


v1.2.20

[Latest](#)

 [DiSlord](#) released this 12 Mar 07:39

[v1.2.20](#)

[0397af0](#)

More info here: <https://github.com/DiSlord/NanoVNA-D/releases/tag/v1.2.20>

UI:

- More faster line draw
- Use shadow text on plot area
- Add reverse marker plates, and use it on top area
- Extend linear, real, imag marker to 6 digit
- Show 0.01 degree in phase measure
- One button for Store/clean trace
- Add Z phase trace
- Add S21 offset setting, allow shift S21 data
- Add S21 SHUNT and SERIES |Z|
- Add VAR input for edelay value
- Show saved calibration range on save menu
- Show VF at bottom on TDR mode
- Add % symbol to keyboard (use in VF input)
- Add u symbol to keyboard (use for micro values input)
- Allow use keyboard '-' in all cases
- Allow input custom sweep points number
- IFBW text at bottom (old bw)

Added lot of commens for code

Refactoring allow more easy add addition options (for UI, Measures, Traces)

Also lot of optimisation, faster and more compact code

Small fixes in menu text align

[NanoVNA.H.v1.2.20.dfu](#)

[NanoVNA.H4.v1.2.20.dfu](#)

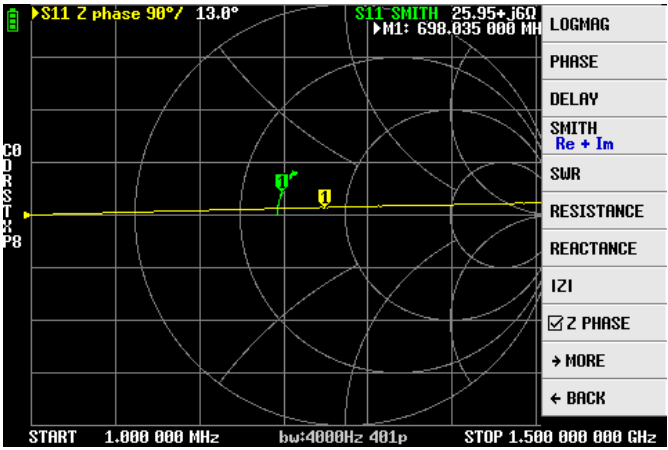
Fix several bugs:

- update trace values on change scale / ref / active trace
- prevent menu show after drag
- fix overflow on trace prepare
- now if real value > 1 (not correct value) then resistance infinity
- Show VF text at bottom on TDR
- Small fixes in new update screen mode

I hope no more bugs in new update code

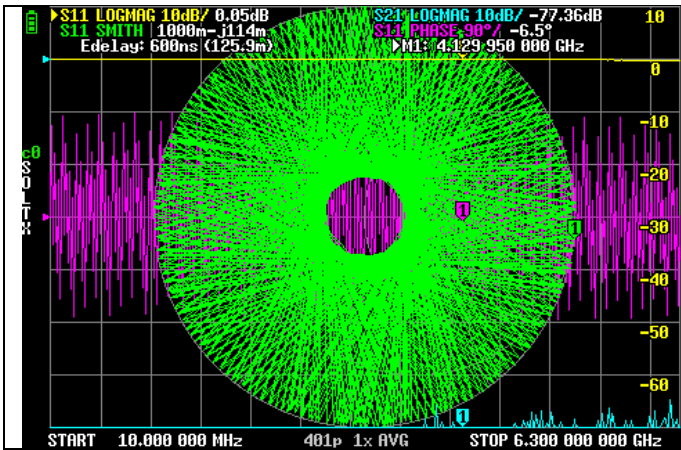
[LiteVNA64 v1.3.08 fix.bin](#)

	<p>NanoVNA-H4 v1.2.14.dfu</p> <p>Compile firmware pack H / H4 v1.2.12 and V2/V2Plus4/Lite series v1.3.07</p> <p>Added:</p> <ul style="list-style-type: none"> - Frequency range on save slot - Reverse marker plates on top area <p>For V2:</p> <ul style="list-style-type: none"> - Huge increase screen update speed - Lot of adaptation for 800x480 and 1024x600 screens (fonts, marker plates, positions, size and so on), i hope soon possible use 7 or 10 inch screens for next Lite generation (at this moment most useful 800x480 resolution) <p>V2 320x240 v1.3.07.bin</p> <p>V2 480x320 v1.3.07.bin</p> <p>V2Plus4 v1.3.07.bin</p> <p>LiteVNA62 v1.3.07.bin</p> <p>LiteVNA64 v1.3.07.bin</p> <p>NanoVNA-H v1.2.12.dfu</p> <p>NanoVNA-H4 v1.2.12.dfu</p>
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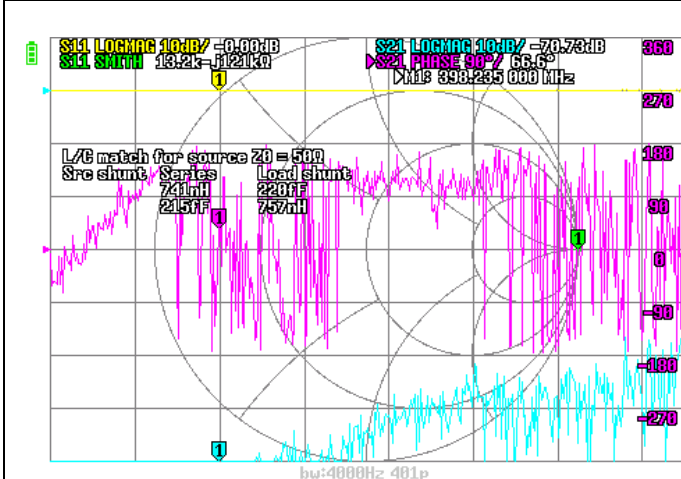
<p>Add new S11 Trace format:</p> <ul style="list-style-type: none"> - Z phase = atan(X/R) <p>See this https://groups.io/g/nanovna-users/message/29327 and just add this trace type (not difficult, and not need lot of code)</p> <p>Show impedance Phase value trace</p> <p>LiteVNA64 v1.3.05.bin</p> <p>LiteVNA62 v1.3.05.bin</p> <p>NanoVNA H v1.2.11.dfu</p> <p>NanoVNA H4 v1.2.11.dfu</p>
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	<p>Update to v1.2.09 H/H4 and v1.3.04 Lite</p> <p>Now use faster line draw algorithm (not big difference on typical usage, but 4x faster on draw long lines, total screen update 2x faster)</p> <p>NanoVNA H v1.2.09.dfu</p> <p>NanoVNA H4 v1.2.09.dfu</p> <p>LiteVNA62 v1.3.04.bin</p>
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[LiteVNA64 v1.3.04.bin](#)

This traces render 2x faster (only lines draw 4x faster)



NanoVNA fw pack (H/H4 v1.2.08 and V2/V2Plus4/Lite series v1.3.02)

[NanoVNA fw pack](#)

[H_H4_LiteVNA_V2_V2Plus_V2Plus4.zip](#)

v1.2.08

- Added plot text shadows
- Added shadow color index (you can change shadow color by color command):
#define LCD_TXT_SHADOW_COLOR 26
- Use shadow color for marker plate

How it look:

Old mode, i set white background, and add white LC match measure text

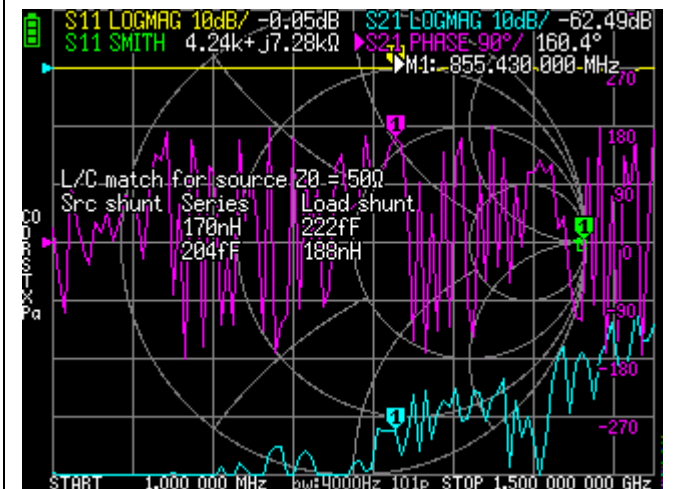
As can see not possible read text (also difficult read marker/grid value text under traces)

Now i enable shadows (use black color):

Now all look better, possible read all

Reverd background to 0

Old texts left, shadow text right (compare how better read LC match text)



v1.2.07

[NanoVNA H v1.2.07.dfu](#)

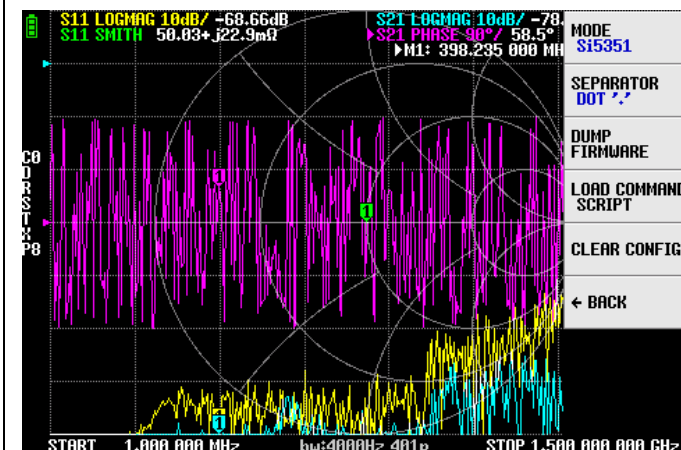
[NanoVNA H4 v1.2.07.dfu](#)

Another small update to v1.2.07:

- Now possible save on SD card different command scripts and run it (before possible run only config.ini)

Command script (**config.ini** file before) any text file contain NanoVNA console commands.

