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Attic T2FD SWL antenna

I am not just into ham radio (AB1KW), I am also an avid listener of other things on the long, medium and shortwave bands. In fact, I will listen to pretty much anything that's on the air. That means putting up an antenna that gives a decent signal over a wide range of frequencies.

The tilted terminated folded dipole (T2FD) antenna is a good match for these requirements. Click the link to get some general information on the T2FD antenna:


Unfortunately, I live in a townhouse at the time, and can only put up an antenna inside. This causes some interesting construction problems and opportunities.

For one, a T2FD works best if the antenna is at least 1/3 of a wavelength long at the frequency you are listening on. This means trying to put as long as possible a T2FD indoors. Other considerations are local noise, which is minimized by keeping the antenna as far away from electrical devices as possible, and the radiation angle, which gets better with height.
Those considerations lead to a simple choice: put the antenna in the attic, in an inverted V configuration. That way it is as high as possible inside the house (resulting in the best radiation angle), as well as the maximum length that will fit diagonally across the townhouse (extending the performance down to lower frequencies).

The T2FD is built using insulated copper wire from a home improvement store, run through some staples nailed into the beams near the low corners of the attic:

![Antenna in Attic](image)

This is an effective, cheap and fairly low noise antenna that works very well from 6 to 30 MHz. The antenna still works fairly well down to about 1 MHz and up to 60 MHz, for the higher end of the AM broadcast band and the 6 meter amateur radio band.

Signal strength gradually drops off below 9 MHz, but since reception on the lower bands is mostly limited by atmospheric noise that is not much of a problem. The antenna only starts becoming "deaf" in the lower half of the AM broadcast band.

To give you an idea of how well the antenna works, one of the main sources of broadband interference in this location appears to be the starters of troubled (?) cars in the supermarket parking lot nearby.

Note that this T2FD is a receive only antenna, due to the 1/4 watt resistors used. Even with bigger resistors, the T2FD is not the best transmit antenna for amateur radio because some of the transmitter power will be wasted in the resistors. When receiving this is not an issue, because the signal/noise ratio and the wideband performance of the antenna are more important issues than pure signal strength.

![Four State QRP Group](image)

QRP bands dead? ? ?......try Noodling !
No gear to buy, no bait, and no wimps, and it may be legal in your state.

http://www.paulsvalley.com/noodling.html?reload
To appreciate the full capabilities of this device, you MUST READ the Complete page!

**Product Pre-Release.**

Idaho Potato Contest Group. Proud to announce a first of its kind device that simplifies the modern Ham Shack!

- It will improve your operation skills. Compatible with most radios, Collins, Drake, Yaesu, Icom, Kenwood, Ten-Tec.
- PLUS the newest option: the [Smeter-for-ur-BELT](#) for the HF impaired.

**Digital Wonder Do-IT-All S-Meter**

Using modern technology there's no longer any reason to give false and misleading signal reports, accuracy is so important during Net and DX operations, plus serious contesters can rest assured they are giving the correct report for every QSO! It's an absolute must for WAS nets, this S-meter insures a good contact every time!

Just position the **Digital Wonder Do-IT-All S-Meter** close to your rig, it's like magic. **What's the secret?** massive quantities of high speed silicon devices (1N4148's) that couple the electron's flow in your rig's AGC circuit to the S-Meter. Fool Proof, A must for serious operator, order Today April 1st. and get the **Dayton Discount** (see pricing / options)

Shown in DX SSB mode, working a DX pileup. Simple, Sleek, complements any rig!
or the CW contester - The USB interface couples the S-Meter to your keyer, just push the button, ur keyer does the rest.

![Image of S-Meter in action](image)

shown here in action, during an 80 meter contact on a "worked all states" NET.. I never heard the station calling, the Net Control yelled "over", I pressed the button, gave the report. The net control was extremely pleased that I had the correct report, he excitedly exclaimed "it's a good contact"?

