# Analyzer By EU1KY, Modified Software By DH1AKF

1. Basic setting (calibration)

Start with the hardware calibration. To do this, the jumper must be installed on «Cal» on the adapter board. You should also make sure that the correct values are set in the basic settings (SETUP menu -> Configuration).
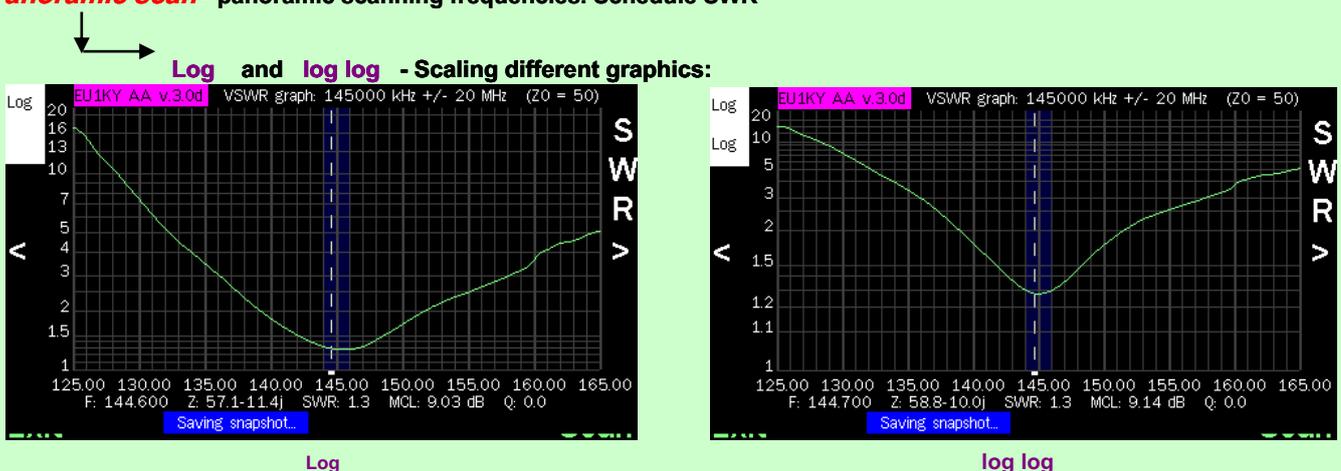
- SI5351_MAX_FREQ (Selects a frequency of 160 MHz / 200 MHz)?
- BAND_FMIN (Selection of 100 kHz to 500 kHz ..)
- BAND_FMAX (Values from 150 MHz to 600 MHz)

Large areas cause big calibration duration, while otherwise the device is limited. In any case, after the change of the reference data requires new hardware calibration HW .

Main menu

EU1KY AA v.3.0d, mod. DH1AKF, Build: 2018-05-14 15:04 UT
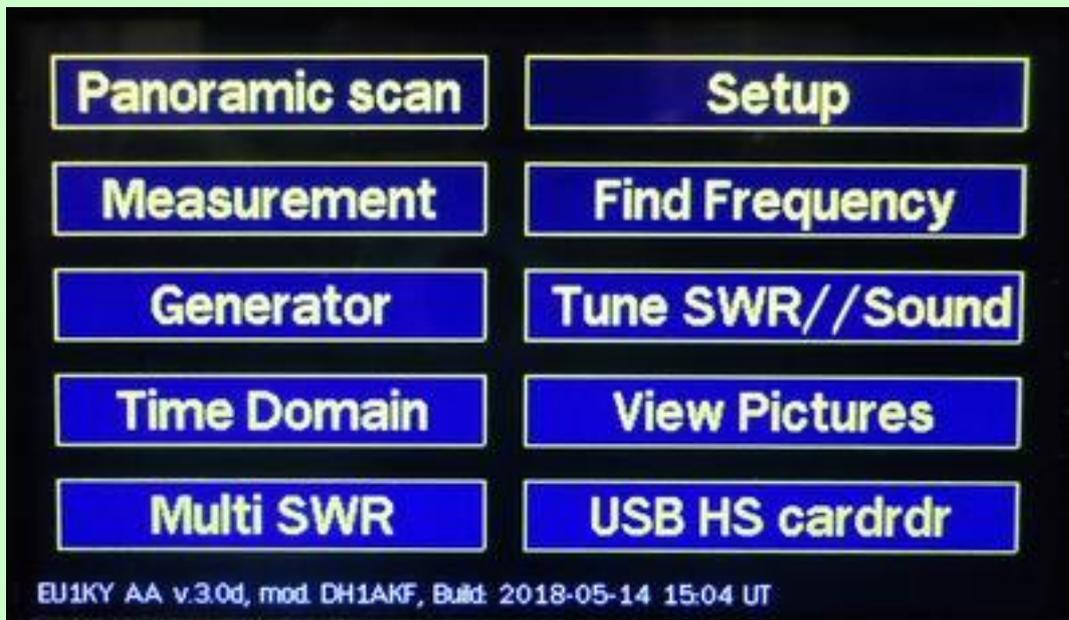
Panoramic scan - panoramic scanning frequencies. Schedule SWR

