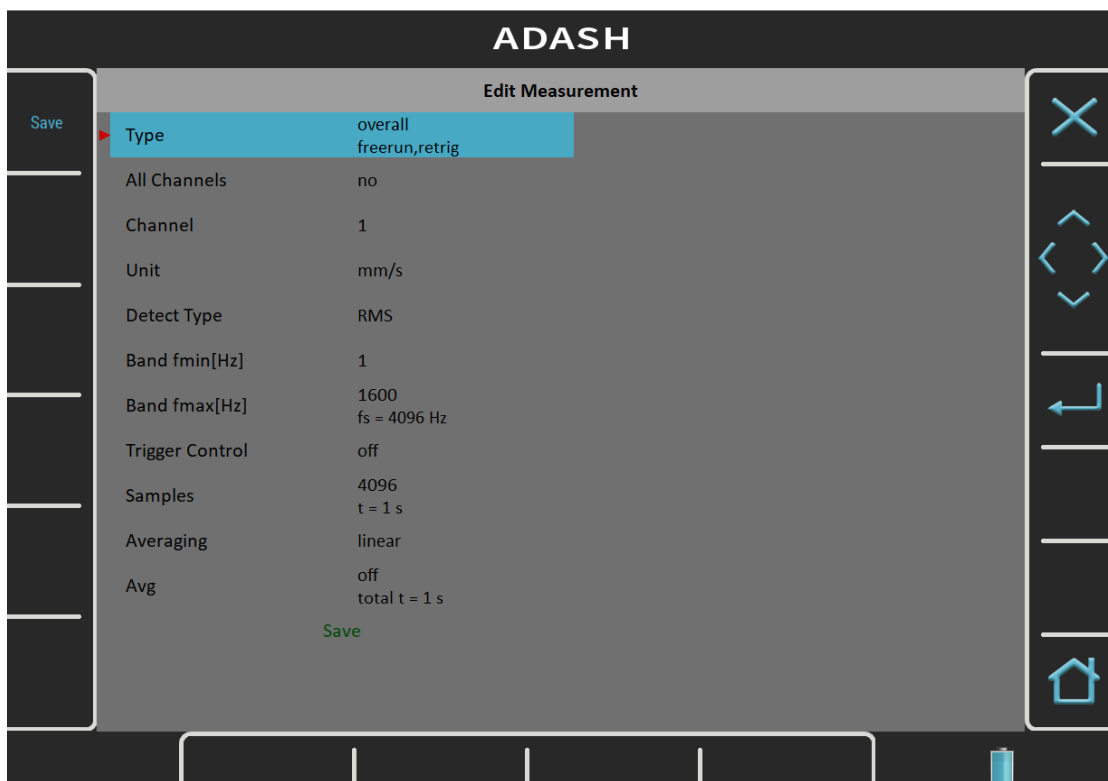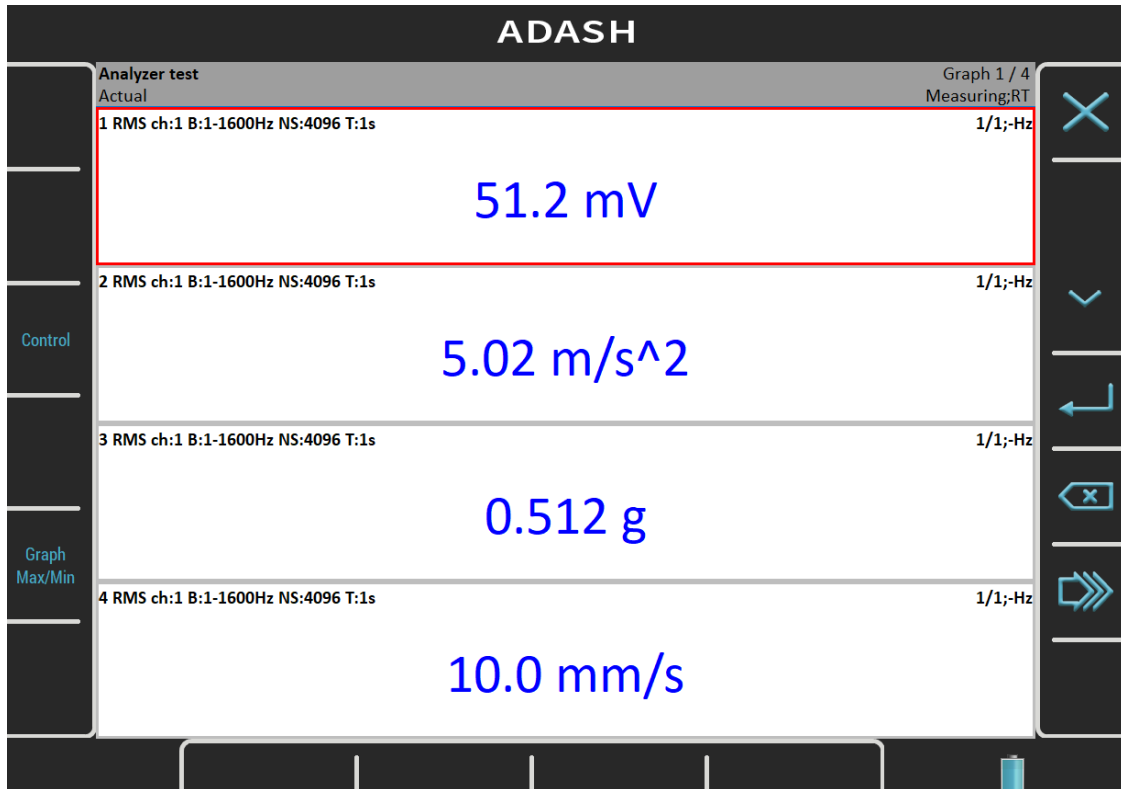
4. Start the measurement
- Connect your Sensor Simulator and turn it ON.
