Kick-off Well Attended

The WCARC kick-off banquet was held on Monday, January 9, at the Country Farmhouse restaurant in Wayne, OH. There were about 20 people in attendance, including more than half a dozen XYLs.

As always, the food was excellent and was enjoyed by all. The tables were populated by several of the newly elected Club officers (see masthead above), who kept the conversation rolling. Some of the new members who joined over the past year were also in attendance, and everybody had a good time having eyeball QSOs. FYI: This event is always held on the second Monday in January in lieu of a normal breakfast meeting. ∎

All About USB-C: Cable Types- II

Arya Voronova , *Hackaday*

Checking The Cables Ourselves

So you can check the cable capabilities by reading the e-marker. Linux users might think that this information ought to have been available to you somewhere in /sys/, but apparently, there's not all that much support for it yet – /sys/class/typec/ is empty on my Framework laptop with 6.0.3 kernel, even with a Type-C monitor plugged in. In the meantime, **there's USB-C testers that can read e-marker information.** Also, as this article series follows, I might just

Net Check Ins-I

Jan 3   **Traffic: 0**
- KG8FH   (NCS)
- KD8NJW
- WB8NQW
- WW8MLL
- KD8RNO
- N8VNT
- N1RB
- WE8TOM
- KE8CVA
- KC8EKT
- WD8LEI/M   (11)

Jan 10   **Traffic: 0**
- WB8NQW   (NCS)
- WW8MLL
- KD8NJW
- KD8RNO
- N1RB
- WE8TOM
- KE8CVA
- KC8EKT
- KG8FH
- WD8ICP   (10)

Jan 17   **Traffic: 0**
- N1RB   (NCS)
- KE8CVA
- KG8FH
- KD8NJW
- WB8NQW
- KA8VNG
- KD8RNO
- WE8TOM
- WD8LEI
- WD8LIC

Brain Teasers

1. How many microfarads are equal to 1,000,000 picofarads (pF) ?
   - **a.)** 0.001 microfarads
   - **b.)** 1 microfarad
   - **c.)** 1,000 microfarads
   - **d.)** 1,000,000,000 microfarads

2. What happens to current at the junction of two components in series?
   - **a.)** it divides equally between them
   - **b.)** it is unchanged
   - **c.)** it divides based on the value of the components
   - **d.)** the current in the second component is zero

3. How much power is being used in a circuit when the applied voltage is 13.8 volts DC and the current is 10 amperes?
   - **a.)** 138 watts
   - **b.)** 0.7 watts
   - **c.)** 23.8 watts
   - **d.)** 3.8 watts

February Contests

The contest lineup for the month of February is given below. Please note that the WARC bands (60, 30, 17 and 12 m) are <u>never</u> open to contesting.

Feb 4-5	*0000 to 2359 Z*	160 m to 10 m
Vermont QSO Party		**all modes**
Feb 4-5	*0001 to 2359 Z*	10 m
10-10 Int'l Winter 'test		**SSB**
Feb 4	*1400 to 2359 Z*	160 m to 10 m
Minnesota QSO Party		**all modes**
Feb 11-12	*0000 to 0559 Z*	80 m to 10 m
CQ WW RTTY 'test		**RTTY**
Feb 11-12	*1200 to 1200 Z*	160 m to 10 m
Netherlands (PACC) 'test		**CW/SSB**
Feb 18-19	*0000 to 2359 Z*	160 m to 10 m
ARRL Int'l DX 'test-CW		**CW**
Feb 25-26	*0600 to 1800 Z*	80 m to 10 m
France (REF) 'test-SSB		**SSB**
Feb 25-26	*1300 to 1300 Z*	80 m to 10 m
Belgium (UBA) 'test-CW		**CW**
Feb 25-26	*1500 to 0159 Z*	160 m to 10 m
South Carolina QSO Party		**all modes**
Feb 26-27	*1500 to 0100 Z*	80 m to 10 m
North Carolina QSO Party		**all modes**

Hams Help HAARP in Latest Test

from ARRL News

On Tuesday, December 27, 2022, the High-frequency Active Auroral Research Program (HAARP) conducted its latest ionospheric experiment of bouncing radio signals off an asteroid passing near Earth's orbit (see the **ARRL News story** from December 23, 2022).

