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News



VIA Echo 2500 Review

Posted by [Charles Gervasi](#) in [News](#) on Sep 10, 2012 7:34:18 AM

For the past few months I have been renting an [Anritsu MS2034B](#) combination network analyzer (VNA) and spectrum analyzer (SA). When I originally rented it from TRS, I had a notion of returning it within two weeks. It turned out to be hard to part with.



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[A Echo 2500](#). The Anritsu I for under \$4500.

Overall the VIA Echo 2500 and its accessories. It

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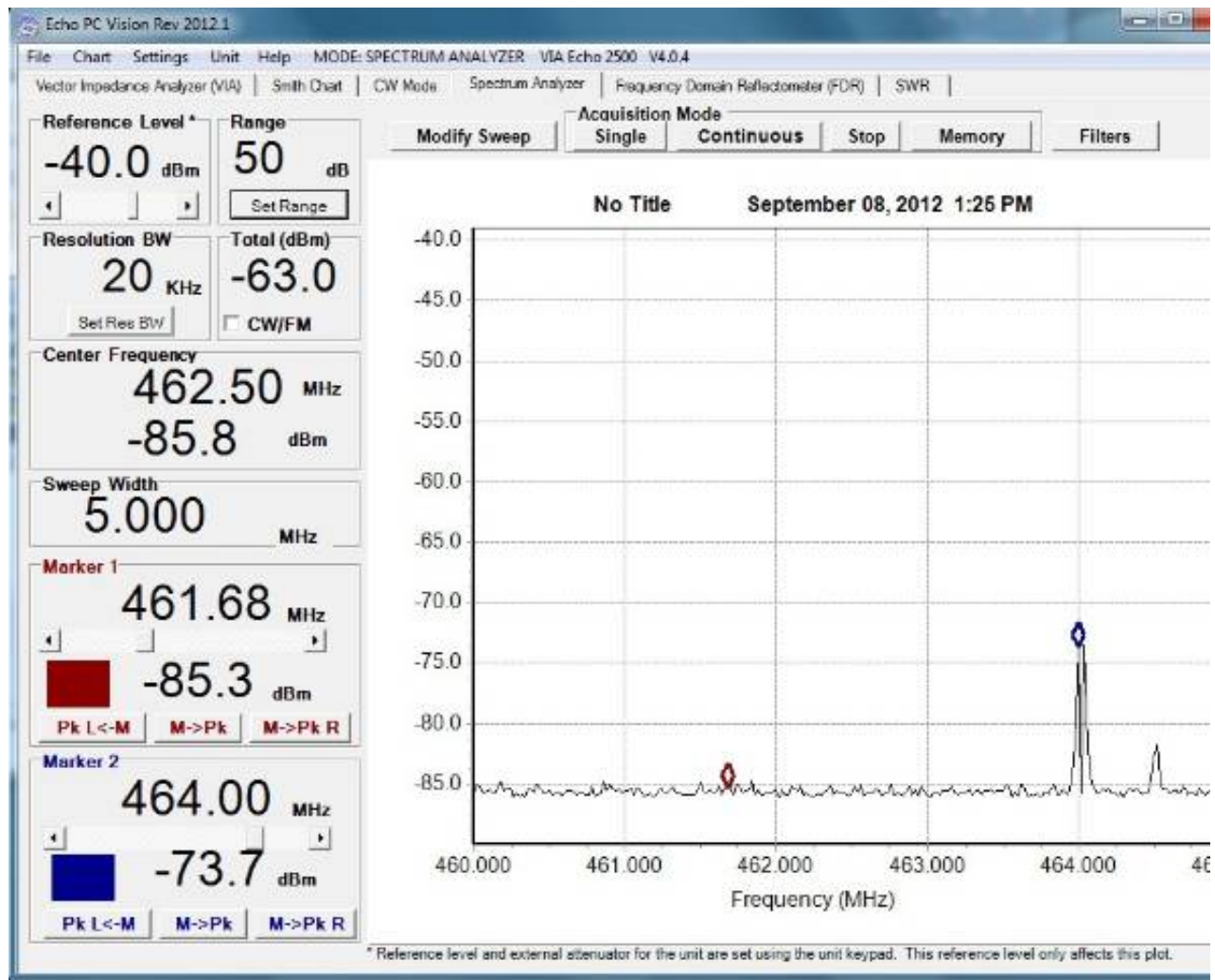
carrying case for the unit and .F ports, USB port, and power

connector. The enclosure, screen, and keypad look rugged, but rugged like something from the 80s.