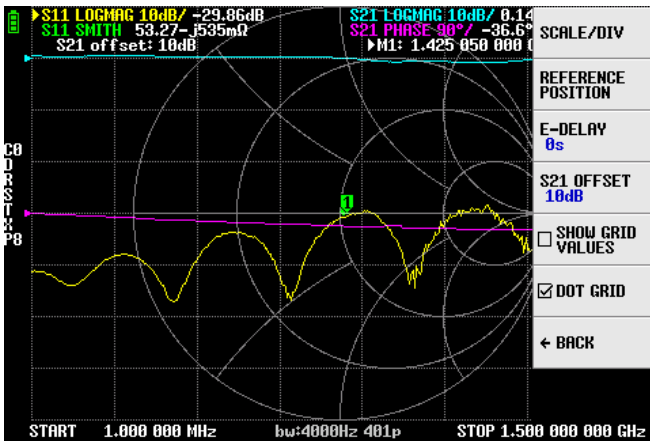
Command must end by new line, file extension *.cmd



config.cmd

Example, i create "**config.cmd**" file on card
Go to CONFIG->EXPERT SETTING->LOAD
COMMAND SCRIPT
Select and run this config.cmd

Now possible create different command scripts and run it



v1.2.06

[NanoVNA H v1.2.06 fixed.dfu](#)

[NanoVNA H4 v1.2.06 fixed.dfu](#)

- fixed error message on empty console command
- update USB and Serial hardware driver (also used by driver streams), this allow save lot of flash, and little improve console command execution
- fixed usart command wait delay
- fixed apply edelay value on calibration (now edelay apply on calibration data)
- Add S21 offset compensation
- reset calibration settings after flash

- add s21offset command

This allow software compensate S21 offset (if use additional external attenuator), on image i add 10dB attenuator and 10dB offset.

v1.2.02

[NanoVNA H v1.2.02.dfu](#)

[NanoVNA H4 v1.2.02.dfu](#)

Changes: added config command:

config { auto|avg|connection|mode|grid|dot|bk|flip }
[0|1|2]

0 - disable

1 - enable

2 (or any else) – toggle

Main hardware changes:

- rewrite I2C driver (used for Si5351 and audio codec control), not use ChibiOS code (remove any interrupts), this allow get more stable measure timings.
- rewrite ADC cofer for H4, not use ChibiOS code (remove any interrupts and DMA mode).

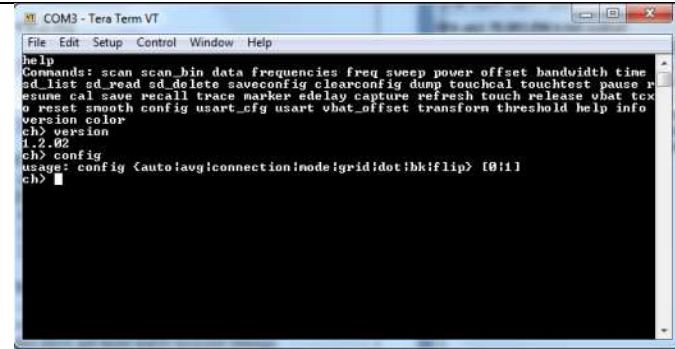
NanoVNA

2019-2021 Copyright 0DiSLord (based on Bedy555 source)
Licensed under GPL.
<https://github.com/DiSLord/NanoVNA-D>

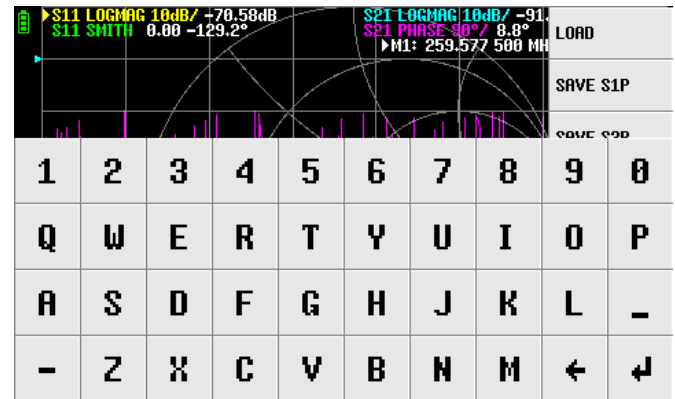
Donate support:
<https://paypal.me/DiSLord>

Version: 1.2.02 [p:101, IF:12k, ADC:192k, Lcd:320x240]
Build Time: Jun 5 2022 - 01:17:28
Architecture: ARMv6-M Core Variant: Cortex-M0
Platform: STM32F072xB Entry Level Medium Density devices
TCXO = 26.000 000 MHz

Time: 2022/06/05 17:58:54 (LSE)
Batt: 4.045V



For H4 more better Vbat and touch measure (possible need fix vbat_offset variable, now vbat measure more correct), also must be more stable touch work. Huge reduce code size (near 1.5k for H, and 2.2k for H4, for example browser option need ~2k flash).



BMP

1	2	3	4	5	6	7	8	9	0
Q	W	E	R	T	Y	U	I	O	P
A	S	D	F	G	H	J	K	L	-
-	Z	X	C	V	B	N	M	←	↵

VNA_00516E.bmp	VNA_20220226140553.bmp	VNA_210421_103628.bmp
VNA_013007.bmp	VNA_19700718043825.bmp	VNA_210421_152655.bmp
VNA_019100.bmp	TEST.bmp	55.bmp
VNA_000429.bmp	VNA_20220402221043.bmp	123456*1.BMP
VNA_25713F.bmp	VNA_20220403210601.bmp	1234567890QWERTYUI.bmp
VNA_26CE61.bmp	222.bmp	
VNA_19700301012751.bmp	PP.bmp	
VNA_20211010131910.bmp	HHH.bmp	
VNA_20211130115400.bmp	VNA_210421_103159.bmp	
VNA_20220221235606.bmp	VNA_210421_103358.bmp	

v1.2.00
<https://github.com/DiSlord/NanoVNA-D/releases/tag/v1.2.00>

- [NanoVNA.H.v1.2.00.dfu](#)
- [NanoVNA.H4.v1.2.00.dfu](#)
 - Add SD card file browser:
 - Allow see files on card
 - Allow load and see screenshots (load BMP)
 - Allow save and load calibration to/from card
 - Allow load SnP files and see data
 - Add more traces formats:
 - S11 |Y| module
 - S11 G conductance
 - S11 B susceptance
 - S11 Parallel R
 - S11 Parallel X
 - S11 Serial C
 - S11 Serial L
 - S11 Parallel C
 - S11 Parallel L
 - S21 shunt R
 - S21 shunt X
 - S21 series R
 - S21 series X
 - S21 Q
 - Added additional 4 admittance marker format and Admittance background
 - G + jB
 - G + L/C
 - Rp + jXp
 - Rp + L/C
 - Add text keyboards for input filenames (max 8 chars on H and 18 on H4)
 - Progress bar on screenshots
 - Remote Desktop (work in NanoVNA-App, translate screen to CPU)
 - Add flip display option
 - More stable work on harmonics
 - Speedup and reduce code in math/fft operations

Made release version, contain all last code for support SD

card browser for all nanos

[LiteVNA62 v1.3.00.bin](#)

[LiteVNA64 v1.3.00.bin](#)

[V2 320x240 v1.3.00.bin](#)

[V2 480x320 v1.3.00.bin](#)

**H/ H4 v1.1.07 and
V2/ V2Plus4 / LiteVNA fw update v1.2.10**

Update:

- Use QWERTY keyboard
- Little Faster FFT in transform domain
- Update math code
- Small fix in fonts glyph
- For V2 allow AGC in < 400k
- Less screen refresh
- Sleep while screen update over DMA, send data over UART

- Code cleanup

[NanoVNA H v1.1.07.dfu](#)

[NanoVNA H4 v1.1.07.dfu](#)

[V2 320x240 v1.2.10.bin](#)

[V2 480x320 v1.2.10.bin](#)

[V2Plus4 v1.2.10.bin](#)

[LiteVNA62 v1.2.10.bin](#)

[LiteVNA64 v1.2.10.bin](#)

NanoVNA H/H4 v1.1.6

- Fixed trace command
- Little faster line draw
- Little faster bitmap draw
- Bug fixes

[NanoVNA H v1.1.06.dfu](#)

[NanoVNA H4 v1.1.06.dfu](#)

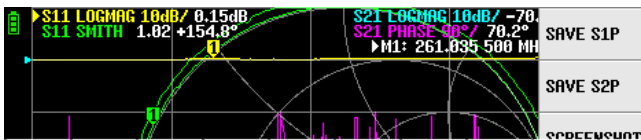
Update H/H4 to 1.1.04 and V2 or LiteVNA to 1.2.08

- Refactoring UI keyboard code (more simple add new input, less size, fixed small bugs)
- Use 2x scale fonts for text keyboard input



1	2	3	4	5	6	7	8	9	0
Q	W	E	R	T	Y	U	I	O	P
A	S	D	F	G	H	J	K	L	-
-	Z	X	C	V	B	N	M	←	↵

S1P



1	2	3	4	5	6	7	8	9	0
Q	W	E	R	T	Y	U	I	O	P
A	S	D	F	G	H	J	K	L	-
-	Z	X	C	V	B	N	M	←	↵

S1P



- V2 contain all last changes as LiteVNA (on V2 disabled RTC, not use auto filename, but enabled SD card support if made hardware mod)

[NanoVNA-H v1.1.04.dfu](#)

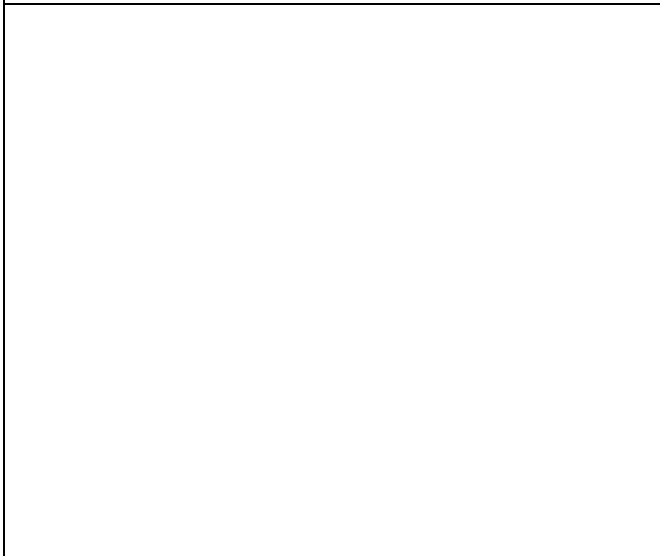
[NanoVNA-H4 v1.1.04.dfu](#)

[LiteVNA64 v1.2.08.bin](#)

[LiteVNA62 v1.2.08.bin](#)

[V2 320x240 v1.2.08.bin](#)