- Start the measurement on the VA5Pro device.
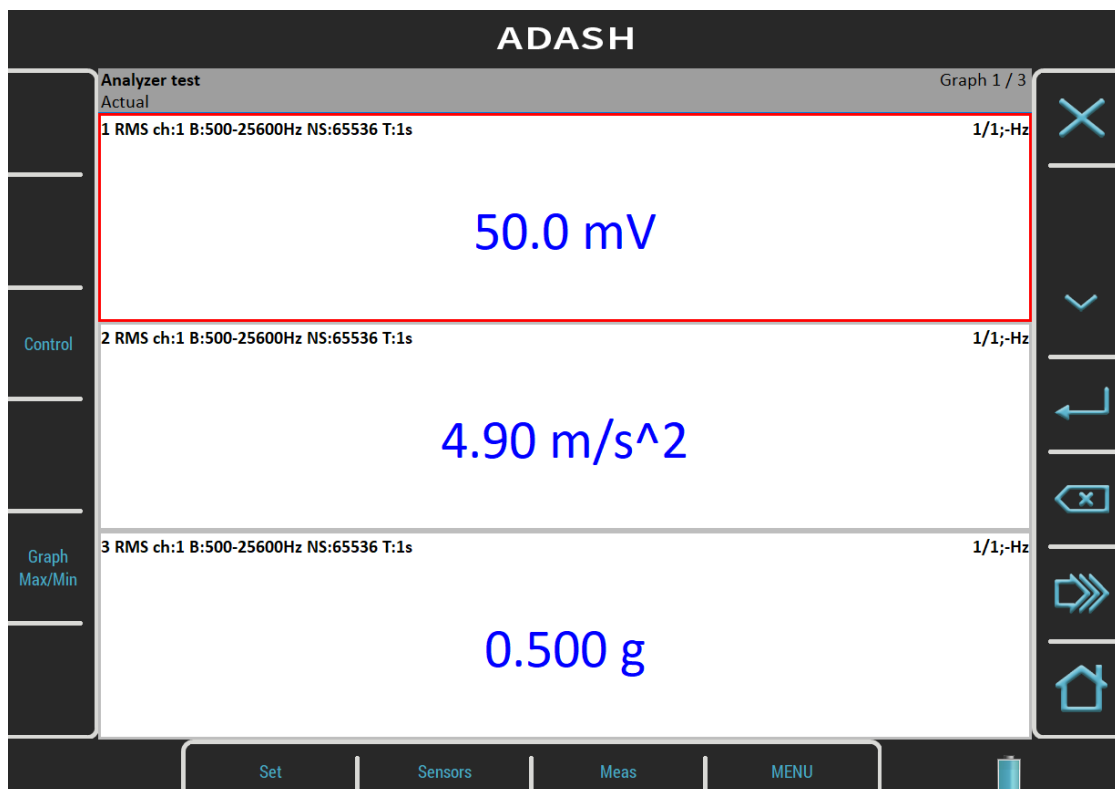- Now you should see measured value of 10 mm/s on the screen.
