

Re: remote antenna for DCF77 clock

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- *From:* "Michael A. Terrell" <mike.terrell@xxxxxxxxxxxxxx>
 - *Date:* Fri, 30 Dec 2005 05:13:20 GMT
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Joerg wrote:

>
> Hello Michael,
>
>> I built my antenna before NIST upped the transmitter power and built
>> the new antennas at WWVB so it was designed to be mounted on a side arm
>> on a 40 foot TV tower. It is a three foot square, 3/4" copper pipe
>> Faraday shielded antenna that I wound the wire inside the pipe after all
>> the joints were soldered. I used a polystyrene cap and a small trimmer
>> to tune it. It still has the prototype preamp in it, I never did get
>> around to laying out and ordering a PC board for it. I had a bag full
>> of chokes made for low frequency tone detectors for old tube type pager
>> radios and they were perfect for the job. The pre-amp uses less than 50
>> mA, so there was no problem with saturation.
>>
>
> Wow, you must yield a heck of a SNR out of that after they beefed up the
> transmitter. I can barely receive it here in the office (California).
> The clock only works on one wall and only in one particular spot. That
> is because there is aluminum foil backed insulation in the walls. It has
> to face a window and I have to make sure the screen isn't pushed over
> that window at night or it won't receive.
>
> How did you get the wires through the pipe joints? How many turns could
> you squeeze in?

I used 22 AWG stranded hookup wire. I laid the wire on the ground outside to let it relax in the hot Florida sun, then I put 100 8-32 hex nuts on the end of the wire and squirted some old silicone "Solenoid Lube" ('50s military surplus in lead tubes) into the pipe. I dropped the wire with the nuts into the pipe and gently shook the pipe so the nuts would go through the 90° corners. When the wire had made it through the loop back to the starting point I tied the far end of the wire securely to the outside of the copper pipe and pulled all of the wire through, till it was tight. Then, like it says on the shampoo bottle, you repeat the process till you run out of wire. I don't remember the number of turns, but I am trying to get it dug out of storage and put it back up. I am going to rebuild it, this time with a sweatable copper insulated

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union made for a hot water heater and run the wires through the bottom of the diecast electrical box. the fittings will thread together, and provide more strength than the PVC coupling I used in the original design.

- > The only antenna like that I ever made was round. When I bent the copper
- > pipe I pushed sand into it first so it would not flatten out too much.
- > Then I found out the sand was too moist and didn't want to come out so I
- > had to let it sit to dry for a week or so. That was before shop vacs
- > became ubiquitous.

I would have poured water through it to wash the sand out of the pipe. :-)

BTW, I used a shop vac to pull wire through a large conduit in 1970 when I ran electricity to my dad's garage in an underground conduit. It was 1 1/2" so I tied a wad of paper towels to a thin rope and stuffed them into one end, then taped the hose to the other end and turned it on. You could hear the motor struggling at first, then it started to move. Finally it popped into the canister of the shop vac a minute or so later. I did this because the only fish tape available was a 50 foot, and the run was about 80 feet and ran under the driveway and I didn't want a pull box under the drive.

Another time I was installing the sound system in a new church. They had waited till a week before their first service for us to install the equipment. We quickly discovered that the general contractor had used blown insulation, and had managed to fill a 200 foot run of one inch conduit with blown insulation. (I think that they did it on purpose.) I spied some of the tapered rubber plugs from the pre charged Freon lines and that they were mostly hollow. I cut a hole in the tip and put it over the nozzle of our large portable air compressor. I started pumping compressed air into the pipe. It whined and changed pitch for almost five minutes, then it started snowing the fine particles of insulation in the church, and missing the tarps we had put under the pull boxes. We swept up a couple 5 gallon buckets, then let the church vacuum up the rest while we finished the job.

Its fun to find quick solutions to problems on the job.

- > Regards, Joerg
- >
- > <http://www.analogconsultants.com>

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Service to my country? Been there, Done that, and I've got my DD214 to prove it.
Member of DAV #85.

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Michael A. Terrell
Central Florida

- **Follow-Ups:**
 - ◆ **Re: remote antenna for DCF77 clock**
 - ◇ From: Joerg

- **References:**
 - ◆ **remote antenna for DCF77 clock**
 - ◇ From: Bernhard Kuemel
 - ◆ **Re: remote antenna for DCF77 clock**
 - ◇ From: Joerg
 - ◆ **Re: remote antenna for DCF77 clock**
 - ◇ From: Michael A. Terrell
 - ◆ **Re: remote antenna for DCF77 clock**
 - ◇ From: Joerg
 - ◆ **Re: remote antenna for DCF77 clock**
 - ◇ From: Michael A. Terrell
 - ◆ **Re: remote antenna for DCF77 clock**
 - ◇ From: Joerg

- Prev by Date: **Re: Combine 2 headphone outs**
- Next by Date: **Re: Tiny PCBs – score, route, or ?**
- Previous by thread: **Re: remote antenna for DCF77 clock**
- Next by thread: **Re: remote antenna for DCF77 clock**
- Index(es):
 - ◆ **Date**
 - ◆ **Thread**