

Antenna Analyzer Summary

Prepared by Fred Hopengarten K1VR

Note: Many e-mail addresses on old correspondence are no longer valid.

From: William Vetterling <vetterw@cfa.harvard.edu>
Date: Mon, 11 Nov 1996 12:09:36 -0500

What I have are:

1. The AEA HF-Analyst -- which has the plotting display
It is their original model
2. The Autek Research HF-Analyst, model RF-1.
3. The AEA VHF/UHF Analyst -- which won't be much help
on 160m!

The Autek device is very handy because it is tiny and runs on batteries for a long time. Very good in the field. But you scan frequencies by hand, and if you want a plot, you have to do it point by point.

The AEA does the plot for you, but it eats batteries alive, so I generally use it with a 115V adaptor. I have not done a careful test of how well these two agree with each other.

Bill, K010

From: Ronald D Rossi <rrossi@btv.ibm.com>
Date: Wed, 19 Mar 1997 10:22:58 -0500
Subject: [CQ-Contest] Autek RF Analyst tip...

I came up with a very simple solution to one of the FEW things I find annoying about the RF Analyst. You know how the on/off switch is SO easy to turn on accidentally? If you own one you do. Anyway I got tired of the thing turning on in the pocket of my jacket.

My solution was to take a small (1/2 inch or so) piece of dense weather strip and put it right over the button (really more like a post). I am talking about the closed cell foam with one sticky side, not the really spongy open cell stuff. I first drilled a small hole to accommodate the post. The hole should be just the right size to work best. I just twisted the drill bit in my fingers, and did it before I removed the paper from the sticky side. Don't be silly and chuck a bit up for this!! Also don't make the piece any shorter than 1/2", as the switch is actuated by side-to-side motion easily.

I had been trying to think up some sort of cover that I could flip up and out of the way to turn the unit on. This is much simpler and very effective. I just had to tell someone (somenany)!

KK1L ex N1PBT...ron (rrossi@btv.ibm.com)
Ron Rossi H/P SRAM Engineering -- IBM Microelectronics

From: Pete Soper <psoper@encore.com>
Date: Wed, 19 Mar 1997 10:28:48 EST
Subject: Re: [TowerTalk] Best antenna analyzer

I have used an Autek RF-1 for a bit over a year. I've used other Ham's MFJ 259 at various times too.

In my opinion the Autek RF-1 is the better value for the money but the MFJ might be considered easier to use in some cases. The controls on the MFJ are definitely easier to use, as the "fine" tuning control on the RF-1 is too fast and I seem to spend time "tweaking" to get just the frequency I want for a test. So for quick SWR tests the MFJ seems much easier to me. Another nice thing about the MFJ is being able to look at the SWR and frequency at the same time. On the RF-1 you must alternate these readings although there is a trivial setting to get automatic alternation.

The RF-1 will make some kinds of measurements that the MFJ will not, allowing you to create your own custom inductors and capacitors tested at the frequency of interest (but with accuracy to just get you into the right range prior to trimming) On the other hand I think the MFJ can be arranged to function as a crude dip meter with an add-on accessory and this isn't available with the RF-1.

Another thing is that the RF-1 is very compact. I've spent a lot of time hanging off the top of a ladder with the RF-1 stuck right into an antenna's feed point and I can't say I'd like to try that with the MFJ. I've even hooked up my RF-1 to an antenna, hoisted it up, and read the display with binoculars. This is conceivable with the MFJ (especially somebody else's <g>) but the extra weight would make me nervous.

The RF-1 uses up its battery pretty quickly. I get perhaps 3-4 months of use from one 9 volt battery by turning it off whenever I'm not using it for more than a few seconds.

Overall, the RF-1 has drastically improved my ability to figure out what is going on with my antennas. I've also switched it in place of my transceiver to work out tuner settings without having to transmit.

Pete KS4XG

From: Mihail Mateescu <yo3ctk@alltrom.ro>
Date: Thu, 20 Mar 1997 16:11:46 +0200
Subject: [TowerTalk] Best antenna analyzer - results (short)

To date, I received 16 responses, out of which:

- * 9 pro-MFJ because is versatile, easy to use and have more functions
- * 4 pro-AUTEK because is cheaper and more compact (lightweight)
- * 1 favored a different instrument (AEA graphic antenna analyzer)
- * 2 recommended to have both MFJ and AUTEK instruments because each one has some features that the other lacks

I have posted separately a summary of all entries. Finally, I decided to have the MFJ.

Mike, YO3CTK

From: Mihail Mateescu <yo3ctk@alltrom.ro>
Date: Thu, 20 Mar 1997 16:11:41 +0200
Subject: [TowerTalk] Best antenna analyzer - summary (long)

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I own the auttek RF-1 because it also does uH that I believe are easier, than, if not possible with, the MFJ-259. The MFJ-259 discount price is \$195. from R&L Electronics in OH, which is lowest I have seen. Of course, the RF-1 is \$129.95 direct from AUTEK.

=====

I just bought a MFJ 259 and I love it!! It is GREAT!

=====

The MFJ is much easier to use and read.

I have the Autek. It works great but it tougher to use because it has one meter and it's digital. The analog metering of the MFJ makes it much easier to use.

Price: the Autek beats it hands down.

Size: Autek wins.

Ease of use: MFJ

If you are in no hurry when using it, for the money, the Autek does the same thing for less but the MFJ is easier to use.

I bought the Autek because the analyzer is something I will NOT be using everyday. I figure for the amount of times I will be using it, I can take a bit more time, and save the money for other things.

=====

Buy the Autek. I've owned the AEA, Autek, and MFJ.

=====

I've used the MFJ 259 many times (I borrow it from a fellow ham. hi) and it works super!! I can tune just about any antenna to resonance @ impedance within about 2-2 khz. Its very easy to use and IMHO is about the only piece of equipment they make which works reliably. (other than my old MFJ 204B bridge/Ramsey frequency counter). If you can get a 259 which works the first time, you wont be disappointed in its capabilities. (MFJ usually has a 50% failure rate on almost any item you buy). As far as the Autek RF-1 goes, I've never heard of anyone using one, so cant help you there.

=====

I just bought a MFJ-259 but haven't used it yet. I have been thinking of buying the Autek RF1 , in addition to the MFJ-259, as I believe the Autek offers features that the MFJ-259 unit doesn't have, and, the MFJ-259 has features that the Autek doesn't have.

=====

Direct your question directly to John Broznahan, W0UN, "Mr Antenna!" He has bought and used them all.

=====

I have the MFJ antenna analyzer - it works like a charm. It makes it so

easy to get your dipoles, beams etc. resonant you'll wonder how you ever got along without one.

Be sure to get the model with the digital frequency counter, not the one with the analog dial.

=====

I have the MFJ-259. It works great. Don't know how I lived without one for so long. Not sure if you can find the AEA version since they went out of business. For the money the 259 does everything I need. It is great to know exactly where the antenna is tuned and what affect you are having on it while trying to tune it.

I usually avoid MFJ but I am happy so far.

=====

The MFJ seems to be the most popular. The other popular one is the AEA, but I think I recall seeing that AEA was sold and things are a little confused until the new owners settle things down. I think the MFJ costs a little less than the AEA too. People who have used both have said that each is better at some things and the best approach is to have one of each!

=====

I have used an Autek RF-1 for a bit over a year. I've used another ham's MFJ 259 at various times too.

In my opinion the Autek RF-1 is the better value for the money but the MFJ might be considered easier to use in some cases. The controls on the MFJ are definitely easier to use, as the "fine" tuning control on the RF-1 is too fast and I seem to spend time "tweaking" to get just the frequency I want for a test. So for quick SWR tests the MFJ seems much easier to me. Another nice thing about the MFJ is being able to look at the SWR and frequency at the same time. On the RF-1 you must alternate these readings although there is a trivial setting to get automatic alternation.

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=====

We use then all, including the AEA.

The one I use most often is the MFJ. The Autek is somewhat difficult in

that sweeping an antenna is done via pushing frequency selector buttons and looking at a digital readout. The analog meters on the MFJ are much better and the frequency is always available, unlike the Autek, which must switch the display.

A word of caution - all of these meters have a common problem. When used in the presence of fairly strong RF fields, they will not indicate the antenna under test properly. This is especially evident on 80, 160 and even 40 when the antenna being tested is within several miles of an AM broadcast station. The devices all use low level RF energy going to the antenna and measure the return loss. Unfortunately, the front ends of the devices are necessarily broadbanded. This means they pick up everything and oftentimes this "everything" is more energy than the device generates. The result is a VSWR reading that will never approach 1:1, or approach whatever the antenna really is.