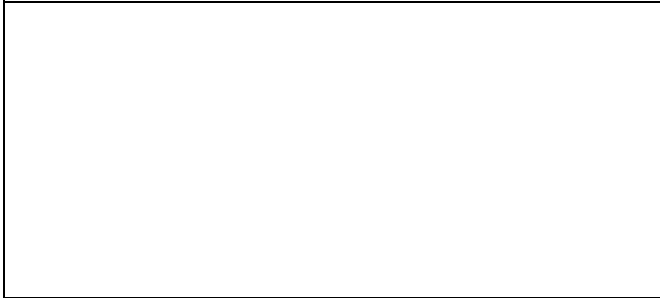
[V2 480x320 v1.2.08.bin](#)



Update H/H4 fw, port all last features
 Additional:
 change trace command:
 > trace [1|2|3|4]
 [logmag|phase|delay|smith|polar|linear|swr|real|imag|r|x|z|g|b|y|rp|xp|sc|sl|pc|pl|q|rsr|xser|rsh|xsh|q21]
 this command allow set trace smith format value (moved from marker command)
 > trace [1|2|3|4]
 [**lin|log|ri|rx|rlc|gb|glc|rpxp|rplc|rxsh|rxser**]

[NanoVNA-H v1.1.03.dfu](#)

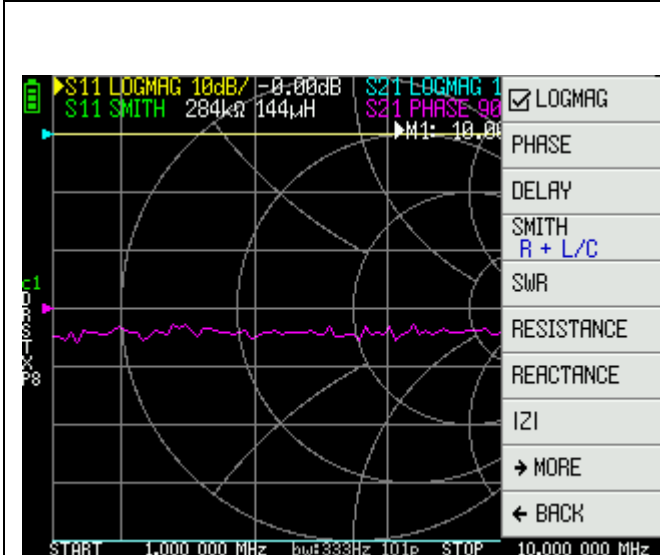
[NanoVNA-H4 v1.1.03.dfu](#)



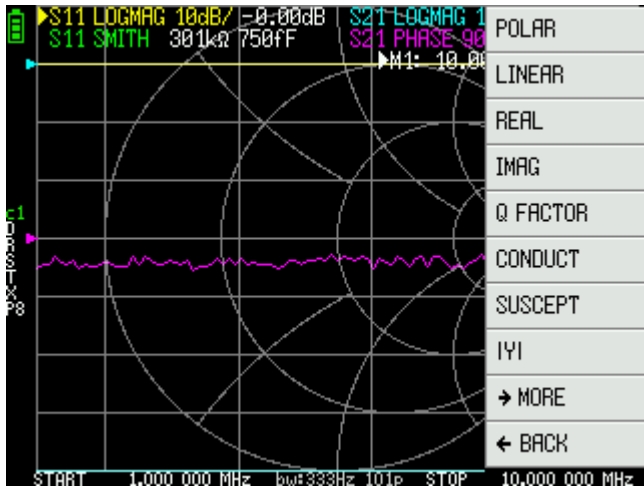
NanoVNA H/H4 v1.1.02
 - Port text keyboard to H/H4 device
 - Small code cleanup

[NanoVNA-H v1.1.02.dfu](#)

[NanoVNA-H4 v1.1.02.dfu](#)



[NanoVNA H v1.1.01.dfu](#)
[NanoVNA H4 v1.1.01.dfu](#)
 - Added remote display feature
 - Added additional 9 trace types:
 |Y| module
 G conductance
 B susceptance
 Parallel R
 Parallel X
 Serial C
 Serial L
 Parallel C
 Parallel L
 - Added additional 4 admittance marker format and



Admittance background

$G + jB$

$G + L/C$

$R_p + jX_p$

$R_p + L/C$

- Remove Smith marker format menu from Marker (now Smith format select in trace format)

- Reduce trace and marker code size

Changed trace type menu

[LiteVNA 62 v1.1.01.bin](#)

[LiteVNA 64 v1.1.01.bin](#)

LiteVNA (and all V2, soon i compile it) also get additional traces / markers

Additional fixed power settings apply in CW mode

NanoVNA v1.1.00 fw pack

NanoVNA-H-H4-LiteVNA-V2-V2Plus-V2Plus4

[https://groups.io/g/nanovna-users/files/NanoVNA%20v1.1.00%20fw%20pack%20H4 LiteVNA V2 V2Plus V2Plus4.zip](https://groups.io/g/nanovna-users/files/NanoVNA%20v1.1.00%20fw%20pack%20H4%20LiteVNA%20V2%20Plus%20Plus4.zip)

<https://github.com/DiSlord/NanoVNA-D/releases>

Update all device firmware to Update all device firmware to v1.1.00

Changes from v1.0.69:

- New 6x10 font
- New medium size Marker plate for small screen
- Added 5x7 and 6x10 font support, use adapted font size for menus for small screens (H devices and 320x240 V2)
- Added multi color string, use color index 25 (LCD_LINK_COLOR) for set color (default color dark blue: R = 0, G = 0, B = 192)
- 5x7 fonts used in calibration / grid values / frequency / menus
- Add Resonance search measure
- Lot of cleanup / optimisation

UI menu text fixes:

- Show selected Smith value in marker menu
- Copy Set E-Delay button to calibration (some users use custom edelay for calibration)
- Use one button for marker search min / max, move buttons from MARKER->SEARCH to MARKER menu
- Move MARKER->MEASURE menu to main screen menu

Only H / H4 / LiteVNA

- Add backup feature, this allow save some settings (freq range / points count / jog step / leveler mode / bandwidth

or avg / last used slot)

Backup restore settings only for stored on flash slot (not work for RAM calibration data)

By default loaded 0 slot (if no backup enabled / on error / no battery)

Only LiteVNA

Added USART support, now possible connect and control device over it (like on H / H4). You can use any BT / WiFi / USB to TTL dongle. Or control from external CPU.

All V2

- Now support 401 measure and calibration points (NOT INTERPOLATED)

LiteVNA

- Support up to 1001 points (NOT INTERPOLATED)

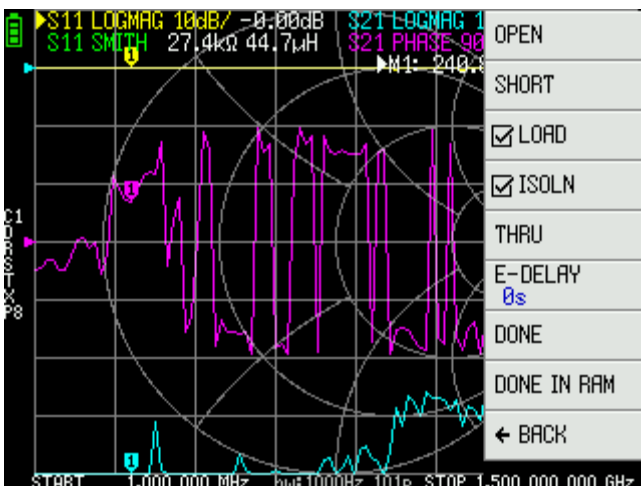
Only H / H4

- Init i2c bus devices on low speed, change on max speed after (i hope this allow fix problem vs hang on first power on)

- 2x increase wait time for SD card (also hope this fix errors on old slow cards)

- Added new v3.6 hardware support (maybe a replacement SI5351 on MS5351), see Expert settings

!!!! V2Plus4 firmware work only on old V2Plus4 devices, new V2Plus4 devices have different LCD module not supported by this fw. As last V2Plus4 sources (software and hardware info) closed i not support it. !!!



[NanoVNA H v1.1 beta 1.dfu](#)

[NanoVNA H4 v1.1 beta 1.dfu](#)

Update to v1.1 beta 1:

- Init i2c bus devices on low speed, change on max speed after (i hope this allow fix problem vs hang on first power on)

- 2x increase wait time for SD card (also hope this fix errors on old slow cards)

- Add backup feature, this allow save some settings (freq range / points count / jog step / leveler mode / bandwidth / last used slot)

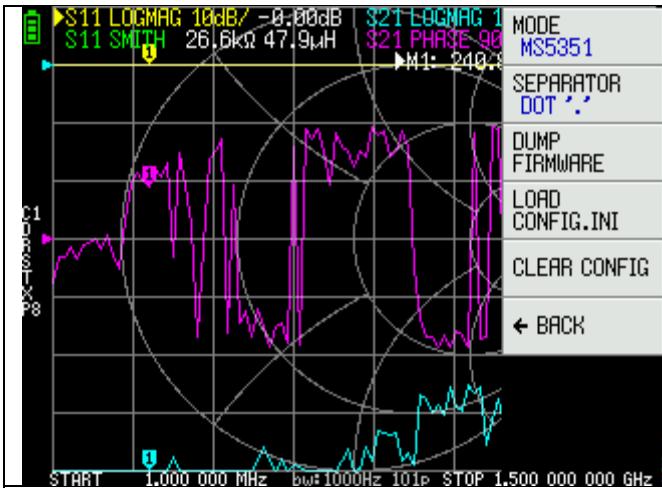
Backup restore settings only for stored on flash slot (not work for RAM calibration data)

By default loaded 0 slot (if no backup enabled / on error / no battery)

- Small ui changes

- Use LTO compilation option, this allow save some space, but unstable on H devices before, i hope now all ok

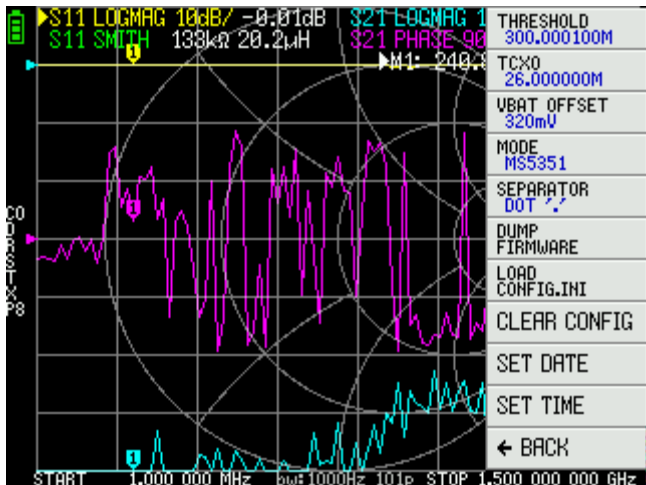
Divide Expert settings on 2 screens



Added Remember State (enable/disable backup feature) checkbox (need save config after for apply)