The amount of functionality in the unit, however, is completely inconsistent with its retro enclosure.

The unit comes with software that runs on a PC. The software, like the case, is nothing at all sexy but has good functionality. You can change all settings through the software, which is slightly less cumbersome than using the menus and keypad. It also displays much better images than you can get from the 280x156 monochromatic display.

PC Software in Spectrum Analyzer Mode: (click to enlarge)



Nice Features:

- It has a constant audible indicator that changes pitch based on the value of the parameter you're measuring at one of the markers. I've been looking for this type of feature ever since a baby monitor serendipitously helped me troubleshoot a board. The downside of this is that it's hard to get even a vague indication of whether the parameter went up or down based on the tone. There is much room for improvement here.
- In SA mode, you are supposed to be able to listen to the AM or FM messages modulated on any carrier you observe. I can see strong FM radio stations, but I could not get this feature to work. The speaker only produced white noise.
- It weighs less than 1kg and runs for over 2 hours on built-in NiMH batteries that charge when the unit is connected to power.



Minor Frustrations:

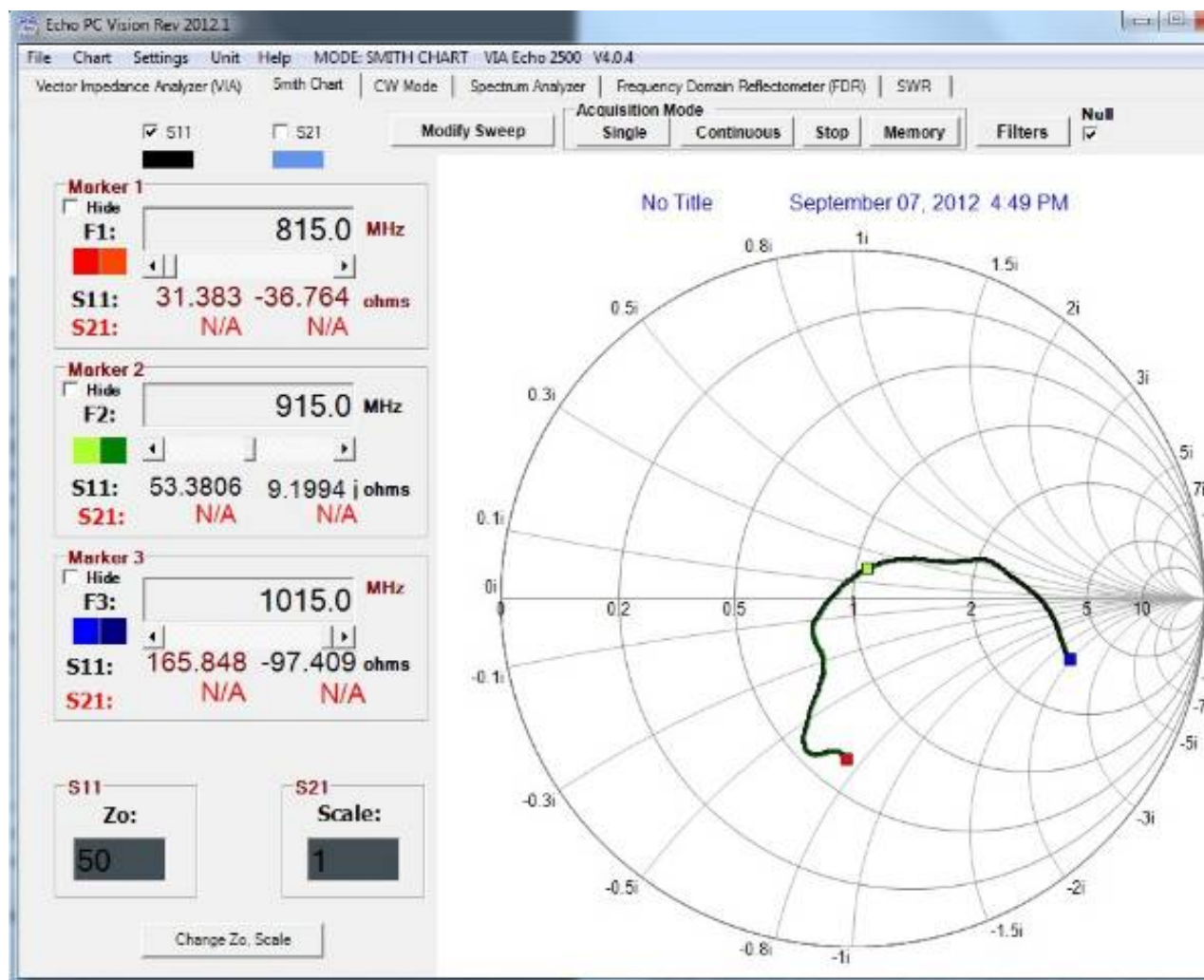
- SA has no zero span mode. The smallest span allowed is 2.5MHz. This means you cannot monitor the variation of signal strength over time on a single frequency.
- It cannot display the Smith Chart on the display. You must connect it to the computer. This sounds cumbersome, but it's actually very easy to get used to. It's much less annoying than I had imagined.
- SA will not allow low bandwidth setting with large spans. At a span of 2.5MHz bandwidth can go as low as 10kHz. Bandwidth setting must be at least 1/250th and no more than 1/10th of the span. Most SAs allow small bandwidths and large sweeps even though this means increased sweep time.
- You can't display the Smith Chart and SWR at the same time.
- The tech writer who did the user's manual described the menus well, but didn't explain much beyond what someone can figure out intuitively.
- There is a slight latency with all keypad operations that's just long enough to be mildly annoying.
- There is a discontinuity in the SA at 1.1GHz where the noise floor changes by 10dB.
- The USB link is slow. Results displayed on the computer update much more slowly (maybe 15s per sweep) than those displayed on the screen.
- After about eight hours of use, I experienced one crash of the firmware and one case of the PC software becoming out of sync with the unit.