I recently have been continuing tuning on my 3 element 80 Zagi and have to do it when the AM stations change directions, otherwise the measurements are unusable.

Had a fellow trying to tune a 40 mtr Yagi once. He called me, said the VSWR was 1.5:1 and I suggested a small change. He called me back about 30 minutes later and said it was now 10:1! Guess what - the AM broadcast station a few miles away had just made the evening antenna direction change.

=====

I have both the Autek RF-1 and the MFJ-259 I bought the RF-1 first and was not impressed I recently got the 259, A much better instrument. The controls on the RF-1 are much too small and reactive a small turn on the tune control sends you from one end of a band to the other, making it very hard to use with any amount of accuracy. The MFJ-259 is bigger and the controls are easier to use, also you see both the SWR and resistance at the same time not so with the RF-1. The 259 also has a frequency counter, but it is also almost twice the price I spent the extra money because I was not impressed at all with the RF-1.

=====

I cast my vote strongly of the MFJ-259. It is an extremely versatile piece of equipment and seems (by all accounts I've heard from all that own one) to be very accurate. Also, MFJ gives very good customer service.

=====

I find the Autek the most cost-effective solution. It does everything the others will do, and more, and it's cheaper!

=====

You might look into the AEA graphical antenna analyzers that actually display the actual SWR curve on the LCD. AEA was recently purchased by Tempo Research Corporation in Vista, CA. Their telephone number is 760-598-8900. They are in a state of transition now, but they should be able to deliver new analyzers within a couple months.

=====

Mike, YO3CTK

From: Pete Smith <n4zr@contesting.com>

Date: Fri, 21 Mar 1997 12:10:18

Subject: Re: [TowerTalk] Modifying AUTEK's antenna analyzer? -Reply

At 07:52 AM 3/20/97 -0800, Bryan Sparrowhawk wrote:

>It would seem that if the Autek RF-1 could be modified to have an
>analog meter showing SWR simultaneously with the digital Freq display
>AND if the controls could be modified to be less sensitive.. it would
>be the premier instrument. Do any of you Autek owners think that
>would be possible/practical?

>de KD7LS

A lot of folks seem to have missed the fact that you can hold down the FREQ and SWR buttons on the RF-1, release them at the same time, and the display then cycles between the two readings about once a second. Not as good as 2 displays but a lot better than switching manually.

Pete Smith N4ZR n4zr@contesting.com

From: Wayne Bailey <nx7k@postoffice.worldnet.att.net>

Date: Sat, 11 Oct 1997 01:19:39 +0000

Subject: [TowerTalk] Antenna Analyzer

I requested information about either the MFJ or Autek Antenna Analyzers Here are the results: I received 26 responses. 22 recommended the MFJ. 7 had both the MFJ and Autek generally stated the MFJ easier to use than the Autek, however the Autek does a couple of more things than the MFJ. Of those seven, 5 recommended the MFJ over the Autek if only purchasing one unit. 13 respondees recommended buying additional battery holders for the MFJ.

I have purchased the MFJ with the coils that make the unit a grid dipper.

Thanks to all that responded -- Wayne, NX7K

From: Ward Silver <hwardsil@WOLFENET.com>

Date: Mon, 6 Oct 1997 09:24:52 -0700 (PDT)

Subject: Re: TopBand: Autek RF-1 Antenna Analyzer

On Mon, 6 Oct 1997, kmlh@juno.com wrote:

> Would a HP or BP filter work or would it mess up the readings? If it is
> only a single BC station maybe a LC plus Coax tunable stub would help.
> I have often considered the RF-1 but I am LOS to a BC station on 1590KHz
> and several others in a 10 mile radius.

>

> 73 Carl KM1H

I know the MFJ-259 is pretty well unusable below 7MHz at my QTH due to strong local BC unless I put in an HPF (Kiwa BC-1).

The only problem with filters is that they usually need something close to their design termination impedance to have their frequency-responses stay as-designed. A highly reactive load or one with an impedance far away from the filter's expectations will upset it greatly. A high-Q stub is much less likely to have the same effect. -- Ward N0AX

From: "Charles H. Harpole" <harpole@pegasus.cc.ucf.edu>
Date: Sun, 5 Oct 1997 23:55:45 -0400 (EDT)
Subject: Re: [TowerTalk] Antenna Analyzer

If u want an MFJ, get the one with the freq. meter built in. Without that, u must have a rcvr near the test instrument--and usually that is not possible. de K4VUD

From: ki0dz@juno.com (Mary-Frances R. Bartels)
Date: Sun, 5 Oct 1997 17:58:33 MST
Subject: Re: [TowerTalk] Antenna Analyzer

On Sun, 05 Oct 1997 04:28:22 +0000 Wayne Bailey <nx7k@postoffice.worldnet.att.net> writes:
>I have been considering purchasing an Antenna Analyzer. Does anyone
>have any recommendation and experiences to impart to me before I leap.

Depends on exactly what you're looking for and the price. I recently purchased the MFJ-259 from Gerald at Texas Towers. For my purposes it works just fine. I'm told that its warts include weak battery holders and no reverse polarity protection for the power-in. However, nothing beats it for finding the center SWR of an antenna. Freqs covered are HF and VHF (no UHF +). It can also be used to determine velocity factor and a few other things (don't have the book in front of me now). For \$200 it's worth it.

BTW, there is a recent thread on the 259 on rec.radio.amateur.equipment (or is it .antenna?). It may still be alive. You can do a search on DejaNews to get it if you can't access it directly.

Mary-Frances R. Bartels KI0DZ

From: "Bruce Goldstein" <wa3afs@solli.inav.net>
Date: Sun, 5 Oct 1997 09:41:07 +0000
Subject: Re: [TowerTalk] Antenna Analyzer

I have been using the MFJ 259 analyzer for several years. Aside from having to to resolder the SO239, it has works flawlessly. I use it most every day to set the antenna tuner plus setting up or checking the antennas.

Bruce

From: Brad Rehm <bradrehm@texas.net>
Date: Fri, 3 Oct 1997 08:48:43 -0500 (CDT)
Subject: Re: TopBand: Autek RF-1 Antenna Analyzer

I have been using the RF-1 for a number of years and have found it very effective. As is true with any instrument, you'll have to take care using it, but it has enabled me to adjust matching elements on my 160m antennas nearly perfectly at the tower. I haven't had to take a rig and battery out to the tower since getting the RF-1.

By the way, it's also a handy tool to have around the shack. I use it for measuring capacitors and inductors, and of course, it can also tell you a great deal about an antenna from the shack end of the coax.

Brad Rehm Georgetown, Texas KV5V

From: "Mike Michon" <michon@eatel.net>
Date: Fri, 3 Oct 1997 07:29:07 -0500
Subject: Re: TopBand: Autek RF-1 Antenna Analyzer

I owned one for a short period of time. It was neat to see the impedance drop as radials were added to my vertical. Unfortunately, I left it hooked up to the antenna tuner and loaded it up one day. It hated it. I am going to buy another.

It took a while to get used to the different settings and I had it flashing through a sequence one time and didn't know exactly what happened. (read the directions).

I put up an Inv. L about a month ago-- 75 feet vertical and 90 feet Horizontal. I am pleased so far. Couldn't work k7k on 18 mhz with my CF Zepp at 70 feet, but worked them with the L. Sure would like to know the pattern of the L on 18 mhz, but no antenna modeling program.

Mike Michon AB5XP Prairieville, LA 504-622-2608 michon@eatel.net

From: "Doherty, Robert" <Robert.Doherty@fmr.com>
Date: Tue, 7 Oct 1997 10:00:00 -0400
Subject: [YCCC] Autek RF- Comments & Feedback

We had over 30 replies from our inquiry about the Autek RF-1 antenna analyzer....several on the reflector have requested me to post the comments.

This in no way is recommendation or criticism of the RF-1

EVERYONE who had the Autek RF-1 loved it! They said they could not get along without it. and wondered how they had in the past.

For those who owned BOTH the Autek RF-1 and the MFJ 259, they preferred the MFJ259.... being able to read all 3 meters at once was a factor.

Separate Meters for Frequency.....SWR..... RF Resistance.

One replied who had both units offered the Autek RF-1 to me for sale if that means anything. He said he would keep the MFJ 259.

One problem with both units. close in AM broadcast stations affect the operation on 80 meters and below. strong RF field. 10 miles or less. We have no AM stations within that distance.

We purchased the MFJ259 at the Rochester NH flea on SAT. Discounted from \$239 to \$199.

Now to get on with the elevated 160 inverted "L" and 580 ft Beverage.