Copy Set E-Delay button to calibration (some users use custom edelay for calibration)

Use one button for marker search min/max



[NanoVNA H v1.1 beta.dfu](#)

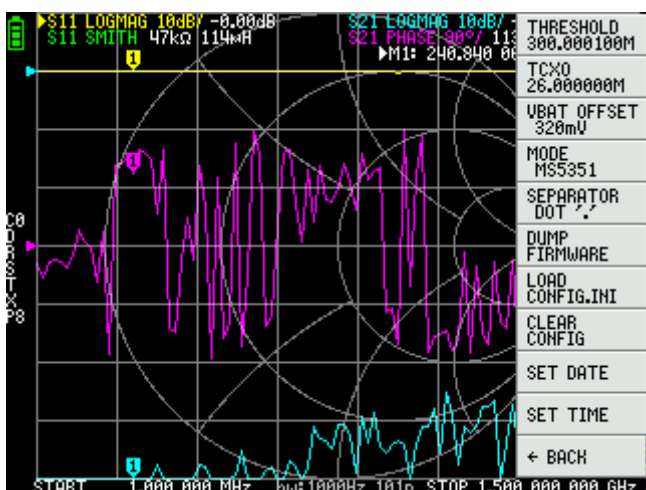
[NanoVNA H4 v1.1 beta.dfu](#)

[V2 LiteVNA v1.1 beta fw pack.zip](#)

[V2Plus4 v1.1 beta.bin](#)

New v1.1 beta release for H/H4:

- New 6x10 font
- Added 5x7 and 6x10 font support, use adapted font size for menus for small screens (H devices)
- Added multi color string, use color index 25 (LCD_LINK_COLOR) for set color (default color dark blue: R = 0, G = 0, B = 192)
- 5x7 fonts used in calibration / grid values / menus
- Small UI menu text fixes
- Show selected Smith value in marker menu
- Small fixes



[NanoVNA H v1.0.71 prerelease.dfu](#)

[NanoVNA H4 v1.0.71 prerelease.dfu](#)

Update to v1.0.71 pre release (next use v1.1 release version):

- Added DATE/TIME input
 - Added MS5351 support on H v3.6 board
 - Added Enter button imaxe (replace x1) for SCALE/REF/DATE/TIME input
- See CONFIG->EXPERT SETTINGS

Date input keyboard (need in YYMMDD format)

Time input keyboard (need in HHMMSS format)

When using the DFU File Manager to convert **bin to dfu**, you MUST add an offset:

[NanoVNA H v1.0.70.bin](#)

[NanoVNA H4 v1.0.70.bin](#)

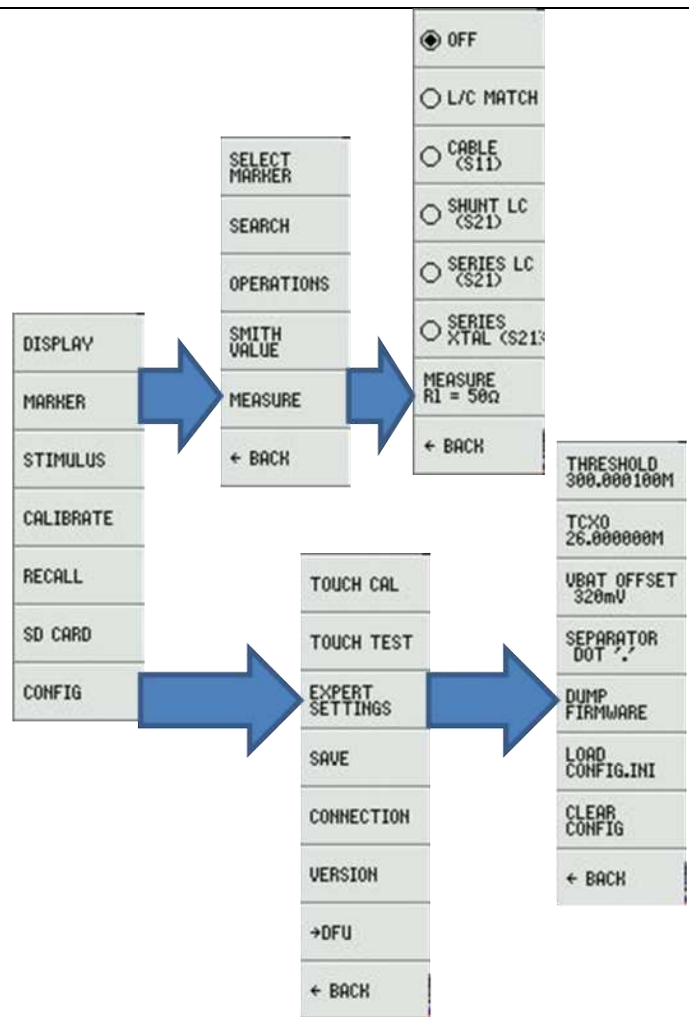
- 1 - Start DFU File Manager
- 2 - Click Multi BIN
- 3 - Select the bin file
- 4 - Enter an offset of **08000000** (include all zeros shown) in the address field.
- 3 - Click the Add To List>> button
- 6 - Click OK
- 7 - Click Generate
- 8 - Enter the new filename to save the DFU image to
- 9 - Click OK
- 10 - DONE!!

Tnx Larry (<https://groups.io/g/nanovna-users/wiki#Updating-To-New-Firmware>)

Update touch calibration procedure, now:

Need touch this point (mark as *), not use screen corner, this allow more correct calibrate

- Restore dump console command (allow get raw ADC data)
- "dump 0" get reflect raw data
- "dump 1" get reference raw data
- Fix saved bmp header, now bmp file open in all software
- Now correct reset USB connection on software reset
- Cleanup



[NanoVNA v1.0.69 fw pack.zip](#)

NanoVNA H - H4 - V2 - V2Plus - V2Plus4 v1.0.69

Update V2 code, more try for made it some as possible as for V1 (need more work in plot module)
Port all last features to V2 (Port Z renorm, measure cable/xtal/lc, sd card features)

Now V2/V2Plus can measure XTAL vs some limits (need use minimum x5 avg), special XTAL mode enable for V2 if selected XTAL of LC measure mode
V2Plus4 can't measure XTAL so this option disabled on it.

All V2 firmware build for No FPU platform

H/H4 added dump firmware to SD card expert option (save as xxx.bin file)

ps.: V2 also support SD card (i use Hugen test board), i can build firmware vs it support for test, but need made hardware mod (soldier SD card slot)

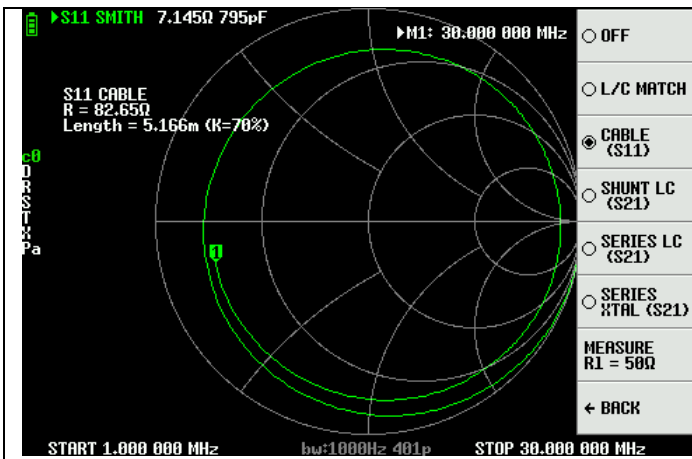
[NanoVNA-CH0-S11-cable-measure.pdf](#)

[Technique-for-measuring-quartz.pdf](#)

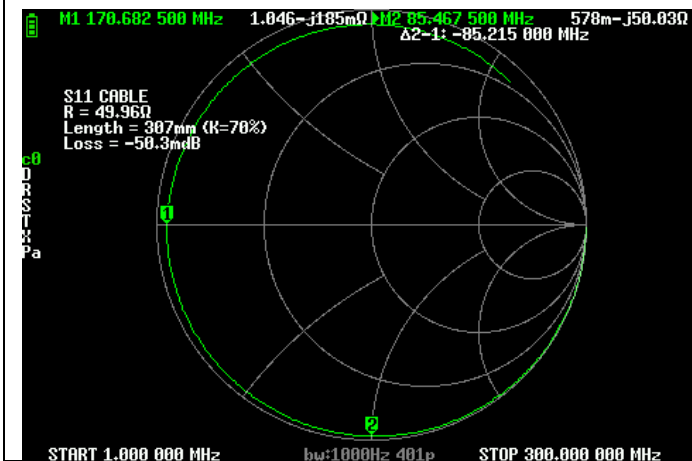
[NanoVNA v1.0.68](#)

- Added measurement module (MARKER-> MEASURE)

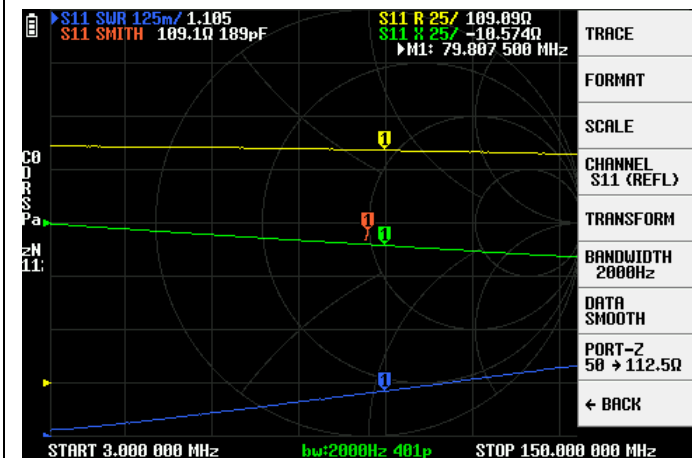
It allows you to automatically measure the parameters of quartz or LC filters (connect in series between ports, or how shunt ports are connected and DUT to ground). The measuring range is the center of the resonance and the resonance itself should be clearly visible on the screen.