Amateur radio operators and radio astronomy enthusiasts were invited to monitor the test and send their results to HAARP for analysis. While the results of the experiment will take several weeks, Jessica Matthews, HAARP Program Manager, said the help was greatly appreciated. "So far we have received over 300 reception reports from the amateur radio and radio astronomy communities from six continents who confirmed the HAARP transmission."

HAARP officials say the results of the experiment could aid efforts to defend Earth from larger asteroids that could cause significant damage. "We will be analyzing the data over the next few weeks and hope to publish the results in the coming months," said Mark Haynes, lead investigator on the project and a radar systems engineer at NASA's Jet Propulsion Laboratory in California. "This experiment was the first time an asteroid observation was attempted at such low frequencies," he said. "This shows the value of HAARP as a potential future research tool for the study of near-Earth objects."

The University of Alaska Fairbanks (UAF) operates HAARP under an agreement with the Air Force, which developed and owned HAARP but transferred the research instruments to UAF in August 2015.   ∎

WCARC Weekly Net

Tuesdays at *2100* all year

147.18 MHz 67 Hz PL

Net Control Roster

Jan	*31*	*KD8NJW*
Feb	*7*	*WB8NQW*
Feb	*14*	*N1RB*
Feb	*21*	*KG8FH*
Feb	*28*	*KD8NJW*
Mar	*7*	*WB8NQW*

NEXT MEETING

Business Meeting

**Monday
February 13
TIME: 7:30 PM/7:00 EB
PLACE:
Sheriff's Training Room
E. Gypsy Lane Rd. &
S. Dunbridge Rd.
Bowling Green, OH**

10 meter Nets

*Informal SSB group meets
Sunday@ 20:30 local on
28.335 MHz*

*Informal CW group meets
Tuesday @ 20:00 local on
28.050 MHz*

Fusion Net

Thursday

@ 19:30 local

on 442.125 MHz

*Wires-X Operators
welcome*

Informal net
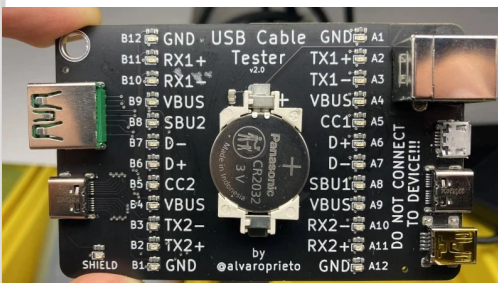
show you how to build an e-marker reader yourself!

If an e-marker is not present, you can assume USB 2.0 speeds and 3 A current support, but not necessarily much more than that. Apart from current carrying capability of the cable, the e-marker can tell you whether the cable contains high-speed pairs, and what kind.

A USB-C cable is supposed to contain either no high-speed pairs, or four of them, in addition to the required USB 2.0 pair, of course. There are legal exceptions – if you have a USB-A to USB-C, USB 3-capable cable, it will contain only two pairs. And a USB-C to HDMI adapter with a hardwired (captive) cable is also likely to only have two pairs. Plus, in practice, I have a cable that came with my USB to M.2 NVMe enclosure that only contains two pairs. It will work for USB 3.0, but it won't work for DisplayPort or such – it's not long enough for that, anyway.

Do you want to check for yourself? No need to cut the cable apart, thankfully. We've covered USB-C testers aplenty, **here's just a recent one.** It's open-source and you can easily assemble it for yourself; otherwise, Tindie and Aliexpress have a whole bunch of ready-made ones. This will not show any differences between a 20 Gbps and 40 Gbps cable, but it will let you distinguish between 2.0- and 3.0-capable cables.

You can also test cables in vivo. If you use a 100 W charger and a 100 W laptop, you can easily check whether your cable is 100 W capable, just by plugging them together through a cheap USB-C power meter and seeing whether current consumption exceeds 3A. Same applies if you have a bunch of cables and you want to know if they do USB 3 or beyond – and you also happen to have, say, a M.2 NVMe enclosure with a USB 3-capable Type-C female port.