Whitey K1VV/W1BB Stew Perry Memorial Radio Club

From: w8jitom@postoffice.worldnet.att.net
Date: Mon, 6 Oct 1997 22:39:19 +0000
Subject: Re: TopBand: Autek RF-1 Antenna Analyzer

> From: Ward Silver <hwardsil@WOLFENET.com>

> I know the MFJ-259 is pretty well unusable below 7MHz at my QTH due to
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>
> The only problem with filters is that they usually need something close to
> their design termination impedance to have their frequency-responses stay
> as-designed. A highly reactive load or one with an impedance far away
> from the filter's expectations will upset it greatly. A high-Q stub is
> much less likely to have the same effect.
>
> 73, Ward N0AX

A bandpass or band reject filter would be the way to NOT go.

The best device is a high Q parallel LC circuit right at the analyzer's terminals. By adjusting the parallel circuit for maximum impedance on the measurement frequency, the circuit would remain transparent for ANY load condition.

The only requirement is the circuits unloaded Q be high enough that the equiv parallel resistance (resistance because it is resonant) of the L/C combo exceeds 1000 ohms or so. That's pretty easy to do.

Tom W8JI

From: towert@microvst.demon.co.uk (Anthony R. Gold)
Date: Fri, 24 Oct 1997 17:37:33 GMT
Subject: Re: [TowerTalk] MFJ 259 vice Autek RF analyst

In message <2.2.32.19971025030731.0069efb0@pop3.liii.com> Len Schaier writes:
> I will be doing some experiments with antennas and transmission lines and am
> considering buying either the MFJ 259 or the Autek Analyst. My goal is to be
> able to measure SWR and the real and imaginary parts of a complex
> impedances. I primary interest is HF.
>
> I am interested in any comparisons or experiences with either device.

The MFJ will not measure impedance off-resonance, only a resonant resistance. The Autek allows one to measure Z, and then along with VSWR (and a smidgin of common sense) to determine R and X in $R+jX$. The smidgin is needed to determine whether X is positive or negative

Tony - G3SKR / W2TG

email: tgold@panix.com

From: k6ll@juno.com (David O. Hachadorian)
Date: Sat, 26 Jul 1997 14:26:40 EDT

Another nasty characteristic of the Autek unit is that when the battery voltage gets low, it starts producing bad data! Now I always check the battery voltage before using the instrument. Otherwise, it's a great device.

Dave Hachadorian, K6LL k6ll@juno.com

From: "L. B. Cebik" <cebik@utkux.utcc.utk.edu>
Date: Sun, 27 Jul 1997 07:12:57 -0400 (EDT)
Subject: [TowerTalk] Re: Antenna analyzers

Re: susceptibility of the Autek and MFJ to erroneous readings when there are nearby high power stations.

If you think about the nature of either instrument, you will understand that the problem is less in the instrument than in what we are asking them to do.

We want a very low RF source (to not radiate out of band signals at detectable levels) and hence a highly sensitive very broad band detection system. Since any nearby signal will induce currents into a significant antenna structure, the instrument will read these currents along with those produced by the generator inside. The level of induced currents will vary with the nearness of the station, its frequency and power, and--of course--the antenna structure (which has in all likelihood not been tested for microwatt sensitivities at all frequencies from sub-AM to supra-FM/TV). You can design an SWR analyzer with prefilters or other methods to eliminate these disrupting energies, but few of us can afford the resulting product.

Although it may sound too basic to need repeating, always use a secondary system to check the readings obtained from a primary instrument--in this case, the station rig and SWR meter as a cross check on the SWR analyzer. Also, just as we do when we use the station equipment, always determine the reliability of the power source before committing the equipment to use (a fancy way of saying "Check the battery of any test instrument before using it").

Guilt quiz: When is the last time you checked the battery in your DVM or the ohm's battery in your old VTVM?

LB, W4RNL

From: Steve Zettel <zettel@libby.org>
Date: Sun, 27 Jul 1997 07:40:10 -0600 (MDT)
Subject: Re: [TowerTalk] Re: Antenna analyzers

One thing that seems to help with this problem is to use a "bead balun" at the input to the Autek and MFJ units. This at least seems to prevent induced currents on the outside of the coax shield from making it into the circuitry, I haven't tested this in a really strong RF field, though, like a repeater site.

Regarding erroneous readings with the Autek at low battery voltages, I have found that on my RF analyzer a good indication of battery condition can be found by switching it to the highest frequency range and observing the LCD readout for several moments. If the LCD display appears to be fading, it's time for a fresh battery.

Steve Zettel KJ7CH Libby, MT USA

From: Ward Silver <hwardsil@WOLFENET.com>

Date: Sun, 27 Jul 1997 09:13:32 -0700 (PDT)

On Sat, 26 Jul 1997, Charlie Summers wrote:

> Well, the problem turned out to be a commercial broadcast station 6
> miles away. This 50,000 watt station overloaded my Autek RF analyzer
> and caused a faulty reading.

(snip)

Living within a few wavelengths of a handful of AM BC stations (good thing I have few fillings...) I have observed similar problems with the MFJ-259. I use the following techniques to keep the RF out:

1) Use a BC filter at the analyzer output - I have a Kiwa BC-1 that works fine at HF. There are several BC-reject filters on the market that will also work. Put a 50-ohm load at the filter output and sweep the analyzer through its range to find out what effects the filter may have on true impedance measurements. Avoid using the filter in ranges where the analyzer shows significant deviations from 1:1. Be aware that the BC-filter will not act like it's supposed to if terminated with impedances far from 50-ohms.

2) Use a band-pass filter for mono-band antennas. Same caveats as for #1.

3) If the problem is RF on the coax shield (also a problem here), try using the analyzer *inside* the tower. The tower will act as enough of a shield (keep the coax in there, too) to limit the amount of BC RF that gets onto the outside of the coax.

4) Always double-check your analyzer readings with a Bird wattmeter or transceiver SWR bridge using forward & reflected power to calculate VSWR. Use at least 25W to make the measurements. If there is significant disagreement between the analyzer and power meter VSWR numbers, you have a problem. I would favor the power meter readings over the analyzer readings. I have several antennas that can not be checked with the analyzer due to excessive BC RF.

5) Keep notes of what worked and what didn't so you don't have to waste time repeating the process on your next project.

Ward N0AX

From: K7LXC@aol.com

Date: Sun, 27 Jul 1997 23:24:58 -0400 (EDT)

In a message dated 97-07-26 09:45:35 EDT, dick@merlin.libelle.com writes:

> >I hate to get off on a tangent but sometimes, after dealing with a
> >problem for a few days, it takes someone else to instantly diagnose the
> >problem. I never dreamed it could be Autek overload!
>

It seems like all of the RF analyzers (AEA, MFJ and Autek) are susceptible to strong nearby RF fields. I've had some luck with my MFJ by having a short jumper stacked with toroids to try to attenuate unwanted RF. The plastic case on the AEA may not provide any shielding so this might not work with it.

In any case, be careful when using them.

Steve K7LXC

From: n7mb@primenet.com (Michael Bill)
Date: Sun, 27 Jul 1997 22:24:53 -0700 (MST)

We have found that using an ICE bandpass filter just before the antenna input to the Autek/MFJ analyzers clears up any external RF overload problems, even on a full-size 160m balloon vertical!

mike n7mb

From: "Edward W. Sleight" <k4sb@worldnet.att.net>
Date: Mon, 28 Jul 1997 21:18:43 -0700
Subject: [TowerTalk] MFJ 249/259 Calibration Procedure

Rick's comment is surprising, since MFJ sent me the complete calibration procedure a few months ago, but FWIW, here is the SWR and Impedence procedure.

1. Set the unit to the 1.8-4 Mhz band.
 2. Make a 100 ohm dummy load (100 or 2 50 ohm in series or whatever installed in a PL-259 with leads as short as possible.
 3. Looking at the circuit board with the tune capacitor at BOTTOM RIGHT, IC1 is about 20% down from the top on the right side of the board. The pot to the left of IC1 is R-17, the SWR adjustment. The pot in the middle of the 3 below IC1 is the resistance pot.
- OK, here we go...
4. Turn the unit on
 5. Use the 100 ohm dummy load and adjust R17 until a 2:1 SWR is obtained.
 6. Replace the 100 ohm dummy load with a 50 ohm dummy load.
 7. Adjust R31 until 50 ohms resistance is read.
 8. Repeat as necessary until SWR reads 1:1 and impedance meter reads 50. (never could get mine exactly on 50, but close enough)

And that's it. Don't mess with R-32 (left hand pot) or R-18 (right hand pot (AGC)).

BTW, just in case anyone is interested, the pin numbers for IC1 are:
Pin 1. Bottom right. Pin 7 Bottom left. Pin 8 Top left. Pin 14, Top right.