- Added a module for measuring cables, the initial frequency - minimum, final - must be such that the cable length is more than 1/4 of the wavelength, automatically measures the length, characteristic impedance, loss at the point of the active marker.
The measuring range is chosen so that the Smith is rotated clockwise 180 degrees, the most important point for this measurement is at marker 1. The shorter the cable, the higher the maximum frequency.



- Added module for normalization of impedance (DISPLAY-> PORT Z 50 -> XX), allows you to see what the DUT would be if the device had the same impedance as it. Works for two ports, which means filters can be measured as well. This will allow you to measure 75 ohm systems, or even higher-impedance filters (there are limitations, the higher the impedance, the lower the dynamic range). Calibrate as usual to 50 ohms, no matching adapters are needed.



[NanoVNA v1.0.67 normalization.rar](#)

We give the recalculation of functional under the impedance of the load, the device calibrated in the usual way to 50 ohm, but the measurement, everything differs from 50 ohm loads can be recalculated, there is a menu for this.

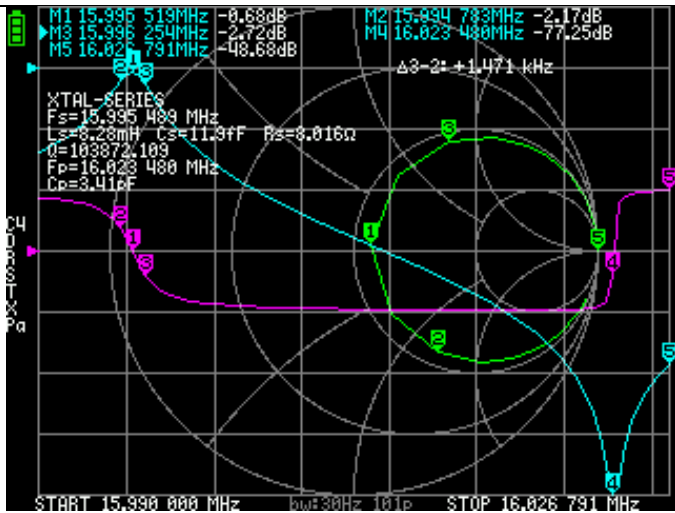
Display-> port z 50 -> xx ohm
Enter 75 Ohm and Nano recalculate that this load looks like this impedance (re-calculation occurs for two ports and gives a measuring device including filters, but the impedance of the filter input and output must be) Added:

- Save screenshot button (quick save on bandwidth text also enabled)
- Fixed scan command for old soft (if soft need disabled calibration)
- Added flag for scan disable edelay setting

[NanoVNA H v1.0.66.dfu](#)

[NanoVNA H4 v1.0.66.dfu](#)

Use dynamic calibration data calculations
- Change calibration logic (now more easy control)




calibration data)

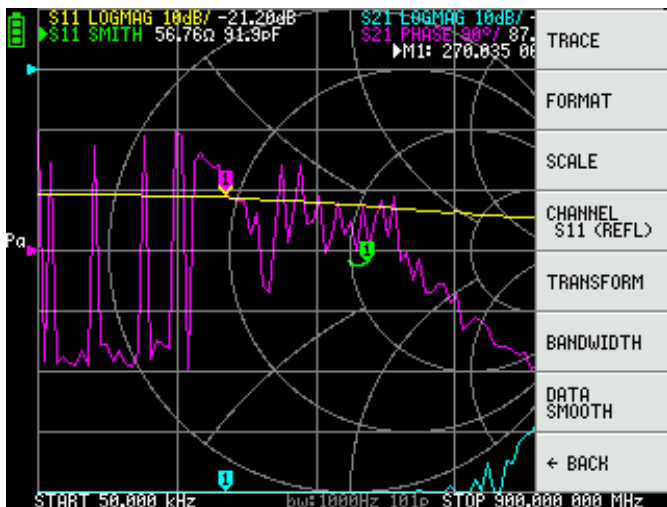
- Add menu for IF offset select (if used dynamic IF table)
- Reduce output power on < 100MHz
- Add measure module (allow made some calculations on measured data)
- Move LC Math function to MARKER->MEASURE menu
- Add some LC and XTAL measure options

For more info see [Crystal Motional Parameters.pdf](#)

[NanoVNA-H.v1.0.64.dfu](#)

[NanoVNA-H4.v1.0.64.dfu](#)

 DiSlord released this on May 31
Fix lever work

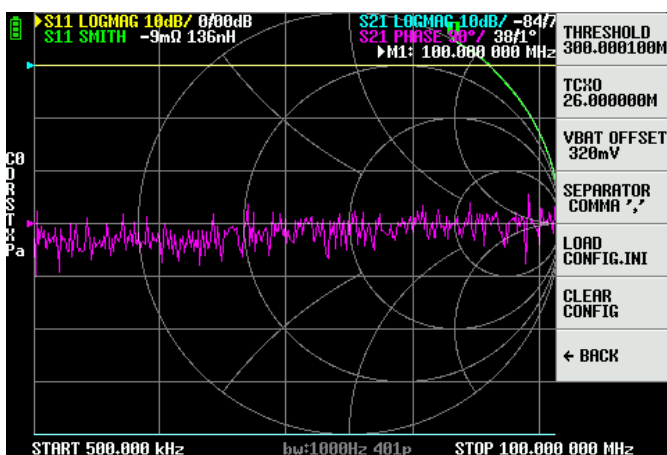


[NanoVNA-H.v1.0.63.dfu](#)

[NanoVNA-H4.v1.0.63.dfu](#)

Added expert config menu

- Added harmonic threshold input
- Added TCXO frequency input (allow precision frequency calibration)
- Added Vbat offset input
- Added expert option SEPARATOR (can be dot or comma, used for digit output to console, some CPU soft not work correctly vs default dot (1.56 example) if system locale use comma (need send 1,56))
- Added load config.ini from SD card (possible write custom script for run/restore)
- Added clear config



More Fast sweep (up to 770 points/sec)

More fast and smooth update

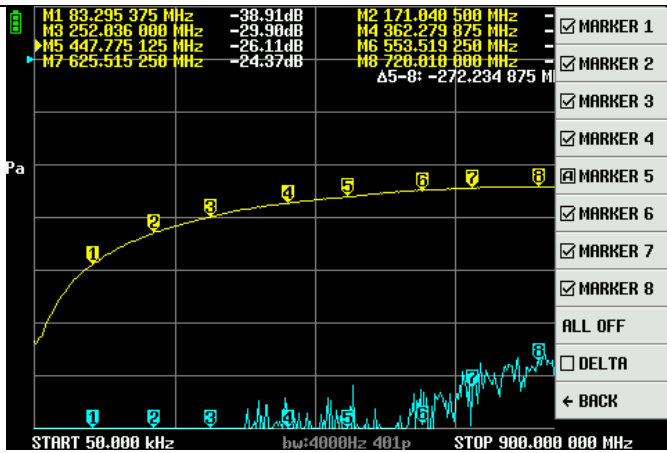
Added SD card access console commands (sd_read, sd_list, sd_delete)

Allow fast change scale/ref fy click on left screen side
Rename CH0 to S11, and CH1 to S21

Added up to 8 markers support

Added more serial speed option (up to 3M, on this speed can work WiFi modules)

Added custom recall buttons (possible see start/stop



freq or empty slot)

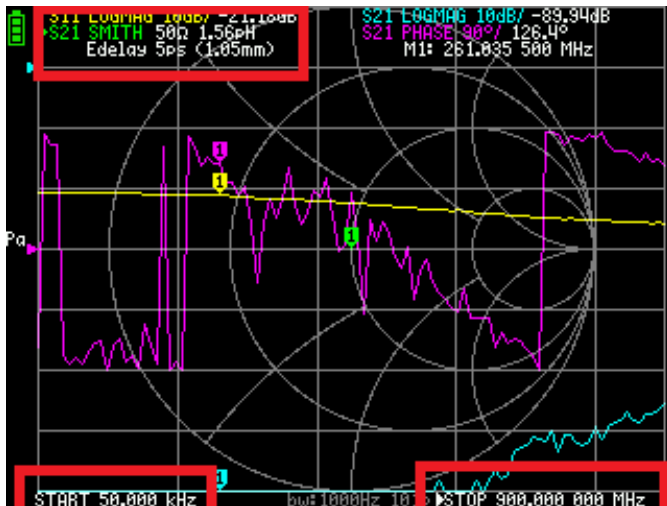
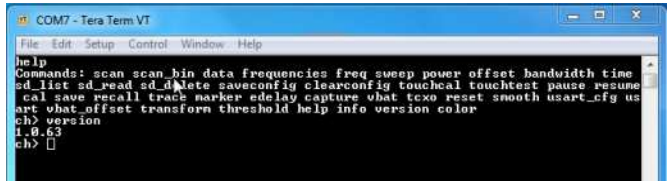
Added smooth option Display->Data smooth (Smooth mode need use carefully!!!)

- Smooth now have 2 mode
Arith avg - made arifmetic average
Geom avg - made geometry average
- max value in device x6 (x8 available from console)

Added show grid value option (DISPLAY->SCALE->SHOW GRID VALUES)

Added dotted grid option (DISPLAY->SCALE->DOT GRID)

A lot of small bug fixes, code size optimization



[NanoVNA-H v1.0.61.dfu](#)

[NanoVNA-H4 v1.0.61.dfu](#)

Fixes some SD card issue (corrupt SPI data transfer, but **need card inserted before power on**)

- Refactoring LCD code, added lcd_printf function, now more easy print text formatted data (allow save some space, and more easy work vs text)

- Rename CH0 to S11, and CH1 to S21

- Remove Channel submenu, now channel switch on button click, also change Channel button text
Pause button now change PAUSE/RESUME SWEEP text

- SWEEP POINTS menu move to STIMULUS (now possible little more buttons in menus) Refactoring keyboard code, remove double variable usage (allow save some space)

- Added quick frequency/edelay input, now **first click select, second click call value input** (double click in this red area for select and input):

[NanoVNA H v1.0.59.dfu](#)