*Is this great or what ??* It's so easy, no guess work - now I'm getting a QSL card  

*Can it get any better ?*  
(see price list for the Bang Bang voice module)

This S-meter handles 6 of the toughest operating conditions, from casual DXing to CW contests.  
*Never give an incorrect RST again. Just think !* You've only seen 3 of the 6 modes in action. This Cutting Edge device makes the County Hunters Mode as smooth as the WAS mode, for working & confirming stations you can't hear. Its mindlessly simple !

**JUST ADDED,** Still in the prototype stage. After receiving hundreds of emails
telling us we omitted the fastest growing segment of the ham population, Here it is , the Smeter-for-ur-BELT.
when released, it will include a 500 foot roll of duct tape, and a belt clip!
here's several pictures of the prototype, ready for a field test!

Picture #2: copying a repeater CW ID.
the ultimate addition to your GO Kit? "never leave home without it” Newington approved

Now a message from the Quality Assurance Team at Dayton.

**Warning : Health Disclaimer.**
Using this S-Meter can cause dizziness, shortness of breath, fast heart rate, high contest scores, and possible death!
The Idaho Potato Contest Group is not responsible for any damage to your equipment if you stay in the contest for more than 4 hrs. Seek immediate medical help!
Pricing:
$599 Digital wonder S-meter
$99 USB contest keyer interface
$22 Bang Bang Voice module for WAS mode, opt 22
free Eqsl interface, opt (considered useless)
operating with this S-meter $ priceless

IN THE WORKS
option 005 LID Filter
option 10-4 a Chrome Cabinet, for those 10-4 good buddy boys.
option 177 Audio Recovery System, removes unwanted base and audio distortion.
   the closer you tune to 14.177 mHz, the harder it works to clean up the trash.
Orders UR's Now, free shipping and the Dayton Discount $599,
order at this email urkidding@ipcg.net
No Delivery date has been determined.

This is pre release information,
From the IPCG Think Tank
Making everyday on Ham Radio
A Celebration....Turn your radio on!

Dan - KB6NU's Column for December 2012

KB6NU builds an end-fed, half-wave antenna

I’ve always been interested in end-fed, half-wave antennas before, but until this recently, I’d never built one. One of the reasons for this is that most designs are for QRP antennas and not made to handle more than 5 – 10 W of power.
A couple of months ago, though, I ran across a design rated at 100 W (http://earchi.org/proj_homebrew.html). The design seemed relatively simple to build, requiring only a single toroid and a capacitor made with a short length of RG-174 coax. Well, it just so happens that I bought 100-ft. of RG-174 at Dayton this year, and I found the toroid cores online from the "Toroid King" for a very reasonable price, so I decided it was high time to build one.

All told, the parts cost about $10, the biggest part of that being a 4-in. x 4-in. x 2-in. plastic junction box (Carlon E989NNJ-CAR) I got from Lowe’s for $6.41. Compare that with the $60 that LNR wants for their end-fed antenna.

I put up the antenna about three weeks ago, on a beautiful fall Sunday, running 34 feet of wire up a trellis attached to a small deck in my backyard, then out to a tree near the back of my lot. With more than a little anticipation, I put the antenna analyzer on it, only to be somewhat disappointed with the readings. The SWR was 2.6:1 at 14.000 MHz, dropping to about 1.5:1 at 14.900 MHz.

Since the internal tuner on my IC-746PRO is supposed to be good to 3:1, I did use it and made a couple of contacts. A guy in MA even gave me a 599 signal report. So, while I was a little uncomfortable with an SWR so close to the limit of my tuner, it did seem to radiate pretty well.

I e-mailed the guy who published the design and asked why he thought the resonant frequency was so high, and he said that all I had to do was add a couple feet of wire to the antenna. I also did some more reading about end-feds and several websites suggested that adding a counterpoise might be a good idea, too.

A week later, I finally got back to playing with the antenna. I added 24-in. of wire to it, and it did indeed bring down the SWR of the antenna to below 2:1 in the CW portion of 20m. I’m happier with this. I made a couple of contacts that day, too, with both stations giving me good reports.

I still do plan to try a counterpoise. Not so much to improve the SWR, but to see if it makes the antenna a little more efficient.