Ed

From: "Paul Ferguson" <Paul.Ferguson@pobox.com>

To: towertalk@contesting.com
Date: Mon, 8 Jun 1998 11:07:48 -0400
Subject: [TowerTalk] Measurring at the antenna feedpoint

When I put up my quad, I checked the resonance at the feedpoints using an Autek RF1. I used a couple of inches of wire to attach the RF1 to the loop feedpoints. Some of the results did not seem correct. The SWR was OK at the shack and the quad played well. A friend had a similar experience. Here is part of his message: to me:

I made the mistake of trying to measure impedance/resonance right at the feedpoint with the Autek RF1. I knew from experience with the 40 dipole that that's a bad thing to do. I'm not sure quite why. So I did two other things. I had an old Johnson Directional coupler. I stuck it right at the feedpoint (6" coax actually) with the signal lines running down to the ground and got readings that made much more sense. I also cut a 1/2 wave piece of RG8x and put the Autek at the end of that. It essentially reproduced the coupler results. It seems one can't make measurements and BE at the feedpoint as well. Body capacity effects I guess. -----

Have others had this experience. Does body capacity cause it?

K5ESW Paul.Ferguson@pobox.com

From: Eric Gustafson Courtesy Account <n7cl@sparx.mmsi.com>
To: towertalk@contesting.com
Date: Mon, 8 Jun 1998 10:30:01 -0700
Subject: Re: [TowerTalk] Measurring at the antenna feedpoint

Unless the Autek measurment port is balanced, I suspect that you were having problems trying to measure an essentially balanced antenna structure with an unbalanced instrument. This had the effect pf making the instrument and probably the operator part of the antenna system. You might want to try the measurement at the antenna with a good 1:1 balancing device in line between the instrument and the antenna.

Eric N7CL

From: "Guy L. Olinger" <k2av@qsl.net>
Cc: towertalk@contesting.com
Date: Mon, 15 Jun 1998 13:34:19 -0400
Subject: Re: [TowerTalk] Antenna Problem - Solved

I have the same MFJ unit. I got one of those cheap bead choke balun kits from The Wireman, and always have it on the MFJ analyzer. All the wierd problems disappeared. Guess it was unbalance: My hand attached to the case, therefore one side of the feedline and not the other. I also have the other analyzer (RF-1? It's at home...) and don't use it without the bead choke either.

As a matter of fact, in general, killing the current on the outside of coax shields has fixed all kinds of wierd stuff around the shack. From the above to the KW high isolation chokes on the input & output of the AL1200, rf on coax shields is a real pain.

Guy

From: Marty Tippin <MartyT@geoaccess.com>
To: TowerTalk <towertalk@contesting.com>
Date: Mon, 22 Jun 1998 08:09:55 -0500
Subject: RE: [TowerTalk] New MFJ 259

FYI - Denver Amateur Radio Supply (www.denverradio.com) lists the MFJ-259B for \$189 ... They consistently have the lowest prices I can find on the net.

No connection, just a satisfied customer.. ;-)

-Marty KI0LO martyt@pobox.com

From: Jimmy Weierich <kg2au@stny.lrun.com>
Cc: towertalk@contesting.com
Date: Mon, 22 Jun 1998 15:19:33 -0400
Subject: Re: [TowerTalk] New MFJ 259

The manual for the new MFJ-259B in .pdf format is available at MFJ's web site, <http://www.mfjenterprises.com/manuals/index.html>.

Jimmy, KG2AU [<kg2au@stny.lrun.com>](mailto:kg2au@stny.lrun.com)

From: Mike Lamb <n7ml@imt.net>
Cc: towertalk@contesting.com
Date: Thu, 12 Nov 1998 17:22:09 +0000
Subject: Re: [TowerTalk] Easy measurement of feedline losses

If you have the new AEA CIA-HF, you don't need to do ANY computation, it is all done for you automatically using its RL measurement capability. I apologize, you do need to divide by two and subtract a residual reading in your head.

It also has an automatic distance to first fault measurement that is easy to use and interpret.

73/Mike, N7ML
Mktg. Dir.
AEA div. Tempo Research Corp.

k6ll@juno.com wrote:

> This is a repost with a more relevant subject line. Recent
> discussions of feedline losses on a kt34 and recurring
> threads reminded me of this oldie, which I first posted
> about four years ago.
>
> A good thing to do every year or so is to measure your
> feedline losses. If you have an antenna analyzer that reads
> high values of swr with reasonable accuracy, the measurement
> can be done from the comfort of your radio room, without
> disconnecting the antenna.
>

> Attach the analyzer to the feedline in question, with the antenna
> still connected. Tune the analyzer's frequency until you see the
> highest peak in indicated swr on the meter. There will usually
> be several high peaks. Pick the highest one near the high end of
> the analyzer's range.
>
> Plug the peak observed swr into the following equation:
>
> $LOSS = 10\text{LOG}((SWR+1)/(SWR-1))$
>
> For example, if you see a peak swr of 8 at 24 mhz
>
> $LOSS = 10\text{LOG}(9/7) = 1.09 \text{ dB at } 24 \text{ MHz}$
>
> Then all you have to do is consult a coax loss chart to see if
> the measured loss is reasonable for the type and length of
> coax being used, and whether it would be cost effective to put up
> new/different coax.
>
> The reason this method works is that almost all antennas present
> a high value of impedance when operated outside their design
> range. This high impedance is a close approximation of an open
> circuit, and the equation above is valid. This idea was
> presented in QST a few years ago, but the author presented a
> graphical, rather than mathematical, solution. I like the mathematical
> solution better, because you don't have to go back and dig up the QST
> article to find the graph.
>
> Some people distrust the accuracy of high value swr readings
> obtained on inexpensive analyzers, and prefer to take
> repeated measurements over several years to detect trends,
> rather than believing the absolute numbers. That's ok too.
> Whenever I have used the above method to measure brand-new coax,
> the results have always agreed closely with expected losses.
>
> Dave Hachadorian, K6LL Yuma, AZ K6LL@juno.com

From: Grant Bingeman <DrBingo@compuserve.com>
To: hamtech <ham-tech@netcom.com>, hamant <ham-ant@ucsd.edu>,
towertalk <towertalk@contesting.com>, topband <topband@contesting.com>
Date: Thu, 20 May 1999 17:10:01 -0400
Subject: [TowerTalk] Impedance Analyzer Interface

Just wanted you to know that I have a Windows98 interface available with
cable for the AEA CIA-HF complex impedance analyzer. I have been shipping these
for two months now, so yes, they are available (special price for hams
also).

Grant Bingeman KM5KG DrBingo@compuserve.com

From: "John Tait" <bravo@iol.ie>
Cc: <towertalk@contesting.com>
Subject: Re: [TowerTalk] MFJ 259B analyzer vs Autek?
Date: Thu, 14 Jun 2001 21:46:34 +0100

Like N400, I also own both units. I would agree completely with his comments. The MFJ for speed and ease of use. The Autek for accuracy.

John EI7BA <http://www.iol.ie/~bravo/>

----- Original Message -----

> Like a lot of other things, it depends.

>

> MFJ has a wider frequency range. You can check out your 6M and 2M antennas. The B model even gives you values of X, although they may not be really accurate. It is good enough if you are only interested in "ball park" > values. The unit is quicker in that you can find the frequency of resonance a lot faster. The measurement of the R component may or may not be all that accurate. The analog meter on mine for example, does not agree with the > digital readout. You have to use a resistor to resolve this if you need to > be really accurate.

>

> Autek gives you slightly better resolution of values, especially R. It is > debatable how accurate these values are, but you can always check things > out with a resistor. Mine seems to be quite close. The values of X are > probably not all that accurate, but hardly anything this side of a General > Radio or Hewlett Packard is all that accurate.

>

> With the Autek, you can also measure values of C and L. That is worth > something. The frequency range is limited to about 34 mhz. You can be a > little more precise with finding the correct length of 1/4 and 1/2 > wavelength transmission lines. I use the MFJ to get in the ball park and > the Autek to tweak to the final value.

>

> For designing matching networks for verticals, I use a small universal L > network. I place it at the base, adjust for zero SWR using the MFJ and > then measure the values of L and C with the Autek. It works correctly every > time.

>

> The Autek is also useful for checking loss in coax.

>

> Obviously the solution is to own both, as I do. Each has it's own good > features.

>

> If I could only own one, I suppose it would be the MFJ. I would hate > giving up the ability to measure L, C and coax loss, however.