Log   and   log log   - Scaling different graphics:
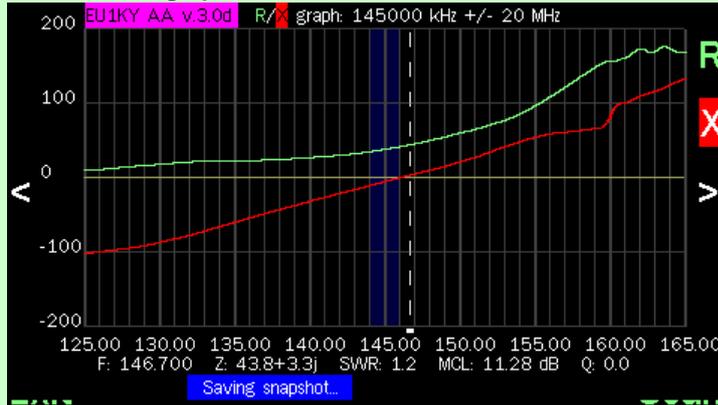

Log

log log

When scanning «Auto», the cursor automatically placed on the minimum SWR. In single scan, the cursor is moved manually with the arrow keys "<", ">".
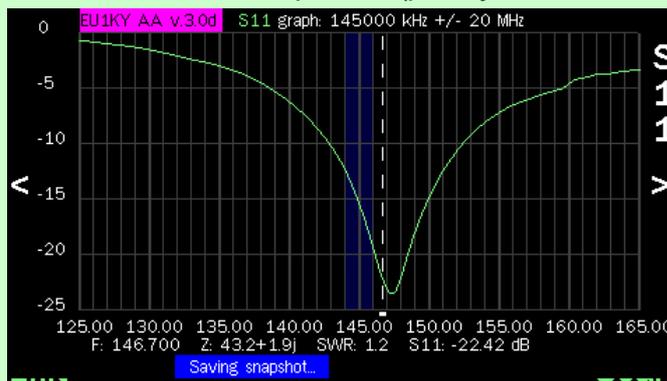
1. When pressing the upper portion of the screen output on the manipulated frequency:
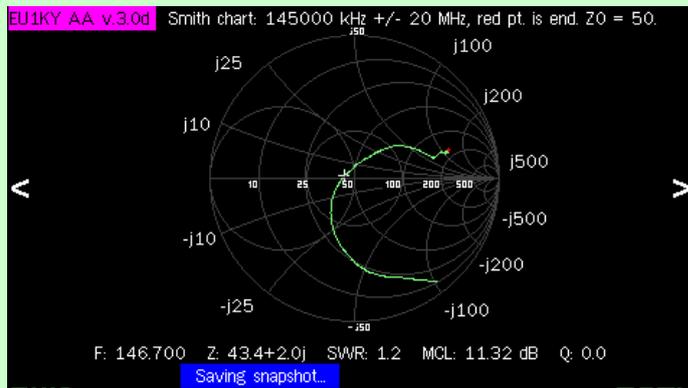

2. Pressing the middle of the screen - graph «R / X" resistance and reactance:

3. Alternatively pressing the middle of the screen - Schedule S11 parameter (possibly turned off in the settings menu)

4. Screen 4 - Smith Chart:

Moving between screens - press center of the display

In all screens: Pressing the top center of the display - enter the input frequency band and scan mode

Scan - start scanning (single)

Auto (fast, 1/8 pts) - fast continuous scan

Exit - exit to the main menu

Similarly, instrument control and modes **Measurement and Generator** . There is also possible to increase / decrease the frequency by pressing the strip at the top of the display. After scanning the panorama mode, a button appears at the bottom of the display **Save snapshot** - saving schedule.