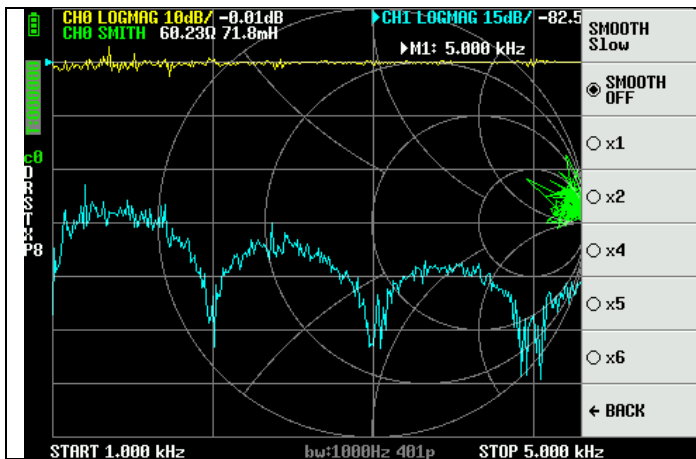
[NanoVNA H4 v1.0.59.dfu](#)

- Added variable menu button size support (now button size adaptate from menu count)

- Added custom button label support

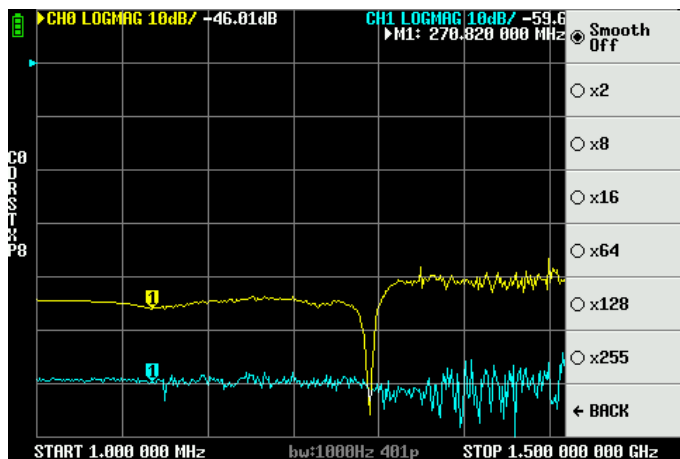
- Use 10us timer resolution (this allow more better measure time, and more little faster made sweep)

	<ul style="list-style-type: none"> - Adaptate sweep delay times to 1us resolution - Move center/span or start/stop mode flag to properties (this allow save mode vs calibration) - Replace some trace type menus <p>UI changes allow add this features</p> <ul style="list-style-type: none"> - Added up to 8 markers support (also possible see modified marker glyph and adaptated size menu) <p>Added custom recall buttons (possible see start/stop freq or empty slot)</p> <p>Added more serial speed option (up to 3M, on this speed can work WiFi modules)</p>
<p>NanoVNA-H 4</p> <p>2019-2021 Copyright @DiSlord (based on @edy555 source) Licensed under GPL. See: https://github.com/DiSlord/NanoVNA-D Version: 1.0.58 [p:401, IF:12k, ADC:384k, Lcd:480x320] Build Time: May 10 2021 - 17:35:16</p> <p>Kernel: 4.0.0 Compiler: GCC 9.2.1 20191025 (release) [ARM/arm-9-branch revision 277599] Architecture: ARMv7E-M Core Variant: Cortex-M4F Port Info: Advanced kernel mode Platform: STM32F303xC Analog & DSP XTAIL = 26.000 060 MHz</p> <p>Time: 2021/05/10 17:35:43 (LSE) Batt: 4.218V</p>	<p>NanoVNA v1.0.58.rar</p> <p>Update to v1.0.58</p> <ul style="list-style-type: none"> - now possible set real XTAIL frequency for NanoVNA Console command, value input in Hz <p>>xtail 26000000</p> <p>Input range 23MHz - 29MHz</p>
	<p>NanoVNA H4 v1.0.57.dfu</p> <p>Changes v1.0.57:</p> <ul style="list-style-type: none"> - Set si5351 exchange speed on i2c bus to 900k - use smith marker show as 50 + j30Om (before value show as 50 + 30jOm) - update fatFS to last revision R0.14b - less code size <p>This (and also some prev optimisations) allow update timings for H4 (only H4, CPU for H can't work more fast)</p> <p>Now full span speed in NanoVNA-App 1 - 1500MHz in 4k Bw, made 570 points/sec (before 440 points/sec)</p> <p>In 1-100MHz range speed more faster ~670 points/sec (before also ~440 points/sec)</p>
	<p>NanoVNA H v1.0.56.dfu</p> <p>NanoVNA H4 v1.0.56.dfu</p> <ul style="list-style-type: none"> - redefine some math function in nanoVNA data calculations <p>This allow save a lot of size (~2.5k), get more faster code (2-6x faster)</p>
	<p>NanoVNA H4 v1.0.55.dfu</p>



- Smooth now have 2 modes (slow and fast) see Display->Data smooth->Smooth fast/slow
 - max value in device x6 (x8 available from console)
 Fast - made arifmetic average
 Slow - made geometry average

Smooth mode need use carefully

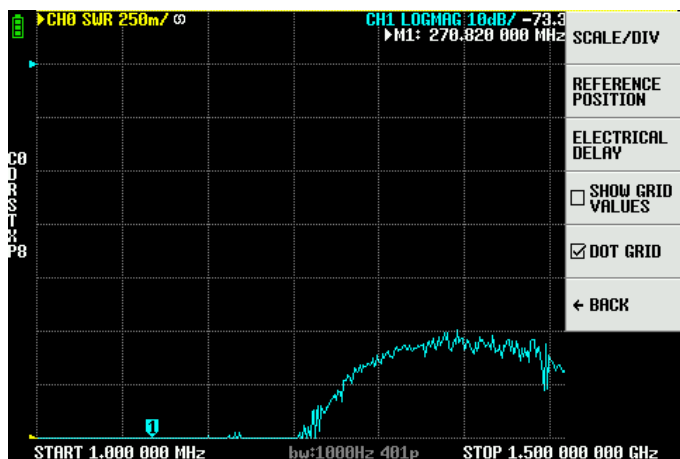


[NanoVNA H v1.0.54.dfu](#)
[NanoVNA H4 v1.0.54.dfu](#)

- added smooth option
 - some code optimization

Difference in smooth vs last test fw:
 - not calculated first and last point (this give less amplitude and phase error on big smooth factor)

Smooth limits:
 - this feature not give big improvement on small points count
 - also on small points count big smooth factor reduce amplitude (it come from processing in complex plane, need process it in amplitude/phase but for this device not have resources)



[NanoVNA v1.0.53.rar](#)

- Added show grid value option (DISPLAY->SCALE->SHOW GRID VALUES)
 - Added dotted grid option (DISPLAY->SCALE->DOT GRID)
 Setting stored in config

[NanoVNA v1.0.52.rar](#)

Need rebuild calibration tables vs apply this.
 Apply edelay for all device measures (include calibration and external data)
 You can change edelay for every step, just set edelay. go to calibration made measure, go back, set new edelay ... go calibration made new measure ... at end need press done

[NanoVNA-H v1.0.51.dfu](#)
[NanoVNA-H4 v1.0.51.dfu](#)

NanoVNA-H 4

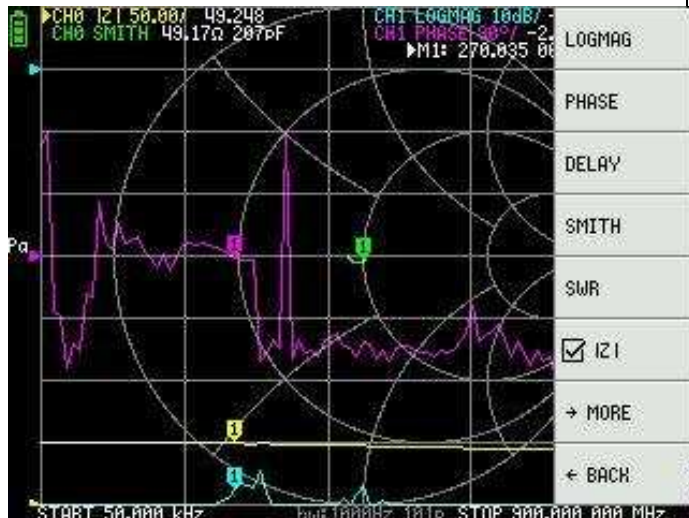
2019-2020 Copyright @DiSLord (based on @edy555 source)
Licensed under GPL. See: <https://github.com/DiSLord/NanoVNA-D>
Version: 1.0.50 Ip:401, IF:12k, ADC:384k, Lcd:480x320
Build Time: Mar 24 2021 - 19:45:14
Kernel: 4.9.0
Compiler: GCC 9.2.1 20191025 (release) IARM/arm-9-branch revision 2775991
Architecture: ARMv7E-M Core Variant: Cortex-M4F
Port Info: Advanced kernel mode
Platform: STM32F303xC Analog & DSP

Time: 2021/03/24 20:03:21 (LSE)
Batt: 4.204V

Now little less limits, some commands allowed in user UI mode (**scan, scan_bin** command **not possible**)

NanoVNA continue answer on ~all console commands while process UI

In some cases possible small screenshot artefacts (screenshot can start on display update in UI) possible prevent this, but this slowdown LCD work (not want do this).