>

> INK N400

From: "Maurizio Panicara" <i4jmy@iol.it>
Subject: Re: [TowerTalk] MFJ 259B analyzer vs Autek?
Date: Thu, 14 Jun 2001 23:01:32 +0200

Once I couldn't use an Autek analyzer because it was fooled by the RF field produced by a medium power FM Broadcast transmitter, located several hundred meters away. I have been reported the same by several other users.

Mauri I4JMY

From: "Jiri Sanda" <jirka@jimaz.cz>
Subject: RE: [TowerTalk] MFJ 259B analyzer vs Autek?

Date: Fri, 15 Jun 2001 00:14:38 +0200

I will come with my opinion.

I own AUTEK (over 5 years now, someone wants to buy it ?) + MFJ269 (about 1+1/2 year) + TESLA Laboratory ADMITTANCE bridge - precision device over 25Years old - having well over 30 Kgs. It was calibrated a few years ago with modern professional Marconi bridge and was doing fine - let's take it as a standard.

I have measured 2 pcs of Auteks, 3 pcs of MFJ259B, 2 pcs of MFJ269 against the professional bridge on my antennas and R + L + C networks. I have never had in my hands the 259.

Concerning accuracy the AUTEK and 259B is about the same , 269 is considerably better. If you open the two mentioned MFJ units - it is visible the detector is completely different.

Ease of use - AUTEK by HUGE far the worst. Tuning is very coarse or too fine. Measurement of C + L is not very convenient to dummies with engineering master degree like myself. It is hard to guess what to do with the antenna from the result. What you get from MFJ is much easier to use in the real life. The professional bridge is also fine provided you stay on the ground and are ready to use your muscles + 220V power.

Concerning the interference from the band or other jamming signals - AUTEK is the worst, MFJ 259B is better, 269 is again better than 259B. The professional bridge is a bit better but not a big deal.

The AUTEK is so bad that on 20-10 in the afternoon (my) when you point the ant towards USA it is impossible to measure at all. It is useless on 40m and down most of the time - while the MFJs are still showing something. The main difference is that on the analog meter of the MFJ you see - this frequency is bad - lets move a few kHz, on AUTEK you after a second get some measurement - God knows what !!?

I would go for the 269. It is more expensive but you get much better device for modest rise of \$. We all do spend big \$\$\$ on antennas + towers so let's measure it precisely to get the punch out!

Jiri OK1RI

From: "Jiri Sanda" <jirka@jimaz.cz>
Subject: RE: [TowerTalk] MFJ 259B vs Autek?, Correction
Date: Fri, 15 Jun 2001 15:21:52 +0200

- 1.go out and buy some NiCd or NiMh AA cells and all you need is to charge the unit. The cost in some not very long period of time will be lower. It will last charged about 2 hours. The tiny 9V battery in the AUTEK will never dream of similar time.
- 2.There is significant difference in MFJ259 259B and 269 * do not forget it. They look the same but are not!

Jiri OK1RI

P.S. Here it looks I am too much in favor of MFJ - I just want to give them credit for a very good product. On the other side most of they tuners I had

chance to meet are VERY BAD.

From: "Bob Thacker" <k3gt@pgh.net>
Subject: Re: [Towertalk] Antenna Analyzer Suggestions?

I have the CIA-HF, an Autek RF-1 and previously owned an AEA SWR-121. The Autek is good, takes relatively accurate measurements, but has some serious drawbacks. It is hard to read, incessantly flickers, changes values quickly and is hard to adjust...but it works. The AEA SWR-121 was good for reading SWR and Return loss only, a good unit to do that. Several weeks ago I got the CIA-HF with the Director software and it is absolutely awesome. I am still finding out how to use it. It is fantastic with plots of RL, SWR, X, Z, R, L, C and phase angle on your PC (PS it is also on the small screen on the unit). Recently I adjusted my shunt fed tower for 80 & 160 in just a few minutes. Got X and R equal which means resonance, no reactance, and it increased bandwidth slightly. It is well worth the BIG bucks for the unit, however its only drawback is the very Spartan operating manual. I guess your supposed to know all about this stuff, unfortunately I'm a neophyte compared to W8JI, N4ZR and many others. Get that one and you won't be disappointed, except for the manual.

Bob, K3GT

From: K7LXC@aol.com
To: towertalk@contesting.com
Date: Sun, 1 Feb 1998 11:40:45 EST
Subject: [TowerTalk] Finally - Antenna Analyzer Summary - LOOOONG

Okay, TowerTalkians --

Here it is (I hope!) - the long awaited antenna analyzer post. Thanks to everyone for their input. There is a lot of info here but makes for interesting reading.

Steve K7LXC

Re: [TowerTalk] Antenna analyzer comments wanted
Date:=0998-01-25 23:22:34 EST
From:=09mwdink@eskimo.com (Michael Dinkelman)

At 02:18 PM 1/25/98 EST, you wrote:

>Hello, TowerTalkians --

>

> If you own or have used an MFJ, Autek, AEA or other antenna analyzer,
> could you please give me your impressions. I own and use an MFJ 259 all the time but would like your comments on how they work, susceptibility to RF, ease of use, reliability, etc.

>

> This is research for an upcoming Up The Tower column. I will also post the responses to TowerTalk.

>
>73, Steve K7LXC
--

Yo Steve

I've had and used the RF-1 for over a year now. I prefer it over the MFJ's (which the Club has). Takes some getting used to, that meter on the MFJ is nice, but once I made up my mind I have been happier with it.

I like its portability and versatility and cost. The hard part is learning to adjust the frequency slowly. I've never had any reliability problems except once when I had a dying battery and didn't know it. Now, I have a test load (50-ohm resistor) for checkout before every use.

Dink
Michael Dinkelman
mwdink@eskimo.co

Date:98-01-26 13:55:13 EST
From:froberts@pe.net (Fred Roberts)
To:K7LXC@aol.com (K7LXC)

Steve-

Used both the older MFJ (external counter) and the AEA units briefly. Was really impressed with the AEA as it produced an SWR curve for whatever frequency band you wished. Of particular note, it did show when the SWR curve was unsymmetrical ... and that came as a surprise to me. My feeling was the AEA gave you maximum information in a short time. Of course, it cost the most of any unit.

Also, noted that MFJ, AEA and Autek didn't provide exactly the same answers, but since the MFJ and AEA were borrowed, never had time to explore this beyond a simple observation.

That's it...

73- Fred, W6TKV

--

From:=09rossi@btv.ibm.com (Ronald D Rossi)
To:=09K7LXC@aol.com (K7LXC)

I use the Autek. I really like it.

Pluses:

Small

measures C and L direct (nice for hamfests!!)
considerably less expensive than MFJ
built solid battery is easy to replace
rather accurate in all the comparisons I've done
has yet to fail on me

Minuses:

On/Off easy to bump (I have a neat fix for this included at the end.)
No analog meter (nice for finding minimums)
Course freq. adjust sometimes too course (you get used to it)
Fine freq. adjust sometimes too fine
Need to buy the VFH model to cover that band

> In a message dated 98-01-26 16:04:33 EST, you write:

>

> > measures C and L direct (nice for hamfests!!)

>

> Hi, Ron --

>

> Do you mean you use it to test things (like what?) before you buy =
them?

> Please elaborate.

Well for example what is the capacitance range of that unmarked air variable capacitor? What's the minimum C? The rig is only good to something near 1000pF (I would need to check this number), but that is fine for most of the variables. I have used it for roller inductors, and chokes as well. You can get the impedance at a given frequency as well as the inductance value. Are these values what I'm looking for?

You can of course estimate the length of that roll of coax (in multiples of 1/2 or 1/4 wavelengths) as well as it's impedance (terminate with 50 Ohms...if SWR is not around 1:1, then it must be 75 Ohm). You can do these tricks with the MFJ, but you have to carry it over your shoulder and look EXTRA geeky (you're already geeky pulling out the test gear anyway, but at least it is not obvious, nor cumbersome).

It fits very well in a jacket pocket and with my power switch mod it won't turn on accidentally.

--

73 de KK1L...Ron (rrossi@btv.ibm.com)

Autek power switch fix (quote from my cq-contest list post)...

I came up with a very simple solution to one of the FEW things I find annoying about the RF Analyst. You know how the on/off switch is SO easy to turn on accidentally? If you own one you do. Anyway I got tired of the thing turning on in the pocket of my jacket.

My solution was to take a small (1/2 inch or so) piece of dense weather strip and put it right over the button (really more like a post). I am talking about the closed cell foam with one sticky side, not the really spongy open cell stuff. I first drilled a small hole to accommodate the post. The hole should be just the right size to work best. I just twisted the drill bit in my fingers, and did it before I removed the paper from the sticky side. Don't be silly and chuck a bit up for this!! Also don't make the piece any shorter than 1/2", as the switch is actuated by side-to-side motion easily.