Measurement - measurement mode
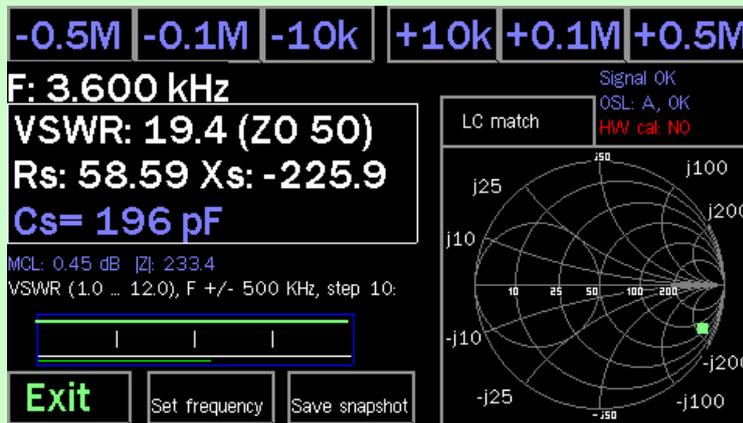
AA also supports the display of the Smith chart. The circle has a green marker (Smith chart). diameter circle denoted 10, 25, 50, 100, 200 ohms. Typically, for well-matched with an impedance of 50 ohms green dot mark must be positioned correctly on the disc diameter line without any bias up or down, which means that X = 0. For more information on how to use the Smith chart please read the chapter "Smith Chart" in the book of ARRL Antenna.

When you click on the chart Smith displayed " LC match for SRC "
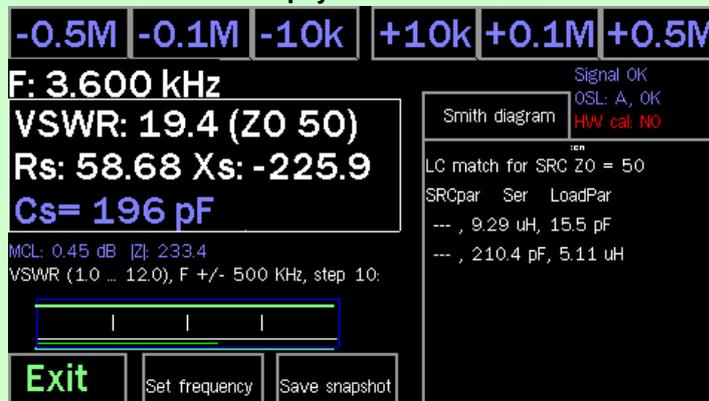
LC Match Parameters: It represents the value of L or C, required for a good match to 50 ohms. Coincidence LC widely used in uncoordinated system for matching system Z0 = 50 OHM. It is widely used in antenna tuner. The calculated values of AA represented in the following diagram:
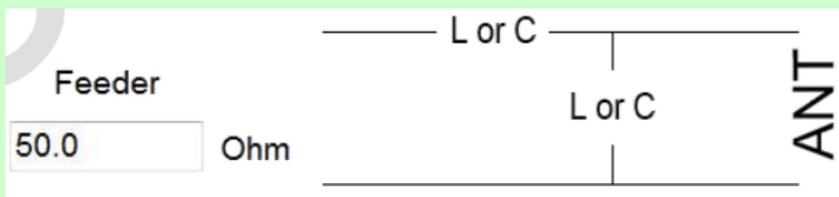
For example, to calculate the corresponding LC 50 Ohms at 17.5 MHz is 0,64uH, 88pF or 128,9pF, 0,99uH. In AA, it shows the following diagram on the right side of the screen.

Generator - generator mode

In the generator, you can view some of the basic values of the initial values DSPed, such as Vi, Vv, Mag Ratio, Phase Difference, and all of them are set to RAW, which says that they are not adjusted using the calibration values. These values are useful for diagnostic purpose.
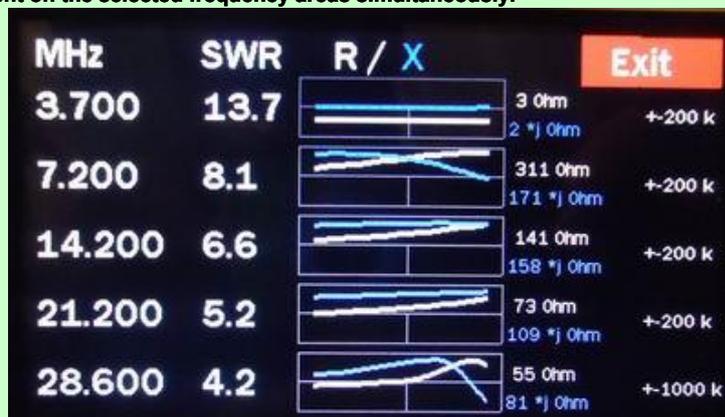
1. " **Colour** " - Change the color of the screen