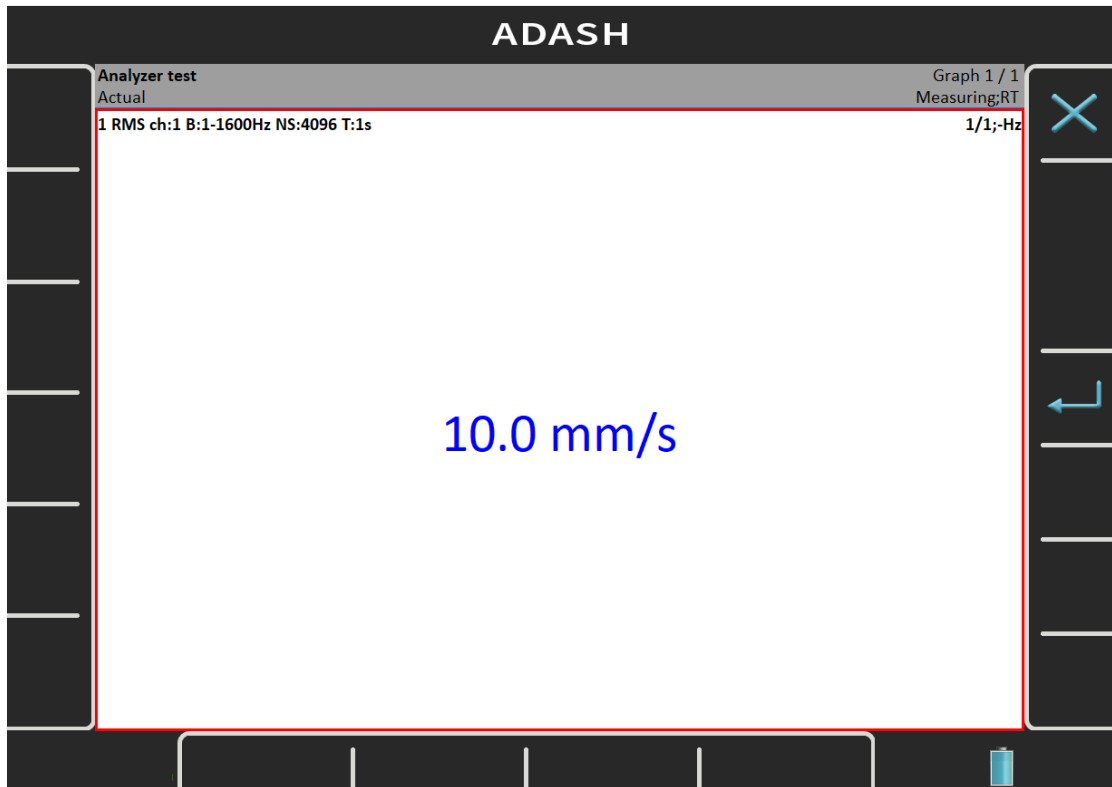
You can also measure in different units or show signal in time domain. Let's take a look.