I had been trying to think up some sort of cover that I could flip up and out of the way to turn the unit on. This is much simpler and very effective. I just had to tell someone!

--

Date:=0998-01-25 15:09:50 EST
From:=09abowen@nettally.com (Bowen, Arlan)
To:K7LXC@AOL.COM

Steve: I wrote this originally in response to an inquiry on the reflector= and saved it because I figured it would come up again. There is a lot mo= re to the story, but only for those who do serious matching work. I made = up a little universal L network. I take it out to the antenna, usually a = vertical, and adjust for a perfect match. Then I measure the L and C comp= onents and build up something that will handle power. Works slick. Much b= etter than trying to guess the Xc or XL component required. Better than a= noise bridge and much faster than the GR 916 boat anchor.

>>>I have the Autek RF 1, MFJ 259, the MFJ Noise Bridge and a GR 916 A, R= F

Impedance bridge. Each of them have merit. The first 2, however, are prob= ably the most useful and certainly quicker to use.

>>>

>>>The MFJ 259 will give you general information a lot faster and is quic= ker, easier to use. It also goes up beyond 2 meters, so is useful at VHF.= The Autek gives a bit more precision with digital readout, but not neces= sarily accuracy. Accuracy is a function of calibration and a few other th= ings. Generally speaking, you cannot read the analog resistance meter ver=

y closely on the MFJ. The meter on mine is not very precise either, when =
checking with known values. Autek appears to be very good in the range 10=
-100 ohms. I did not have any precision resistors to check the higher values.

>>>

>>>Take a typical problem. My pal is putting up a Beverage. He wants to know if the old
coax is OK to use on the low bands. First I put the MFJ on the open coax and find a low
resistance "dip" around 3.2 mHz. Then I connect the Autek and set it near that freq. I find
a more precise dip that reads 7 ohms. Per the instruction sheets, I multiply the reading by
a constant and divide by the feedline impedance (50) and come up with 1.2 dB loss (at
that frequency). The analog meter on the MFJ would be hard to read at that low number.
You would be looking for a few minutes longer to find that impedance dip at 3.2 MHz with
the Autek.

>>>

>>>Another typical problem. I want to know the SWR vs. frequency for a 5 =
band

quad before I crank it up to full height. I put the MFJ on the feeder and=
sweep the entire spectrum on all 5 bands, 20 thru 10M. I get ballpark SW=
R readings on all of them in about 5 minutes. With the Autek, you would b=
e at it somewhat longer as first you adjust the freq. dial to get to the =
band, then switch to SWR to get the reading. Adjustment of the frequency =
control is quite critical on the Autek. Lots of "kHz" with just a mini mo=
vement of the controls. Not bad once you get the hang of it.

>>>

>>>With MFJ, I can adjust the matching network on my 6 and 2M home brew b=
eams. Autek cannot do that. With MFJ, I can find quarter or half waveleng=
th of coax in just a few minutes. Autek takes more searching, but you get=
a more precise measurement if that is important. I actually use both. MF=
J to get in the ballpark. Autek for final value.

>

>There are many more examples. These are just ones that I have done recen=
tly.

>>>

>>>With Autek, I can measure capacitance and inductance with reasonable a=
ccuracy. I can adjust and check out Beverage step down transformers easil=
y

with it too. Ditto for coils needed in an L network for the low band ante=
nnas or any other similar application. I now know the value of all those =
mil surplus capacitors that I have accumulated over the years. Ditto for =
various variables that I have in the junk box.

>>>

>>>Bottom line? Try to get both. I don't think you will be sorry. Can onl=
y afford one? I guess I would go with Autek. Might be slower, but has a b=
it better resolution and more capability. You give up the 6 and 2 M bands=
, however. Autek only goes to about 32 mHz.

>>>

>>>Both will also act as low level RF generators, but the MFJ has a bit m=

ore output and an antenna port for that function. I can run my GR 916A impedance bridge with the MFJ as an RF source. Can also be used as a precision dipper, with the proper coils available from MFJ. The dipper function is quite insensitive and not very useful.

>>>

>>>INK N400

>

Date: 0998-01-25 20:50:41 EST

From: 09SavageBR

To: 09K7LXC

Hi Steve

If this sounds weird, it's because I am watching the Super-Bowl as I write.

I have used the MFJ-249 and now the 259 for several years. After 40 years in ham radio I think they are the best \$\$ value and most useful tool available. Of course my favorite pastime is playing with antennas of all kinds. About 5 years ago I retired from a career as a microwave engineer designing all kinds of antennas for satellites and spacecraft. During this time have used some of the most complex test equipment ever built but also the most expensive. I guess that is one of the reasons I enjoy the simplicity, low cost and versatility of the 259 for use in ham applications.

What is great:

So many problems are confused due to the point of measurement. The portability of the 259 that allows measurements at the feed point of an antenna 100 ft "Up The Tower" is very valuable. Also having a "plug in" direct reading grid dip meter in your pocket is very convenient.

Being able to measure complex impedance at the feed point with two simple readings from the 259 is also very valuable. I have a method that will provide complex Z by making two SWR measurements. One measurement in the standard way and one measurement with a series resistor built in a connector is all that is required.

I also use the 259 and a dummy load or a short to test all kinds of coax new and old for loss, quality of connector installation etc. It is probably the most useful trouble shooting tool in the shack when "something funny is going wrong" and the rig won't tune up right!

Think what we had to do to "create" an SWR vs. freq. plot of an antenna feed point before the age of the 249/259?

I have given both the 249 and the 259 rough treatment since they first came

me on the market without a failure

What is not so great:

Due to the basic operation, it is susceptible to stray RF radiation. If your friendly CBer or another ham is operating near by or there is a strong broadcast station in the neighborhood you can get some very weird readings. I spent all one afternoon looking for a loose connection on an antenna because the swr APPARENTLY was intermittent. I finally realized my neighbor was testing and operating his CB radio in his camper. Every time he keyed the mic the 259 meter would peg looking like a loose wire in the wind. Boy did I feel stupid!!

Access to the battery holders is not very user friendly. Most folks substitute an external battery. A battery "test" button would be nice for use before you start up the tower. Checking for the highest frequency available in the 170 MHz seems to be a pretty good indicator on mine. When the max freq. falls off the batteries are low.

The device would be more flexible if there was a 50 ohm-75 ohm switch. This should be rather easy for MFJ to implement. Since MFJ does not provide a schematic I am not sure. I wonder why they provide a parts list but no diagram?

A shoulder strap connected directly to the case-- not the carrying bag-- would be nice.

Most of my comments apply to all units you mentioned, but the cost and ease of use of the 259 is hard to beat. No doubt my favorite and most used piece of test equipment.

There are probably a lot more comments but half time is over!

73s

Bruce AA4Z

--

Date: 0998-01-25 22:18:57 EST

From: 09k6ll@juno.com

To: 09K7LXC@aol.com

I have the Autek, and like it. There are two nearby am BC stations, and they cause false readings on big antennas. In those cases, I front-end the Autek with an ICE mdl 402X am BC filter. Also, if the battery gets low, the unit will give false readings, with no other sign that the battery is

low.

I like the fact that it measures high values of swr. This is useful for determining the loss in a piece of coax. The little manual that comes with the unit is very helpful and informative.

Dave Hachadorian, K6LL
Yuma, AZ
K6LL@juno.com

Date: 0998-01-25 22:52:01 EST
From: 09ab5tv@ix.netcom.com (Madison Jones)
Reply-to: 09ab5tv@ix.netcom.com
To: 09K7LXC@aol.com (K7LXC)

I have used my MFJ-259 for about 18 months. It works very well for my purposes, though the cheesy battery boxes are WORTHLESS. I solved my problem of having them break at inappropriate times and places with the result of using Velcro to attach a 2 ah gel cell of approximately the same width and depth of the analyzer case.

Prior to obtaining the '259, I used the prior model (one-meter showing SWR, as I recall) and liked it. There was a very interesting article in 73 magazine a couple of months ago on how to modify the bottom-of-the-line MFJ (no bells, no whistles and almost no cost) so it will give all the features of the '259. Looked like a very satisfactory meter at modest cost (\$100).

Last year at XA5T, we used the AEA model in getting a number of antennas up on the same tower. It has some features which the MFJ doesn't, and told us our 160 wire was being de-tuned by the Cushcraft 40-2cd. Don't know if it really was, but we did move the 40-2cd to another tower under a TH6, where all worked well. The MFJ did not show the conflict, so we don't know if it was all necessary.

