The Zero Beat

A Quarterly Newsletter for the SMARTS Radio Club

SMARTS Radio Club

Volume 44, Issue 1

March 2019

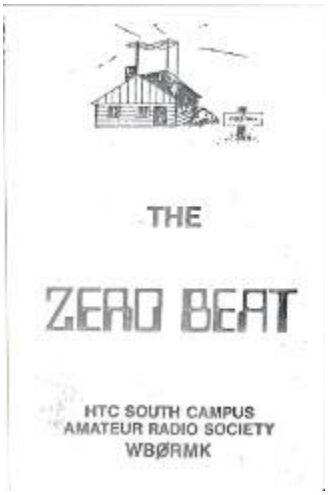
The Zero Beat Returns!

I have been kicking around the idea of resuming the club newsletter for a while. Those that may remember, the Zero Beat was a monthly publication going all the way back to 1975, when the club, then known as the "HTC South Campus Amateur Radio Society" met at Hennepin Technical College in Eden Prairie. The newsletter included articles by various club members, copies from other publications, Technical questions and general activities the club was taking part in. The previous months secretary report and upcoming events were also included.

I have decided to resume the newsletter on a quarterly basis. I will try to have a section where I re-print some articles that were in previous editions of the Zero Beat.

Some stories I would like to include in each edition include a "Builders Corner" where a project, built by a member, will be featured. Some examples would be an antenna idea you have been experimenting with, a project using an Arduino, Raspberry Pi or any other flavor of SBC that you enjoy playing around with to control something in the shack or anything Amateur Radio related. We would love to have your project featured in a future newsletter!

If anyone has an article, Project or anything that you feel would be interest to club members, please send me an email at kb0fxk@gmail.com. Use "Zero Beat Article" in the subject line.



Original Zero Beat Artwork from 1986

Inside this issue:

Special points of interest:

- Skywarn Training, March 13. 6:00—10:00 PM
- Dayton "Hamvention" May 17, 18 and 19
- Field Day, June 22-23
- SMARTSFEST, September 28.
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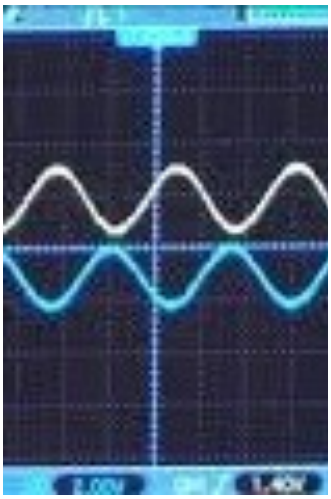
Skywarn Training

The annual training for Metro Skywarn will be held Wednesday March 13th from 6:00 PM to 10:00 PM. Training will be held at the Carver County Government Center, 606 East 4th Street Chaska, MN 55318.

For more information, go to www.metroskywarn.org

To sign up, go to https://www.eventbrite.com/e/carver-county-2019-spotter-training-tickets-54960893512



Visual representation of a signal in "Zero Beat"

What exactly does "Zero Beat" mean?

The term goes back to the early days of Ham Radio when operation was usually conducted with a separate Receiver and Transmitter. It is most desirable to be on the same frequency as the station you are working. Because transceivers are most commonly used, now, this is usually accomplished almost automatically because the transmitter and receiver share the same frequency determining components.

Actually, many CW stations are a fair amount away from the same frequency because many operators do not have any idea of what the actual frequency their transmitter is working at! It should be very close to the sidetone. If the sidetone is matched to the tone the other station is making in your receiver, you should be close to zero beat, but there is no guarantee of it!

In the earlier days, with separate receivers and transmitters, it was customary to tune the transmitter to the receiver's frequency by pressing a "spot" switch, which would turn on its VFO. You would then hear the transmitter's VFO in the receiver's speaker. If the incoming signal and the transmitter's VFO were close enough together, the two signals would "beat" against one another forming a third tone which could be plainly heard in the speaker. When the two signals were close enough together, the beat tone would go away because it would be too low in frequency for the speaker to reproduce. However, you could actually see the S-Meter pulsate up and down as the two signals in turn reinforced and cancelled each other out. When the signals were exactly in frequency and phase with each other, even that effect would go away, and the two signals were said to be "zero beat". &"spot";

Dayton "Hamvention" 2019

Hamvention will be held May 17, 18 and 19, 2019 at the Greene County Fairgrounds and Expo Center. The entire staff of Hamvention volunteers is working hard behind the scenes to make our second year at Hamvention's new home at the Greene County Fairgrounds and Exposition Center even better than the first. Details will be posted when they become available, so check back often.