5. Measurements in various units.
- Stop the previous measurement
- Select Meas → copy
- Choose different unit and save measurement.
- Now you added new measurement. You can also add new measurement with different unit as in previous example in step 3.
- You can add all units that are displayed on the back of the Sensor Simulator.
- Start the measurement and now you measure in all units at the same time.
- In this 1Hz to 1600Hz frequency range you measure values for 80Hz signal.

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Analyzer test	Graph 1 / 4
Actual	Measuring;RT

1 RMS ch:1 B:1-1600Hz NS:4096 T:1s   1/1;-Hz

51.2 mV

2 RMS ch:1 B:1-1600Hz NS:4096 T:1s   1/1;-Hz

5.02 m/s^2

3 RMS ch:1 B:1-1600Hz NS:4096 T:1s   1/1;-Hz

0.512 g

4 RMS ch:1 B:1-1600Hz NS:4096 T:1s   1/1;-Hz

10.0 mm/s

Control

Graph Max/Min

- For 8kHz signal measurement you have to change the frequency range from 500Hz to 25600Hz and select 65536 number of samples.

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Analyzer test	Graph 1 / 3
Actual	

1 RMS ch:1 B:500-25600Hz NS:65536 T:1s   1/1;-Hz

50.0 mV

2 RMS ch:1 B:500-25600Hz NS:65536 T:1s   1/1;-Hz

4.90 m/s^2

3 RMS ch:1 B:500-25600Hz NS:65536 T:1s   1/1;-Hz

0.500 g

Control

Graph Max/Min

Set   Sensors   Meas   MENU

Time domain of the signal

We can display signal in time domain by following steps.

- Select Meas → New Advanced
- Type: time
- Band fmin[Hz]: 1
- Band fmax[Hz]: 25600
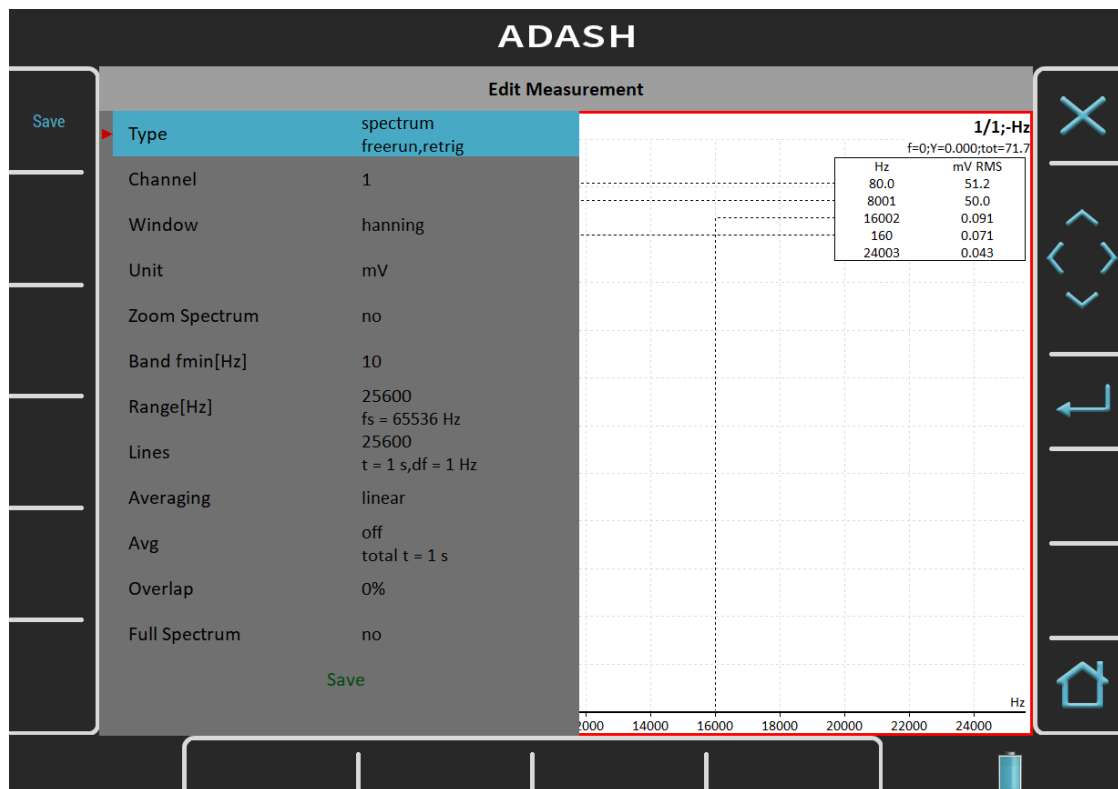- Save measurement
- Start Measuring