2.   **"AM"** - with a frequency of 500 Hz (AM)

3.   **"FM"** - frequency shift keying + - 150 Hz and at 500 Hz. (FM)


Time Domain - OTDR mode
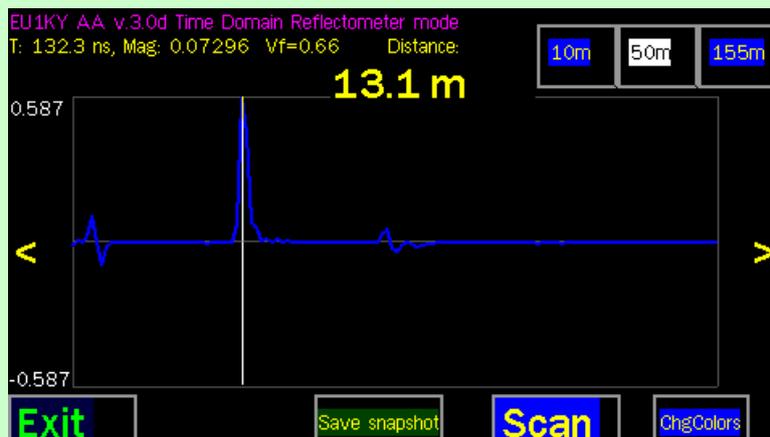
When measuring cable with a different coefficient of shortening, it is necessary to change this value in **"Setup" -> "Configuration" -> "Vf"**

Multi SWR - **"SWR" measurement on the selected frequency areas simultaneously.**

1. The selected frequency is stored.

2. To change the frequency of the station, it is necessary to press the frequency digits.

Setup - installation and calibration of the instrument

"Configuration"   "Configuration editor"
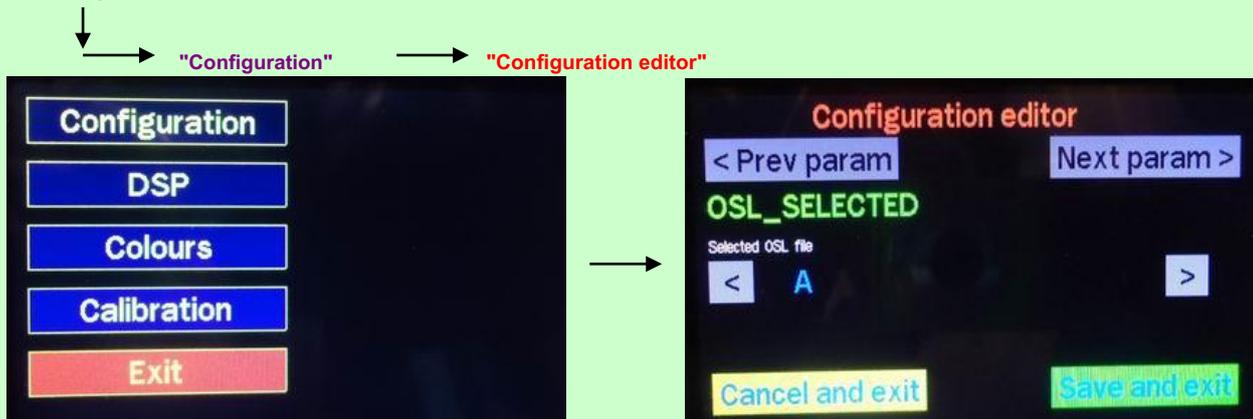
Menu "Configuration editor"

Here, not all parameters need to be changed during normal operation

OSL_SELECTED - File selection, which will be saved calibration results Note. " A".