Don't know about the Autek, except to say the frequency dialer is far easier to set/read than the MFJ, which needs a vernier or something to desensitize it a little. It's also much smaller, and therefore somewhat less bulky to haul up and down the tower.

Regards,

Madison
w5mj

--

From: 09tgstewart@pepco.com
To: 09K7LXC@AOL.COM

I own both an AEA and the Autek.

The AEA is very nice when tuning up antennas, it's big advantage being the overall "picture" of the antenna with it's frequency scanning capability. It is, however, very susceptible to external RF on the lower bands which can disturb your readings and in severe cases even cause the "out-of-lock" indicator to come on, making it useless. In most cases, it's a very useful tool.

I haven't used the Autek much but it seems quite handy, being a very small package. Physically it's a little delicate so treat it with care. I haven't noticed any RF problems, though I'm not sure I've given it a chance to exhibit any.

73, TY K3MM

--

From: 09k4sb@mindspring.com (K4SB)
Reply-to: 09k4sb@mindspring.com
To: 09K7LXC@aol.com (K7LXC)

Well, I guess you didn't like my joke. By the way, 1 paw Ed is now 2 paw Ed again. They took the pins out Tuesday.

I have used the MFJ's since they first came out, and have had no problems

. No overload, no false readings. My major problem with them was to convince myself they tell the truth. Each time, every time. They are exceedingly accurate for cutting 1/4 wave lines, etc, and the other features. BTW, I own 3 of them. (1 is permanently mounted in the truck for the screwdriver ant with a 2 way coax switch. Switch to the MFJ and hit the switch on the screwdriver, and you're at 1:1 PDQ.

I would give you my amplifier if you pointed a gun at me, but you'd have to shoot to get my MFJ.

73 Ed

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Date: 0998-01-25 16:18:31 EST

From: 09froberts@pe.net (Fred Roberts)
To: 09K7LXC@aol.com (K7LXC)

Steve-

I use the Autek unit and find it is particularly handy when travelling because it is so very small. The course/fine frequency adjusting process is a bit touchy, but it works fine. It did the job for me when installing wire antennas in the field.

When I received the unit from Autek, it had an internal short that was remedied by sending it back to Autek ... I wondered if they had done a final checkout. Also, the power switch is a pushbutton switch and sensitive to being turned on in a suitcase ... so I have found it necessary to remove the battery when packing it.

73-
Fred Roberts, W6TKV
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Date: 0998-01-25 17:14:23 EST
From: 09dx@traverse.com (Barry Martz K8BK)
Reply-to: 09dx@traverse.com
To: 09K7LXC@aol.com (K7LXC)

Hi Steve.

I have the Autek RF-1. It works fine but is not anywhere near as easy to use at the MFJ. The all digital is TOUGH to use compared to the analog meters. It is very RF sensitive. I took it with me on a trip to a local island to set up a vertical (putting tuner at antenna base) and another station was transmitting on another band about 90 feet away and it would not work at all. I bet the MFJ would react the same but that is my experience. For the few times you actually use it per month, the Autek works fine. If I were using it more often, I would get rid of it and spend the few extra bucks and get the MFJ!

7 3 de Barry/K8Bk

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From: 09w0etc@ix.netcom.com (Larry Lindblom)
To: 09K7LXC@AOL.COM (K7LXC)

Steve:

The area just east of Des Moines, IA is broadcast station alley. Multiple big time FM stations and several AM stations including WHO (50 kW into =

a half Franklin antenna). I'm 5 miles east of the city and n0ni is 15 miles east. We've used both his MFJ & my Autek at both locations. The MFJ is highly susceptible due to strong BCI, the Autek doesn't seem to be affected as much as the MFJ by the BCI.

My 25 cents worth (2 cents adjusted for inflation)

73 from IA (that's where the fat hogs grow-hey, something has to eat all the tall corn)

Larry L. w0etc

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From: 09k4oj@ij.net (k4oj)
Reply-to: 09k4oj@ij.net
To: 09K7LXC@AOL.COM (K7LXC)

yo, Steve

We use the Autek - but it is a royal pain in the ass - the damn know is so sensitive to tuning you barely touch it and you move freq. 100KHz...looking back I kinda wished we had gone with the MFJ, I stayed away because of the MFJ reputation...

The Autek is also RF susceptible.... it is not much good at my Dad's place on VLF since there is AM BC nearby...

later

oj

--

From: 09Earl_Dery@mindlink.bc.ca (Earl Dery)
To: 09K7LXC@AOL.COM

Hi Again Steve,

I own an earlier version MFJ (207) an Autek, and recently got the AEA.

Each one seems to have their own strengths and weakness. The MFJ seems to generally be quite reliable as does the Autek, however at times the Autek will read a bit different than the MFJ. I can't yet make a much of a comment on the AEA as I just got it for Xmas and haven't really had time to get to know it. I had got the AEA primarily because one could store the

ir SWR plots and print them out for reference (not done yet).

The size of the Autek sure is nice when you carry it up the tower.

73 Earl VE7IN

--

From: 09davidg@primenet.com (David Gilbert)
To: 09K7LXC@aol.com (K7LXC)

Hi, Steve.

I've owned an Autek RF-1 for about two years, and think it is a great piece of gear. I've tried it against a variety of known passive loads (RLC combinations), and it has always checked out. When I've used it on antennas, I sometimes get readings I don't fully understand, but most times they make sense after some experimentation. I've come to trust the little bugger pretty well.

If the SWR is not too high (say less than 5:1), you can use a little formula to get actual R and X values instead of just Z. I've found that it does indeed work.

I've never had the occasion to operate it in high RF ambients, so can't speak to that. The battery life is pretty marginal, and I wish it didn't cycle through the bands with a push-button -- all it takes is an inadvertent touch to send you to an unwanted frequency. But those are about the only downsides to what is otherwise a pretty slick little tool for us antenna geeks.

73,
Dave AB7E

Date: 0997-03-20 09:12:39 EST
From: 09yo3ctk@alltrom.ro (Mihail Mateescu)
Sender: 09owner-towertalk@contesting.com
To: 09towertalk@contesting.com

This is the summary of all responses I received to my query (names withheld). Thank you all for your efforts.

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I own the Autek RF-1 because it also does uH that I believe are easier, than, if not possible with, the MFJ-259. The MFJ-259 discount price is \$195. From R&L Electronics in OH, which is lowest I have seen. Of course, the RF-1 is \$129.95 direct from AUTEK.

I just bought a MFJ 259 and I love it! It is GREAT!

The MFJ is much easier to use and read.

I have the Autek. It works great but it tougher to use because it has one meter and it's digital. The analog metering of the MFJ makes it much easier to use.

Price: the Autek beats it hands down.

Size: Autek wins.

Ease of use: MFJ

If you are in no hurry when using it, for the money, the Autek does the same thing for less but the MFJ is easier to use.

I bought the Autek because the analyzer is something I will NOT be using everyday. I figure for the amount of times I will be using it, I can take a bit more time, and save the money for other things.

Buy the Autek. I've owned the AEA, Autek, and MFJ.

I've used the MFJ 259 many times (I borrow it from a fellow ham. hi) and it works super!! I can tune just about any antenna to resonance @ impedance within about 2-2 kHz. It's very easy to use and IMHO is about the only piece of equipment they make which works reliably. (Other than my old MFJ 204B bridge/Ramsey frequency counter). If you can get a 259 which works the first time, you won't be disappointed in its capabilities. (MFJ usually has a 50% failure rate on almost any item you buy). As far as the Autek RF-1 goes, I've never heard of anyone using one, so cant help you there.

I just bought a MFJ-259 but haven't used it yet. I have been thinking of =

buying

the Autek RF1 , in addition to the MFJ-259, as I believe the Autek offers features that the MFJ-259 unit doesn't have, and, the MFJ-259 has features that the Autek doesn't have.

=====

Direct your question directly to John Broznahan, W0UN, "Mr Antenna!" He Has bought and used them all.

=====

I have the MFJ antenna analyzer - it works like a charm. It makes it so easy to get your dipoles, beams etc. resonant you'll wonder how you ever got along without one.

Be sure to get the model with the digital frequency counter, not the one with the analog dial.

=====

I have the MFJ-259. It works great. Don't know how I lived without one for so long. Not sure if you can find the AEA version since they went out of business. For the money the 259 does everything I need. It is great to know exactly where the antenna is tuned and what affect you are having on it while trying to tune it.

I usually avoid MFJ but I am happy so far.

=====

The MFJ seems to be the most popular. The other popular one is the AEA, but I think I recall seeing that AEA was sold and things are a little confused until the new owners settle things down. I think the MFJ costs a little less than the AEA too. People who have used both have said that each is better at some things and the best approach is to have one of each!