Overall, this has been a fun project. I learned something about end-fed, half-wave antennas and saved a bunch of money by rolling my own. Isn't that what ham radio is all about?

When he's not messing with antennas, Dan, KB6NU publishes the "No-Nonsense" series of amateur radio license study guides. The latest in this series is the No-Nonsense Extra Class License Study Guide. For more information, go to KB6NU.com or e-mail cwgeek@kb6nu.com
I have been assigned to 1152 mhz, 1296 mhz, 2304 mhz, 3456 mhz and 5760 mhz.

I spend most of my time with an off-topic 100 mw maximum power level and sometimes with only 10 mw. One of my latest circuit boards only has 11 mw out at best.

The off-topic pictures are for a 300 to 3000 mhz RF power detector for about -40 dBm to about +18 dBm......Plus 17 dBm is 50 mw.

I needed an enclosure a bit bigger than the Altoids tin. My significant other has been told to fix this for breakfast for the last 4 years and I finally woke up to the fact that I was wasting cans while I was saving and using 3 pound coffee cans for cylindrical antennas.

The 2 pictures show before and after on the RF power detector.
** NEW ** A green option is now offered if you prefer a color other than black. Just choose the Green Board PayPal option.

This kit was conceived to fill a need within the hobby for an inexpensive, highly accurate VSWR and RF power meter for QRP power levels. The QRPometer uses simple analog signal-processing circuitry to provide a set of essential measurement features not previously available in a single unit. High quality, double sided, printed circuit board construction is used, with solder mask and silk screened component reference.
designators. All components are through-hole for easy assembly. NO toroids are required. All controls and jacks are PCB mounted, and a single, four conductor ribbon cable is the only wiring necessary. The QRPometer can be constructed by beginners as well as experienced builders. Construction time is approximately 3 hours, depending on experience level. The only equipment required for calibration of the QRPometer is a digital voltmeter, and a QRP transmitter.

First time builders please note: This kit is not difficult to build. All parts are thru hole parts, there are NO SMT parts. The parts are wide spaced on the board making installation easy, and all connectors are board mounted which eliminates point to point wiring. Also note that there are No TOROIDS to wind - none.

**Ordering Information:** ... The cost of this kit is $50 US or $56 DX. Shipping is included in each price.

http://www.4sqrp.com/QRPometer.php
A QRP Christmas

“A foot of new snow and it’s still falling, this is getting bad,” Tom muttered to no one in particular. Just then Stella walked in with a sad look on her face and Tom knew right away.

“The kids aren’t going to make it, are they?” he asked. “No,” she answered, “I just got off the phone with them and the roads are all closed.”

Great! Two days before Christmas, and the world had come to a halt.

Tom gave his wife a hug and said, “Well Mother, we might as well get over it, nothing much we can do now but wait this thing out.” In the 50 plus years since the couple bought the house they had weathered many winter storms, but this would be the first Christmas without the kids and, now, the grandchildren. Nature could be cruel, but at least they had plenty of food and firewood, and there was ample gas for the generator in case the power went off.

“I think I’ll go see if the repeater is still on the air,” Tom said as he headed to his ham shack over the garage. Being a radio amateur had its advantages, and emergency communication was one of them. He fired up the VHF set, and—sure enough—the local repeater was alive and busy. Several folks in the community needed assistance, and snowmobile deliveries were being organized accompanied by hams to maintain communication.
As with many things, people take communication systems for granted until they’re suddenly unavailable. Two years earlier, with the proliferation of cellular telephone technology, Middletown decided it no longer needed Amateur Radio to assist during emergencies.

A few months later, the river overflowed its banks during a massive rainstorm. Lightning wreaked havoc on the power grid and even cellular telephones were overloaded or knocked out altogether.

With one loud clap of thunder Amateur Radio was back in the disaster communications business in Middletown. The Town Council went so far as to give the Middletown Amateur Radio Club access to a county building to serve as a communications headquarters and monthly meeting spot.

Stella walked up the stairs to the radio shack with a hot cup of coffee for Tom. She figured he’d be spending quite a lot of time on the air during this snow emergency. She was wrong. Tom wasn’t all that fond of 2-meters, really. He’d always been a CW op. In fact, for years he never even owned a microphone for his HF gear. To him, ham radio was and would always be, CW.