[NanoVNA_v1.0.49.rar](#)

[NanoVNA-H-1.0.49-map.rar](#)

Update to NanoVNA v1.0.49:

- code size optimizations
- More code unification for H/H4 (now possible use 4 inch display for H or 2.8 display for H4 if need for example)
- Add $|Z|$ trace type
- Use less gain and disable align in 300-600MHz range (should increase dynamic)
- Math calculation optimization (logmag processing ~2x faster)
- More faster prepare and draw traces (in some cases up to 3x faster, for example on long lines draw)
- Rewrite Transform Domain math to more fast processing on H (up to 2x faster) on no FPU usage
- More fast LCD data read (for screenshots) for small screen
- Fix calibration state show (not lost last X state)
- Now on calibration measure show O (Open collected data) S (Short collected data) t (Thru collected data). After press done data recalculated to D,R,S,T,X (as before)
- Fix marker state on reload
- Now possible enable up to 6 markers
- Add radio button for min/max marker search (mode also stored in config)
- Now possible change Scale/Ref/Trace type on sweep pause and screen redraw for new settings
- Add 'A' icon for active marker in menu

[NanoVNA v1.0.45.rar](#)

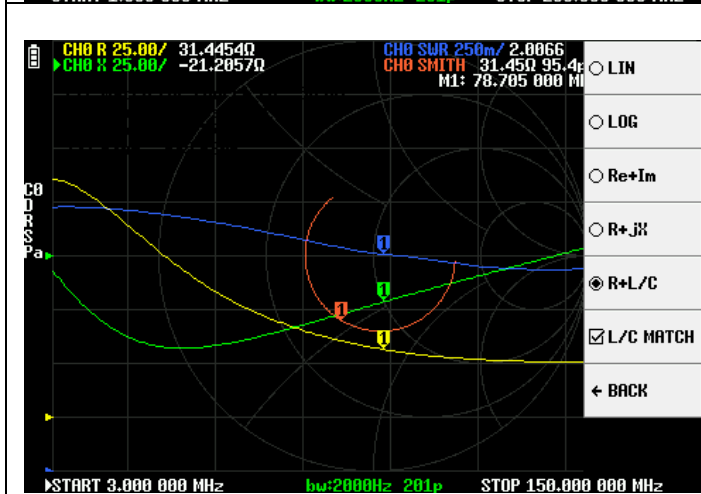
Fix some issues, less code size

Changes:

- * Add warning if power settings in calibration not some as current (red power string)
- * Disable marker track after marker start drag
- * Fix LC Match text update on screen
- * Fix marker frequency update in memory (return correct

marker info from console command)
 * Fix measure in 450-460MHz
 * Disable AIC channel cache
 * Code size fixes
 * Increase 1 point measure wait time (hope this solve calibrate issue)
 * Fix graphic update on trace/channel change (work also in pause sweep)
 * Calibrate on 100Hz bw (30Hz bw before)

- More compact flash code
 - Update power setting on pause sweep also



[NanoVNA H v1.0.40.dfu](#)
[NanoVNA H4 v1.0.40.dfu](#)

Change list from last v1.0.39:
 * big code optimisation (allow save ~1k)
 * add palette color for LC match text (LCD_LC_MATCH_COLOR 19)
 * cache channel in sweep (possibly fix issue on calibration in one trace mode)
 * fix LSE startup time (disable not tick time check, need more research in it)
 * increase USART IRQ priority (prevent data lost on high speed exchange)
 * disable calibration apply show after any calibration collect data run
 * for sin/cos calculation use extended FFT table (allow save additional 4.5k flash), this also fix hang if enter big edelay value

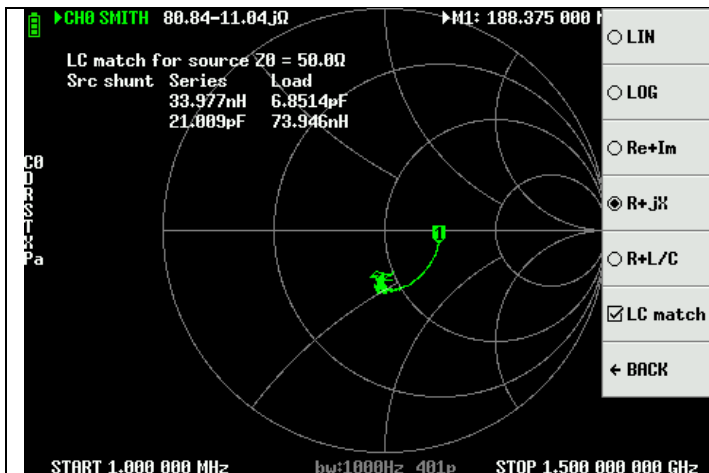
Marker fix:
 - search closest marker for drag
 - correct select previous on add/remove marker (fix problem then marker removed and mode can change to one marker show)
 - fix some 'marker' console command errors

[NanoVNA v1.0.39.rar](#)

Current firmware use variable point count and 256 FFT for H or 512 FFT for H4

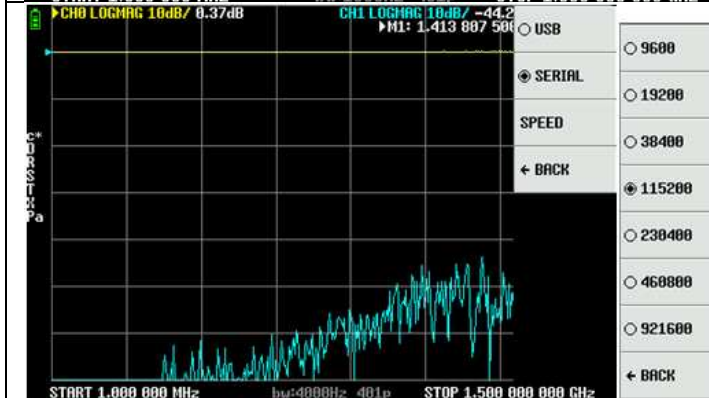
[NanoVNA.v1.0.38.zip](#)
 First release my firmware modification for NanoVNA, NanoVNA-H, NanoVNA-H4
 Features:

- Allow Serial connect and control
- Variable points count (up to 401 for H4)
- Custom color themes
- Fast data exchange vs CPU (use binary mode)
- Low noise measure on high speed ADC mode



- (192k for H and 384k for H4)
- Added L/C match calculation

Support SD card save screenshots, s1p or s2p files



[NanoVNA v1.0.33.rar](#)

Firmware for H and H4 v1.0.33. For personal use, without any sources. Added serial connection mode. This allows you to connect NanoVNA via Bluetooth (HC-05 or some modules) or USB to TTL or WiFi to TTL (like ESP8285 DT-06 WIFI к TTL) module to CPU.

[NanoVNA v1.0.30.rar](#)

Firmware for H and H4 v1.0.30 For personal use. No sources provided. Added custom color themes. Now allow change any color used in NanoVNA by 'color' command. [Custom colors theme](#)

[NanoVNA v1.0.28.rar](#)

Firmware for H and H4 v1.0.28 For personal use, no any sources Last fixes: Auto detect LSI or LSE mode. Fix power command

[NanoVNA 0.9.3.4](#) -H and -H4 [SD card /w RTC]

added Q factor format trace (See FORMAT->MORE->Q FACTOR)

Now AntScope2 can detect NanoVNA

Small changes for time command (terminal prg):

time [y|m|d|h|min|sec] 0-99

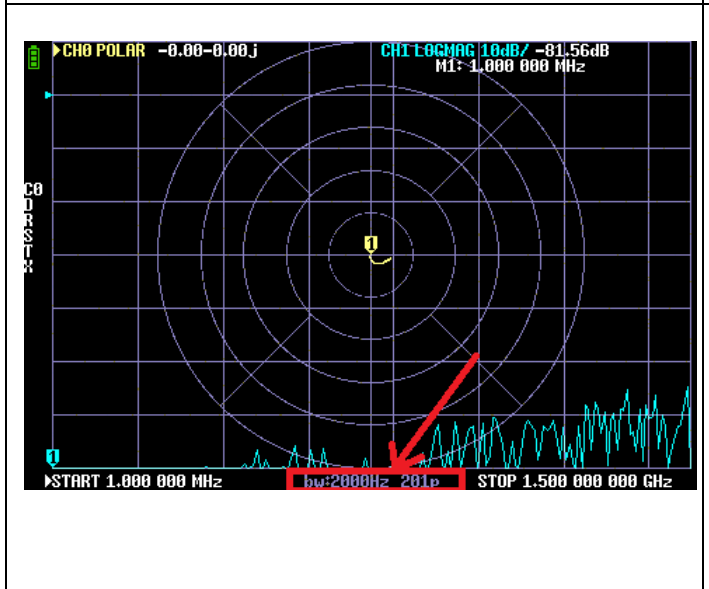
When Internal RTC please use LSI version, when installed External **32.768 kHz quartz** use LSE (Time tick while power off).

For made **screenshot need tap on BW text** at bottom

For save s1p or s2p file in MENU->SD Card-> SAVE

See this post for more information

<https://groups.io/g/nanovna-users/message/14447>

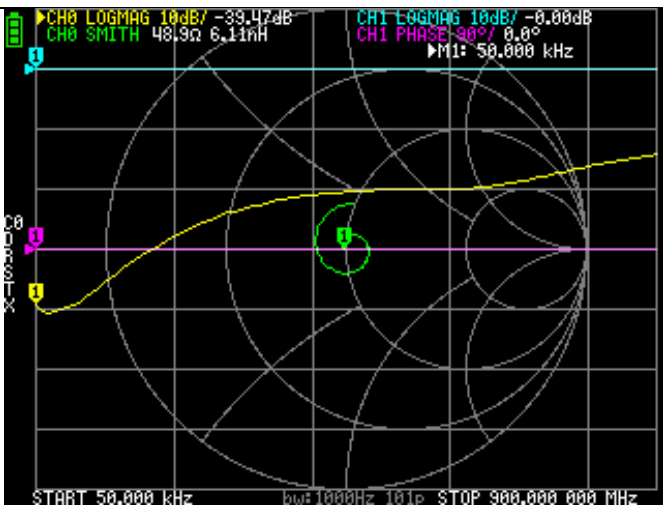




[NanoVNA-H 0.9.3.3 beta SD Card LSE.dfu](#)

The 32.768 kHz Quartz must be soldered between pin3 and pin4 of the STM32F072 so that the operation of the RTC is tied to quartz accuracy. The firmware allows power to be supplied to pin1 vbat via D2 diode when the device is turned off. The display shows the date and time in the version window in the menu.

https://groups.io/g/nanovna-users/attachment/14214/0/IMG_20200607_223253.jpg



[NanoVNA-H 0.9.3.3 beta SD Card.dfu](#)

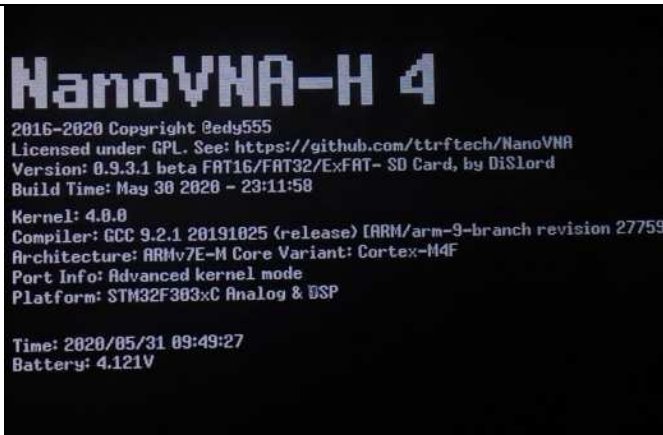
SD Card slot on old PCB can see in this post, if solder it and install this firmware now possible store screenshots and S1P or S2P files on it.

Some limits. Only FAT12/FAT16/FAT32 support (exFAT not supported). RTC clock not run while power off (hardware limits, need install external quartz and add software support).