=====

09 I have used an Autek RF-1 for a bit over a year. I've used other Ham's MFJ 259 at various times too.

09In my opinion the Autek RF-1 is the better value for the money but the MFJ might be considered easier to use in some cases. The controls on the MFJ are definitely easier to use, as the "fine" tuning control on the RF-1 is too fast and I seem to spend time "tweaking" to get just the frequency I want for a test. So for quick SWR tests the MFJ seems much easier to me. Another nice thing about the MFJ is being able to look at the SWR and frequency at the same time. On the RF-1 you must alternate these readings although there is a trivial setting to get automatic alternation.

09The RF-1 will make some kinds of measurements that the MFJ will not, allowing you to create your own custom inductors and capacitors tested at

when the AM stations change directions, otherwise the measurements are unusable.

Had a fellow trying to tune a 40M Yagi once. He called me, said the VSWR was

1.5:1 and I suggested a small change. He called me back about 30 minutes later

and said it was now 10:1! Guess what - the AM broadcast station a few miles away

had just made the evening antenna direction change.

I have both the Autek RF-1 and the MFJ-259 I bought the RF-1 first and was not impressed I recently got the 259, A much better instrument. The controls on the RF-1 are much too small and reactive a small turn on the tune control sends you from one end of a band to the other, making it very hard to use with any amount of accuracy. The MFJ-259 is bigger and the controls are easier to use, also you see both the SWR and resistance at the same time not so with the RF-1. The 259 also has a frequency counter, but it is also almost twice the price I spent the extra money because I was not impressed at all with the RF-1.

I cast my vote strongly of the MFJ-259. It is an extremely versatile piece of equipment and seems (by all accounts I've heard from all that own one) to be very accurate. Also, MFJ gives very good customer service.

I find the Autek the most cost-effective solution. It does everything the others will do, and more, and it's cheaper!

You might look into the AEA graphical antenna analyzers that actually display the actual SWR curve on the LCD. AEA was recently purchased by Tempo Research Corporation in Vista, CA. Their telephone number is 760-598-8900. They are in a state of transition now, but they should be able to deliver new analyzers within a couple months.

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73 de Mike, YO3CTK

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Date: 0998-01-26 17:49:37 EST
From: 09on7nq@glo.be (Danny MEES)
To: 09K7LXC@aol.com (K7LXC)

Hello Steve..

I have an MFJ259 here and been using it for about 3 years now. Tuned my 80m vertical, 1/4 WL slopers for 80m and my quad with it. Worked fine for me but do not have any experience with the other products such as the AEA

or Autek.

A few things I noticed while using it are:

- 1) check the batteries frequently or make sure the PS is stable.
This could lead to mis-readings.
- 2) Use RF beads
- 3) a bit un-handy for tower climbing.

Again the MFJ259 has been a very handy tool for me!

73 es GL with the article in CQ Contest.
ON7NQ Danny

Date:=0998-01-26 22:20:50 EST
From:=09avidham@sojourn.com (Roger C. Stimson)
To:=09k7lxc@AOL.Com

Steve,

I find the MFJ 259 one of the best antenna accessories to ever come down the pike. True, it is not a lab instrument. True, it is a pain in the ass to change the batteries and it does perform erratically when the batteries get low. True it is vulnerable to high RF environments.

BUT...I find it very useful for two everyday ham activities: (1) I use it to tune my NYE Viking tuner off the air and (2) I use it to check many antennas and feedlines throughout the winter months when snow and ice do strange things to feedpoint impedance. I have overcome the battery problem by keeping one of my MFJ 259s hooked up to a 13.8 vdc power supply. It is always ready to go and works perfectly. I am just 1/2 mile from two TV towers--one to my north and one to my east--and do not experience any problems with their emissions, RF or otherwise. I have the two Autek SWR analyzers and use them when I am on the towers. Their compact size makes them ideal for quick checks when high off the ground.

Next to my safety belt, tool bag and tools, the SWR analyzers are this hams best friends.

73 Roger K8RS

--

Have uses some of the others but not enough to give a good evaluation...

Likes of AEA:

- 1) seem to be very accurate
- 2)really like the graph to see exactly where antenna resonance

3) easy to use and see while up the tower

Don't like about AEA:

- 1) Large and bulky to carry up the tower-- no real way to secure--- I use a small nylon rope to hold to my belt...
- 2) unit has been sent back for repairs twice because of "high RF environment"--
what ever that means---- cost me about \$100 per trip

Hope that helps Steve... whatever device u need one of them to test instead of the constant up/down... I guess I'm getting too old but limit myself to 3 trips in any one day up the towers... most of my towers are at least 150 ft

73

bud-k4isv

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>Hi Steve, I have been using the AEA SWR121 for over four years now and think is an invaluable piece of equipment for antenna work. I find it to be very well constructed, accurate, stable and dependable. I have checked its stability and accuracy with my FT-1000 and it is every bit as good as the 1000 in these categories. SWR accuracy, it follows what I get with the Bird watt meter.

That being said I think its best features are the ability to see the frequency response of the band in question, the graphical representation is superb. Another feature that I use it for is checking out old coax cable or new for that matter. All my coax is checked for attenuation with the unit prior to installing it. When I first received the unit I checked a 300 foot run first using a bird and dummy load at the distant end. Calculated the attenuation based on the loss and then used the SWR121 to test the same length of coax at the same freq. Results were less than a tenth of a dB difference.

I was having a real bad time with the elevated radials of my 160m antenna.

I used the length that both Elnec and AO suggested. However using the SWR121 installed between two radials as you would a dipole and seeing the band and I was able to adjust their length, and what a difference that made.

I don't think you could find an easier piece of gear to use. Simply punch in what you want on the keyboard and you are presented with a nice picture, and you know what they say about a picture.

The push of two buttons lets you know the status of your battery supply and calibration.

Two negative comments, was at a friends home who lives near a broadcast station and while checking his 160m antenna the results were erratic due to RFI from the broadcast station.

At first it appears a bit pricey but the time it has saved me. All my monobanders, coax runs, and wire antennas have and are periodically checked with the unit. The above may sound like a sales pitch Steve, but trust me I am in no way connected with the mfr. I just trust the unit as it has never failed me. Pete N4KW

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From: 09dick.green@valley.net (Dick Green)

I've used the MFJ 259 and the Autek.

The analog meter on the MFJ is a more natural and intuitive way to find SWR dips than the digital display on the Autek. However, that's about the only good thing I can say about the MFJ.

The tuning resolution on the MFJ frequency counter is so tight that it's really tough to pinpoint the exact frequency of the dip. The Autek is much better in this regard, and also has a fine tuning knob for even better resolution. The Autek tends to agree with my rig much more often than the MFJ.

The MFJ is big and awkward while the Autek is small and very handy. I don't go up the tower (tubular crank-up), but I'd imagine that the Autek would be much more convenient up there for folks like you.

The MFJ burns up batteries much quicker than the Autek.

The MFJ's resistance meter is only accurate at resonance. The Autek shows impedance, capacitance, and inductance, regardless of resonance.

Both units are reasonably well documented, but the Autek manual gives much more detailed technical information.

73, Dick, WC1M

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I have 2 antenna analyzers: the MFJ-259 and the Autek RF-1.

The MFJ has one feature the Autek doesn't have - an external input to the frequency counter (which also has more digits of resolution). But that's

t's about all it has over the Autek. The Autek, on the other hand, is less expensive, has digital readout for everything, is more accurate, works down to 1.2 MHz (vs. 1.75MHz for the MFJ) and costs \$110.00 less. Both units are essentially SWR meters and "V/I" meters. The Autek has the advantage of being more accurate and can measure pure capacitances and inductances directly (it measures X_c or X_L and Freq. and then does the math to determine C or L). The Autek is only the size of a pack of cigarettes.

The MFJ has one major problem that caused me to buy the Autek a couple of months later. It showed much higher SWR than actually existed on the Mosley PRO-96 I was putting up. It caused a couple weeks of consternation until I talked to Mosley and was told about how the MFJ couldn't handle the complex periodic impedance presented by multiband antennas. I also had trouble getting low, stable SWR readings at the base of my 160-meter shunt-fed (L-network) tower. The SWR would bounce all around between 2.5:1 and 4:1. Yet when I fed the tower with my XCVR the SWR on the XCVR would read 1.2:1. I have not had these problems with the Autek. The Autek's readings are accurate enough so that you can actually calculate R from SWR and Z using the formula they give in the manual. I did have one problem with the Autek - a bad solder joint on one of the boards. But I was able to touch up all the connections and eliminate the problem.

So for my money the Autek is the clear winner.
Wayne - W1QC