- SA's max hold (the manual calls it persistence) only works on the small display, not the PC interface.

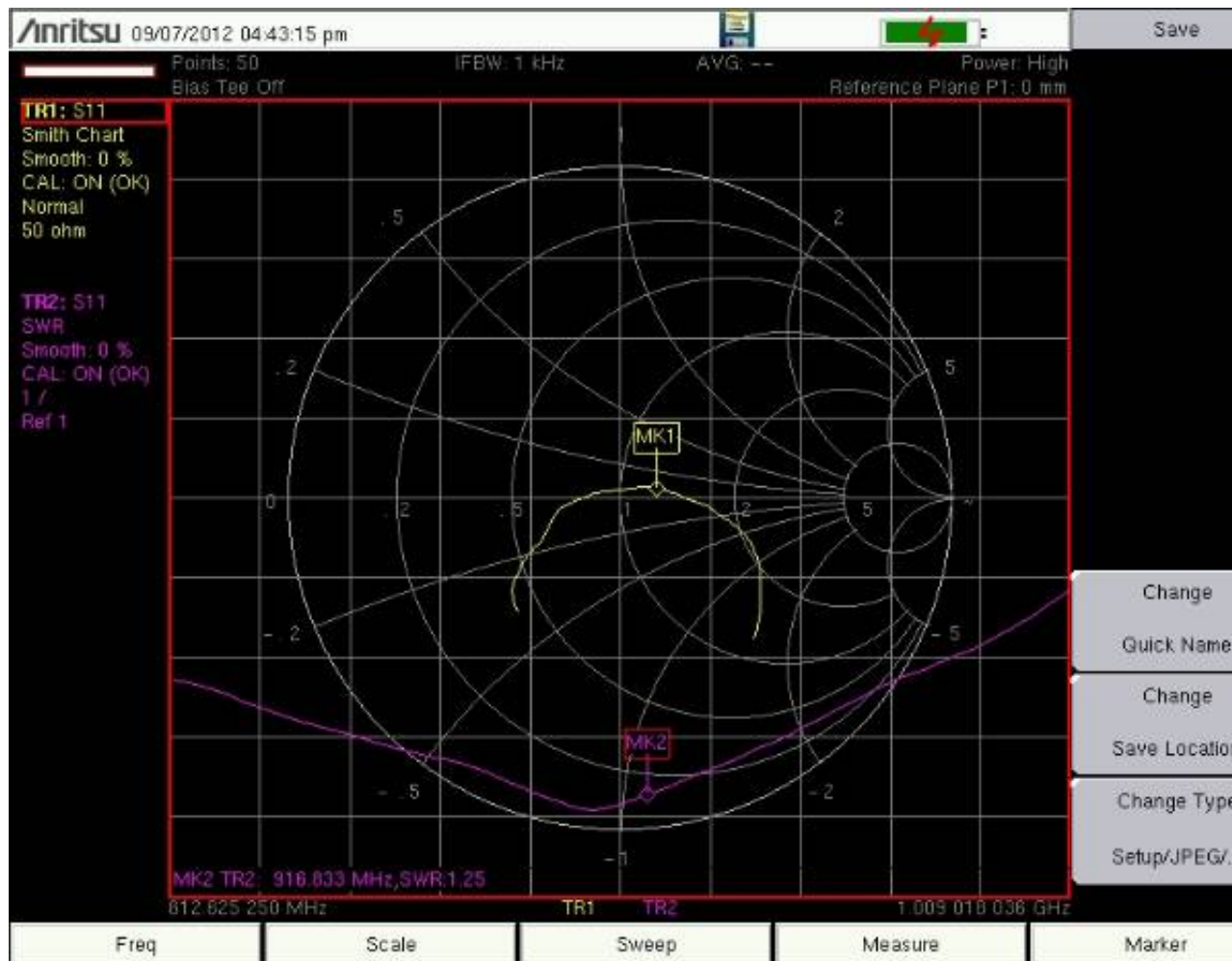
Comparing Anritsu and VIA Echo's S11 plots:

I compared the S11 plots of many antennas. The results are similar but slightly different, even though I used a good cable and took great care to cal it out and not move the cable after calling.

VIA Echo's S11 plot of a rubber duck: (click to enlarge)



Anritsu MS2034B's S11 plot of the same antenna: (click to enlarge)



To see if these slight differences would cause a problem, I took an antenna that was very poorly matched, measured S11 on both VNAs, and added components of a pi-matching network one at a time, measuring with both VNAs after adding each component. It's hard to know because it wasn't a blind experiment because I saw both sets of results. My gut feeling is that Anritsu is more accurate but I could match an antenna on the VIA Echo as well as on the Anritsu.

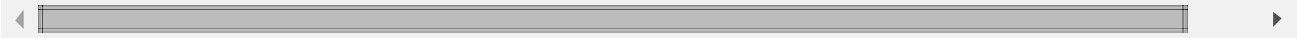
Conclusion:

It must have been hard for the engineers who designed the VIA Echo to sacrifice functionality to keep the cost down, but they did an excellent job. They went cheapest on the things that matter the least. On features that actually make a difference when matching impedances, it is close to being as good as equipment three times the cost. The same is true of the SA functionality, except I wonder how much cost it would have added to add zero span.

Oddly the 80s enclosure reminds me of tuning antennas as a teenager by measuring the SWR at three or four frequencies and then tweaking the antenna or the matching network. That reminds me of just how powerful it is to have access to any VNA.

I would highly recommend this scope for someone on a tight budget who needs something basic around the lab and can rent something more expensive as needed. It would also be good for someone with unlimited budget who needs something easy to carry for quick testing on top of buildings or towers.

Note: This is a completely independent review. I paid full price to buy the Echo from [Valuetronics](#) and to rent the Anrtisu from [TRS](#). I don't know anyone working at these companies.



1468 Views

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[DAB](#) Sep 10, 2012 2:51 PM

It sounds like an intriguing device, but even 4500 USD is too rich for my toy budget.

However, if you need one of these devices in your work, I can easily see where you could justify the expense.

Plus most of the defects you highlighted could probably be solved using a software upgrade.

Try contacting the manufacturer. If you give them some good feedback they might let you "beta" test the next software upgrade.

Just a thought,
DAB

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