Only short filenames.

Most limits comes from small flash size in H version CPU.

<https://groups.io/g/nanovna-users/message/14154>

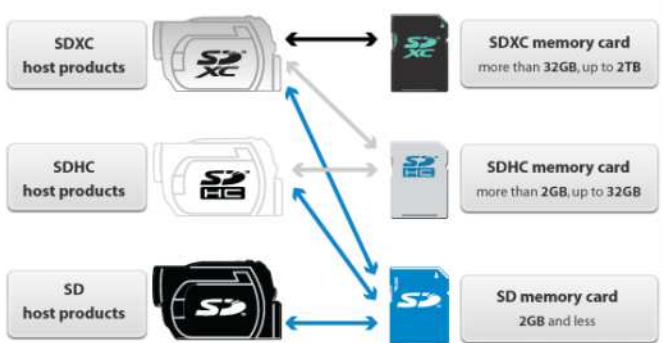


[NanoVNA H4 v0.9.3.2 beta - SD Card LSE Clock.dfu](#)

LSE version if you **install 32.768 kHz quartz** on PC14 and PC15 pin (Time tick while power off)

[NanoVNA H4 v0.9.3.2 beta - SD Card LSI Clock.dfu](#)

LSI version - for not installed 32.768 kHz quartz (Time not tick while power off) RTC used for detect last file save and names



[NanoVNA H4 v0.9.2 beta - SD Card.dfu](#)

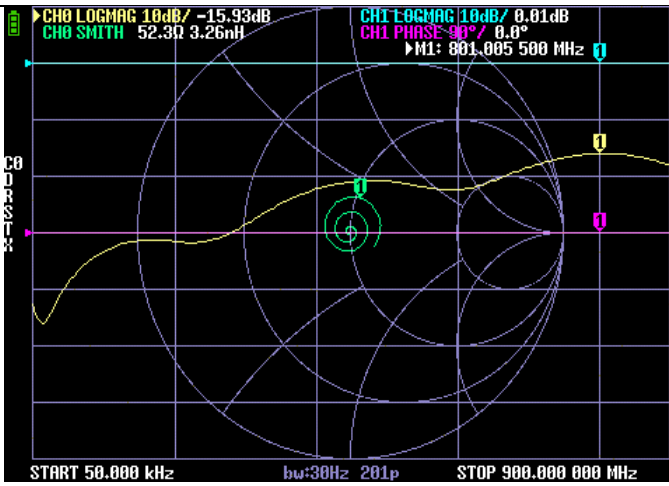
Add support ExFAT filesystem and check work on my SD card

Samsung EVO Plus 128Gb HD XL

All worked, support ExFat need additional 4kB flash and can't be supported on NanoVNA-H (if add card slot in it)

But on H4 stiiil more flash space (only ~89kB + 64kB for calibration save used from 256kB)

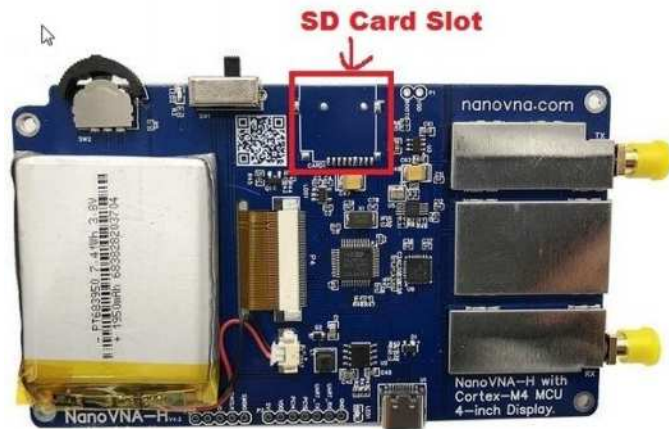
On Samsung EVO Plus 128Gb HD XL read speed ~300kB/sec write ~190kB/s



[NanoVNA H4 v0.9.1 beta - SD Card.dfu](#)

Work around errors in SD card support:
 Cleanup my SD card support code
 Implement read/write data CRC16 check
 Implement command CRC7 check
 Fix SPI bus problems
 Enable support short and long filenames

SD cards work
 SD HC cards work
 SD XL cards should work if format to Fat32, but need test, possible I enable exFat support



[NanoVNA H4 v0.9.0 alfa - SD Card.dfu](#)

Used microCard slot pins:
 2 - SD_CS
 3 - SPI_MOSI
 4 - VDD
 5 - SPI_SCLK
 6 - GND
 7 - SPI_MISO

some slot variants: XUNPU TF-115K and THD THD2528-11SD-GF
 read more <https://groups.io/g/nanovna-users/message/13743>

[NanoVNA-H4 v0.8.4.7.dfu](#)

Next H4 update:
 Cleanup ADC code (used for touch screen and battery measure).

Reduce touch press check from 1kHz to 20Hz and set touch press ADC time to 1 tick (it allow little more reduce measure noise), for vbat, touch X and Y measure use bigger ADC time.

Add Brightness setting to config menu.
 Now for set Brightness need select Config->Brightness and use leveler button Left or Right for adjust it. On done press leveler button Down for set. For save value need use Config->Save.

Fix calibration reset error added in last patch, now this should work correct

[NanoVNA-H4](#)

[v0.8.4.6 96kHz ADC 800Hz sweep_points.dfu](#)

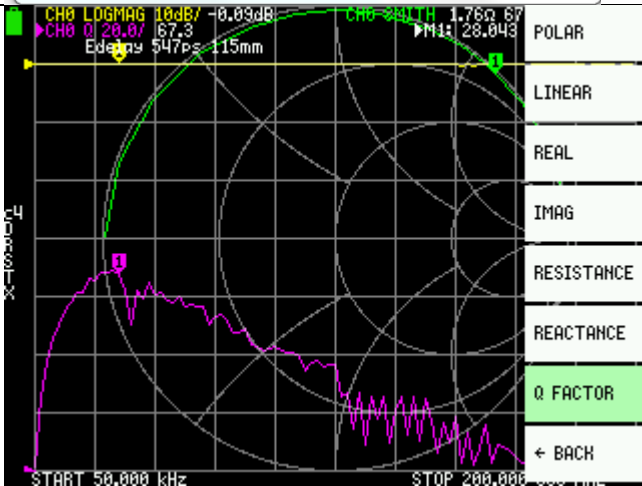
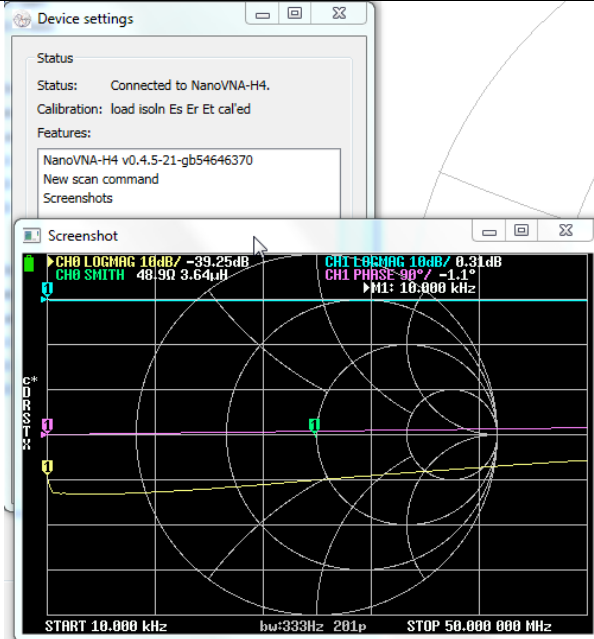
Change:
 IF to 12kHz
 Disable AIC3204 internal PLL clock, use direct MCLK as CODEC_CLKIN from si5351
 More faster calibrate (measure only calibrated CH) allow

reduce default bandwidth on calibrate to 30Hz
Gain selected to get the lowest noise level for AIC3204 in some harmonic range

[Hardware.py](#)
The DiSlord Hardware.py fix, which I tested with two tools, works well.
With 2.8" and 4" screens - I used nanoVNA-Saver version 0.2.2.
I just copied Hardware.py to the NanoVNASaver directory, which is available in the C: / nanovna-saver folder.

After installing Python 3.7.4, you can start it with the nanovna-saver.py command.

link info: <https://groups.io/g/nanovna-users/message/13096>



[0.8.0-20200620](#)

[edy555](#) released

- Add format Quality Factor
- Fix label R+jX to R+jX
- Add bandwidth command
- some fixes

[0.7.1-20200321](#)

[edy555](#) released

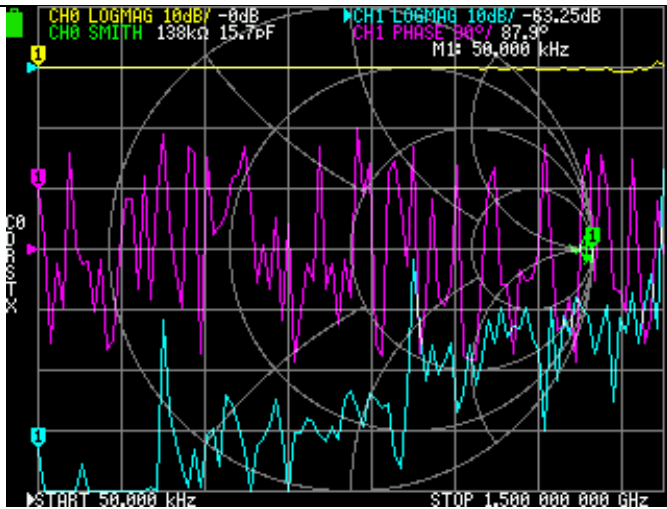
- Contributions from [@DiSlord](#)
 - shrink flash size
 - fasten sweep
 - added color command
- added lever operation for the electrical delay

fixed code style

[0.7.0-20200223](#)



[edy555](#) released



- Merged incredible contribution from [@DiSlord](#)
 - font face becomes smart, clear and having variable width
 - update trace color to have good contrast
 - update battery indicator
 - changed marker icon
 - changed focus sign of the lever mode
 - replaced number formatting scheme
 - remove the shell from chibios
 - remove some unused command (info, thread)
 - shrink the size of flash and SRAM
 - cleaned a large amount of the codes
- Lever operation updated
 - disable lever mode change by frequency change
 - clicking lower edge of the left and right changes lever mode to adjust the frequency of the stimulus
 - dragging marker or clicking upper side makes lever mode to adjust the frequency of markers