His high school print shop teacher had convinced him to get his ham license in 1939. A few years later, Uncle Sam took note of his radiotelegraphy talents and made him a Navy radio operator aboard the USS Missouri. He served from 1941 until the end of
the War and even was present aboard the Missouri for the formal Japanese surrender.

Not long after the War, he married his high school sweetheart, Stella, and started what would be a 40-year career at the telephone company. They had three children and still lived in the very house they’d bought brand new as a young couple in 1947.

Tom was a tinkerer, and he’d built several transmitters and even a few receivers. But he was a serious brasspounder and could handle 30 to 40 WPM with ease. His station was always as clean as his signal, and any piece of equipment he built was a work of art. It wasn’t good enough just to work and look good—it had to be perfect. Other members of the local radio club poked fun because Tom had a habit of making sure that even the screw slots on anything he built were aligned in the same direction.

He didn’t buy his first commercially made gear until 1961—a Hallicrafters SX-140 receiver with a matching HT-40 transmitter. That was the only store-bought equipment in his shack until over a decade later, when his best friend died suddenly. His friend’s widow gave Tom all the equipment in her husband’s shack, including a complete Collins S-Line. That gear took a special place in Tom’s heart and shack, not so much because it was the “ultimate station,” but because it had belonged to his closest friend.

After retiring in 1986, Tom quit building equipment. He maintained several skeds with on-air friends from around the world. Saturday nights were his favorite, for it was then that he met with a large number of old Navy radio ops on 7.030. He really enjoyed those rag chews! But, one-by-one, the gang started to dwindle as more and
more of his buddies became Silent Keys. It depressed him so that when his main receiver quit working in 1993, he didn’t bother to fix it. K9NZQ was off the air for the first time since World War II.

Stella was worried enough about her husband’s depression that she told the kids about the problem. They chipped in and bought him a brand new 2-meter FM radio for his birthday thinking that would cheer him up. Tom listened to the local repeater every day, but he rarely transmitted. It just wasn’t the same.

She had hoped that having all the kids and grandchildren at the house again this Christmas would perk Tom up and chase away the lingering blues but now the weather had ruined that plan.

"I think I’ll go out and make sure the generator still starts,” he said as he passed through the kitchen. “The power lines are beginning to ice up.”

Once he was out the back door, Stella took the opportunity to quickly and carefully wrap her gift to him. One of his friends had suggested to her that she buy Tom a kit for Christmas. Taking his suggestion, she ordered a small QRP CW transceiver kit he’d recommended. She didn’t know if he would like it, but with this weather she was especially glad it had arrived a few days earlier. Like it or not, at least he would have something to open on Christmas morning.

Day turned into evening and somehow the power stayed on. More snow was falling outside. The TV was calling it some sort of record snowfall for central Indiana. When Tom said he was going to bed and it was only 6:30 PM, she decided it was time.
“Let’s go ahead and open our presents now and not wait two more days” she said, handing him the gaily wrapped box. He didn’t really want to open presents, now but he didn’t want to disappoint Stella, knowing that she was still upset about the kids.

“All right, let me go get yours first,” he agreed. In a few minutes they were opening their presents. She seemed to really like the bread making machine. He was more than a little surprised as he opened the little QRP kit.

“There now,” she allowed, “that will give you something to do for a few days and it will keep you out of my kitchen.” Tom knew he’d been underfoot lately. “You’re sending me to my room without pie?” he said with a smile.

“Go on with you. I’ll bring pie up to you as soon as the coffee quits brewing,” she said as he headed back to the shack with the little box in hand.

By the time she walked in the shack, pumpkin pie in one hand and hot coffee in the other, Tom had unpacked the box, sorted the parts and was halfway through the instructions. She was happy to see he at least looked interested and left the room with her fingers crossed that this might cheer him up.

He didn’t leave the shack until nearly midnight. By then, he had half of the components soldered to the main board, and he had wound several coils. “If the power doesn’t go out,” he muttered, “I could have this thing running by Christmas!”