You can zoom your Y axe with Zoom option and see the signal running. This measurement is ideal for cable testing. Move with your cable and check the signal on the screen. If there signal is stable once you are moving with the cable, then the cable is in good condition.
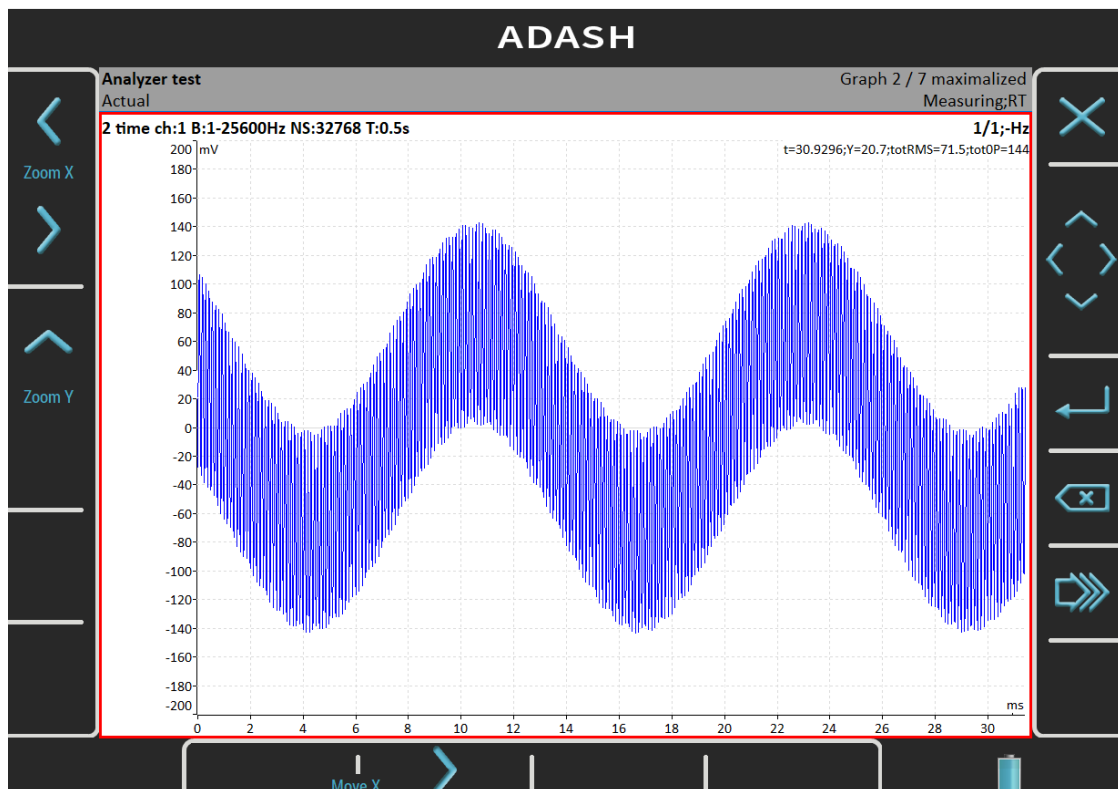
Spectrum of the signal (advanced measurement)
Measurement of spectrum.

- Select Meas → New Advanced
- Type: spectrum
- Unit: mV
- Band fmin[Hz]: 10
- Range[Hz]: 25600
- Lines: 25600

Select graph you have created and select Graph Properties. Set properties as follows.

- Scale: auto
- Axe X: Log
- Axe Y: lin
- Graph lines: discrete
- Save Measurement

Start the measurement. As you can see there are significant peaks at 80Hz and 8000Hz. They are also included in peak list at the right side. It correspond with sinus waves generated by Sensor Simulator.