Z0 - the choice of the base impedance Smith chart and VSWR measurements

OSL_RLOAD - the value of LOAD resistance calibration

OSL_RSHORT - SHORT value resistance (closed) for calibration

OSL_ROPEN - resistance value OPEN (open) for calibration

MEAS_NSCANS - the number of scans per measurement mode

PAN_NSCANS - the number of scans in a panoramic window

PAN_CENTER_F - selection of the initial or central frequency in the panorama window

LOW POWER TIMER - the transition to the "sleep" mode

S11_GRAF_SHOW - display the graph S11 parameter in a panorama

SCREENSHOT_FORMAT - Screenshot File format (bmp or png)

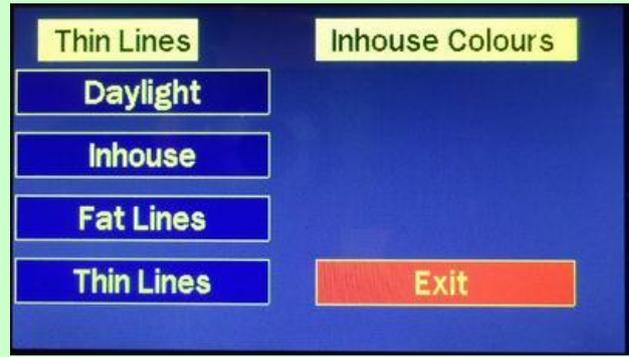**TDR Vf** - the measured velocity factor of the cable for OTDR mode (default 0.66)

SHOW_HIDDEN - show hidden settings

DSP - It shows the level of noise at the input of the controller board

Colours - change of color on the screen

If you press the central location on the screen, the display will switch to a different style, providing information on the sampling time, and value.
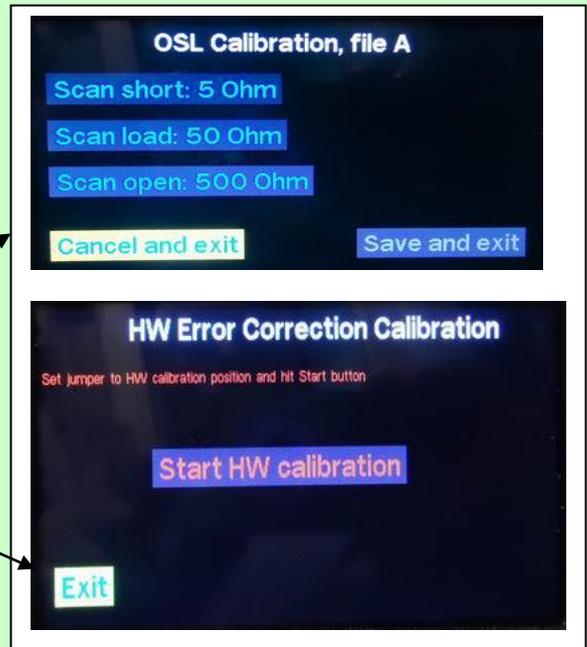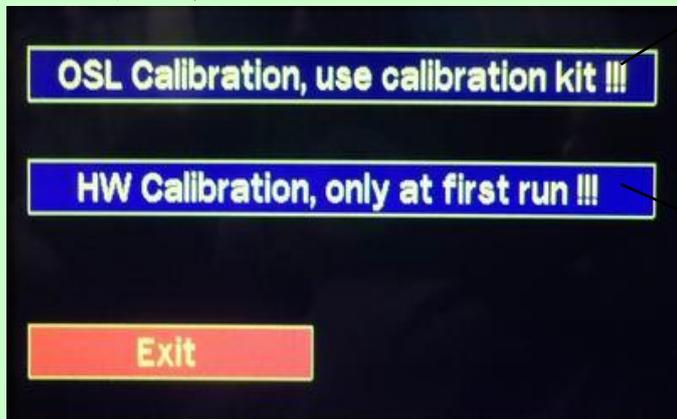

Daylight - White background

Inhause - Black background

Fat Lines - Thick lines

Thin Lines - Fine Lines

Calibration

OSL and HW calibration:

windows calibration

Calibration OSL Calibration

(Jumper on Jpm1).

Resistors 5 ohms, 50 ohms and 500 ohms.

EXAMPLE resistors made

These three test values alternately connects and runs calibration **OSL** .

SETUP Menu -> Calibration -> Calibration OSL

Note. Calibration is also possible at 75, 100 or 150 ohms instead of 50 ohms. It can be specified in the configuration.