The next morning he awoke at 7:30 AM, two hours later than usual. Stella already had the bacon frying when he walked into the kitchen. A quick look out the back window revealed yet another foot of fresh snow had fallen last night. He was glad to see blue sky and sunshine and hoped that meant the worst was over. After breakfast he was back in the shack, soldering pen in hand.

Tom was genuinely impressed with the little kit. The instructions were clear, and it looked to be of high-quality. He had already convinced himself, though, that he would never make a contact on 40 meters with less than 3 W. Nonetheless, he was happy to have something to keep his hands and mind busy. And it was a good thing that he’d kept up that dipole so he could see if this radio actually worked.
By 7 that evening, the kit was nearly finished. He was ready to apply power and begin initial testing. Stella knew that her decision to buy the little kit was a good one when he asked if she’d mind if he ate supper in the shack. By 11 PM Christmas Eve, the kit was finished. He plugged in the headphones, hooked up the antenna connection, and applied power.

The noise level jumped, and he knew things were working when he moved the VFO ever so slightly and instantly heard a QSO in progress. “Now, that’s a good sign,” he said to himself. He pulled off the headphones and headed upstairs to tell Stella the good news. But she was fast asleep. It was midnight. No point in waking her up now. He slipped back to the shack and put the headphones back on.

73 ES MERRY XMAS OM DE W5WBL he heard as one QSO completed. Tom moved a little higher in the band until he heard a strong station in QSO with a VE6 in Vancouver. He was more than a little impressed with the sensitivity of the receiver. After listening to a few more QSOs he continued moving up the band until suddenly, he heard a familiar call sign.

CQ CQ CQ de XE3HHH XE3HHH XE3HHH K. Tom almost couldn’t believe it. Here was his old friend Miguel in Mexico calling CQ. He listened as Miguel called several more times with no reply. Thinking it silly to even try, Tom grabbed an old straight key and plugged it in. It was the first time in years that he had even touched a key. “This will never work” he thought as he tapped out XE3HHH XE3HHH XE3HHH de K9NZQ K9NZQ HW CPI OM?

Tom’s jaw dropped when almost instantly Miguel came back. K9NZQ de XE3HHH FB OM I THOUGHT YOU DIED HI HI MERRY CHRISTMAS AMIGO. The two chatted for nearly an hour until Miguel had to go.
After the final 73, Tom sat back in his chair and rubbed his chin. He couldn’t help but smile when he thought of just how much fun this day had been. Building the little kit and actually working an old friend just seemed to make his day complete. He would have bet half his retirement pension that there was no way to work Miguel with less than 3 watts. He knew some guys who worked QRP regularly, but he had always assumed that actually making contacts was a pretty rough and risky business. At least he never thought it would be that easy.

He was about to shut down the rig and go to bed when he heard a loud CQ just off the frequency where he worked Miguel. It was KL7DD. Tom reached for the key figuring he’d get in another quick QSO—or at least make the attempt—then go to bed. KL7DD turned out to be Joe in Point Barrow, Alaska. Joe also was ex-Navy, so the two hit it off right away. What started off to be a “quick” contact turned into a two-hour QSO. Joe only had trouble hearing Tom a couple of times. The little QRP rig was holding its own and making a believer out of Tom in the process.

Four contacts later, Tom was exhausted. About the time he shut things down and headed for bed, Stella walked in. “Merry Christmas!” she exclaimed. “What time did you get up? I didn’t hear you get out of bed?”

Tom wasn’t sure how to tell her he had been up all night ‘playing radio’ so he just replied, “early.”

“Well, I’ve got breakfast ready,” she said as she walked back down the stairs. He was still thinking about the contacts he made last night when he sat down at the kitchen table. “You know Mother,” he said with a smile, “this might have been one of the very best Christmas’s we’ve had in a long, long time. After breakfast, let’s call the kids, but then I need to be back in the shack by noon because I told a guy that I would meet him on 40 meters to help him check out his new antenna...”

No doubt about it. K9NZQ was radio active once again.

**A QRP Christmas** by Jeff Davis, KE9V
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