Given that, here's a quick & dirty test – connect the enclosure to an USB-C-equipped laptop with a cable, then run lsusb -t, which will show the connection speed (480 for USB 2 cables, and 5000/10000 for USB 3-capable cables). As a bonus, you can check if any of your USB 3 cables fail the reversibility test too – since, apparently, that's still a problem.

Compensating For Lack Of Labels

Of course, the manufacturer knows the cable capabilities and exact internal structure when they build it. There are supposed to be labels, but there are hardly ever labels on the cables. Sometimes there are labels on the packaging, so, if you haven't yet thrown it out, you might want to take note of what's written on there – or revisit the store

listing. Say, you have a cable without markings, and you've just determined what kind of cable it is. What do you do? Well, you get the nail polish bottles out, and follow **the proposal of [@_saljam].** It's **a coloring scheme for marking USB-C cables** after you've learned what they're capable of. One stripe means 3A, two stripes mean 5A. Orange is USB 2.0, blue is USB 3 20 Gbps (Gen 1), green is USB 3 40 Gbps (Gen 2), yellow is Thunderbolt. I particularly like how, with this scheme, the Thunderbolt 5A-capable cables look like bees. Also, saljam says this scheme is reasonably color-blindness-friendly!

That said, USB-C started fixing things. They introduced a new labelling scheme that a lot of people laughed at. However, this new logo scheme is quite simple and makes sense. If a cable supports 40 Gbps, it will have the 40 Gbps logo on it. If the cable supports 240 W, it will have the 240 W logo on it. If it supports both, it will have both logos. You might not want to paint over these logos with nail polish, but I trust you to figure something out.

USB-C In Captivity

You might have seen devices, like docks, with short USB-C cables attached to them permanently – as opposed to having a female port on the dock, and

using a male-male cable. This is called a "captive cable". Captive cables actually don't fall under the same rules, and the circuitry required for them is way simpler, which is why they're used on cheap stuff so often. In short, if you want to use high-speed lanes on your device and you build a captive cable into it, you don't need to add a high-speed multiplexer chip to support two different cable rotations – as then, it's the responsibility of the host to adapt to the orientation of the captive cable. Plus, since the only possible CC line is hardwired, you only need one 5.1 KΩ resistor instead of two – and you don't need an e-marker, either. If you're adding a female port with high-speed lanes to your dock, on the other hand, you do however need a multiplexer.

In a penny-pinching arrangement of selling a highly featured USB-C dock on Aliexpress for $15, that just won't do. As a result, many cheap devices will come with captive cables, which makes things both easier and harder.

On the upside, you no longer have to worry about picking the right cable to connect such a device, and it's more likely to be standards-compliant in a useful way, just because of how simple it is to implement a captive cable. On the downside, you're limited to the cable that's soldered into the device, and it breaks, the whole device breaks. ∎

The Livonia Amateur Radio Club

53rd Annual
Swap–n–Shop

SATURDAY
February 18, 2023
Sale hours: 8:30am-1:30pm

ARRL Sanctioned Hamfest

BUY | SELL | TRADE
- Amateur Radio Gear
- Computers
- Electronics
- Test Equipment
- Ham shack accessories and more

> *NEW LOCATION!*
> *MONAGHAN BANQUET CENTER*
> *19801 FARMINGTON ROAD*
> *(north of 7 Mile)*
> *LIVONIA, MI*

- Door Prizes!
- DXCC QSL CARD CHECKING

ADMISSION: STILL ONLY $5
(cash @ door)
Admission ticket pre-sales are available to vendors/sellers with advance table purchase, visit website for details.
Same-day tables subject to availability

Talk-in: K8UNS LARC Repeater
145.350 PL100Hz

ADVANCE TABLE SALES, INFORMATION:
https://livoniaarc.com/larc-annual-swap-and-shop/
email: swap@livoniaarc.com
voice: (734) 648-6453

FOR SALE:
Xiegu G90 HF Radio.
Includes the cooling fan-stand. 20 watts.
Great for portable operation. $300 for
club members. Will be listing publicly at
a higher price soon.
Contact: WE8TOM@we8tom.com

FOR SALE:
MFJ-998 Legal Limit Autotuner

NEVER Used (Hooked up once)

Asking: $500.00

Contact: jhalsey@woh.rr.com

WOOD COUNTY ARC
P.O.BOX 534
BOWLING GREEN, OH
43402