On the menu **SETUP -> Configuration** Advanced users can configure the AA in accordance with their needs.
Set output format for screenshots in *** .bmp** or *** .png.**
The changes are saved via **"Save" and "Exit".**

HW Calibration - in the process of using the device is not required
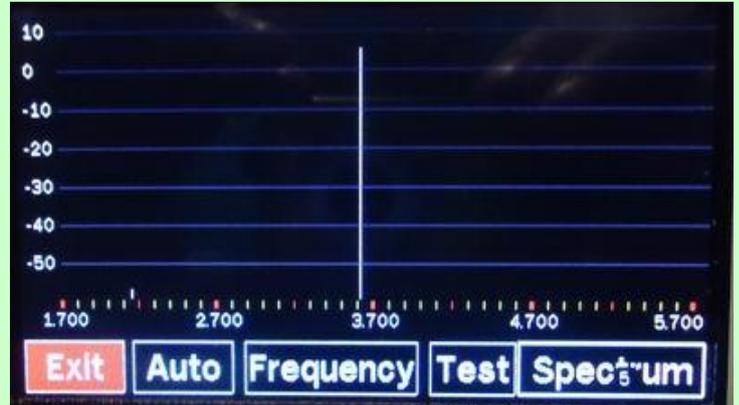
Before HW calibration, it is necessary to rearrange Jumper with Jmp1 on Jpm2. After calibration, HW, return Jumper on Jpm1.

Find frequency - Scanner frequencies:

The mode «One Band» you can measure the signal of -60 dBm, voltage and power.
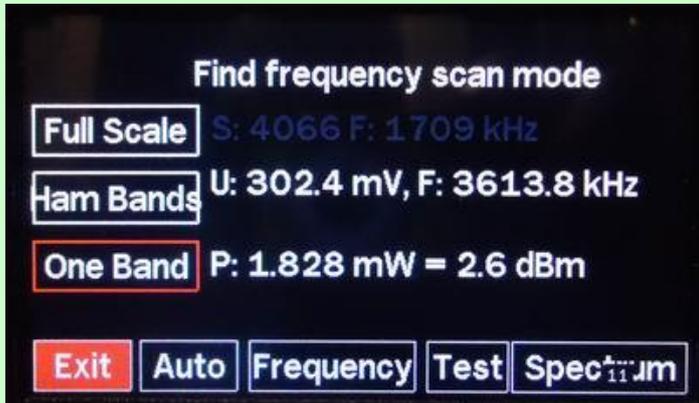
Digitally

the panorama

auto - Continuous scan jobs frequency spectrum .

Frequency - frequency Selection

Test - "Test" button generates a 3755 kHz.

Spectrum - In graphical form.

Tune SWR / Sound- Measurement SWR graphically with sound.

When measuring the SWR changing color and length of the strip. If the SWR is not privyshaet (SWR-defined buttons 2 and SWR -3) strip of white and green. If SWR large job level, the bar turns white and red, plus the buzzer sounds. Also, the tone of the sound depends on the SWR. With smaller SWR, the sound tone lower. Sound can be turned off.

buttons:

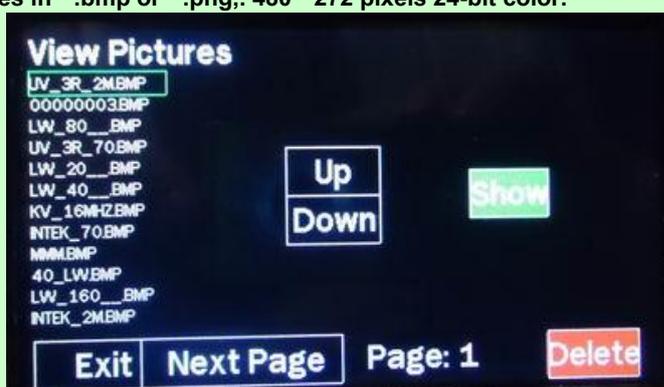**Frequency** - the frequency of choice.

Mute - enable / disable the sound.

SWR-2 - Max SWR - 2

SWR-3 - Max SWR - 3

View Pictures - Viewing the recorded images:

It allows you to review the recorded images of graphs on the device without the aid computing system. Any pictures in * .bmp or * .png,. 480 * 272 pixels 24-bit color.

USB HS Cardrdr - Viewing the recorded images via a USB Computer. Can be erased, copied to the Computer, images stored on the SD card AA. For computers connected via cable micro USB-HS AA.

Working with «AntScope» program - only in the main menu mode. The device connects to the PC through the left USB-connector (mini-USB). Driver installation is required for the board STM32-Disco. After starting the program in its settings, you must select the COM port.

screenshot - if you wish, you can change the picture when you run the AA program is necessary to create your own logo in the form of «logo.bmp» file or «logo.png». You must copy it into the directory «AA» on SD-card. 480 * 272 pixels 24-bit color.

justas LY2BOK, (English Translation by John VK5COR)