For more information, send an email to info@hamvention.org, or, check out their website at https://hamvention.org/

KickSat-2 is Alive

www.arrl.org/news/kicksat-2-is-alive-and-being-tracked

KickSat-2

For the first couple of days after the 3U KickSat-2 was deployed from Cygnus NG-10 last November, nothing was heard from the satellite. But in a February 16 post to AMSAT-BB, Nico Janssen, PA0DLO, reported receiving several short and weak transmissions from KickSat 2 — short telemetry bursts on 437.5077 MHz. Assistant Professor of Aeronautics and Astronautics at Stanford University Zac Manchester, KD2BHC, is the principal investigator for the KickSat project, which NASA adopted as an official mission.

"Yes, KickSat-2 is alive," Manchester told ARRL. "We have been tracking it since Thursday, [February 14,] and have been able to decode at least some packets. The signal is weak and we think the antenna did not properly deploy on the CubeSat."

KickSat-2 is scheduled to deploy up to 104 tiny Sprite satellites into low Earth orbit. The Sprites then would transmit on 437.240 MHz at 10 mW, communicating with each other via a mesh network and with command stations on Earth. The Sprites, which are less than 2 square inches, are expected to reenter Earth's atmosphere within weeks.

Coax Connectors: Crimp or Solder?

For anyone who's been in the hobby for a while, or, for newly licensed hams, there comes a time when one needs to install a connector on coax cable. In the past, this has been met with much trial and error, not to mention much disappointment. Coax connectors needed to be soldered on to the cable, a tricky task to undertake. The coax had to be trimmed precisely so the fine braid wires wouldn't find their way on to the center conductor and create a short in the connector. If you were able to successfully prepare the cable, the task of soldering the connector in required a high wattage soldering iron to properly heat the rather large mass of the connector body and flow the solder into the braid. Too much heat though, and you'd run the risk of melting the dielectric between the braid and center conductor, creating another potential short. Practice, the correct tools and a steady hand were needed to install a quality, long lasting and strong coax connector.

Not anymore. Crimp style coax connectors are becoming more popular, and the tools to install them are becoming more reasonably priced. One such kit that is available, is the kit offered by DX Engineering, the DXE-UT-KIT-CRMP2. The kit contains different dies to install a variety of connectors, and even crimp Power pole contacts. The kit includes instructions for cable prep and connector installation. They have videos that walk you step-by-step on their website, www.dxengineering.com.

If you find soldering coax connectors difficult, or, are looking for a new method, check out the products offered by DX Engineering. You will no longer dread replacing that faulty coax connector.

DXE-UT-KIT-CRMP2

The K7RA Solar Update

From the ARRL Website:

No sunspots are visible since January 30. The lack of sunspot activity has persisted for over 3 weeks, as of February 21. This past week (February 14-20) the average daily solar flux was only marginally higher, rising just barely from 70.4 to 70.6. Geomagnetic indicators were lower, with average daily planetary A index declining from 8.1 to 4.9, and average daily mid-latitude A index (measured at a single magnetometer in Virginia) dropping from 6.1 to 3.9.

In the 45-day outlook for solar flux, the current forecast shows predicted values below 70, for the first time in a few weeks, from March 1-10 and again on March 26 through April 6. We are approaching the end of the winter season, and the vernal equinox (first day of spring) happens on Wednesday, March 20. This suggests better HF conditions. Likewise, in the Southern Hemisphere is the autumnal equinox, a good period for HF propagation.

Predicted planetary A index is 10 and 8 on February 22-23, 5 on February 24-26, then 16, 20, 18, 12 and 8 on February 27 through March 3, then 5, 8, 5, 8, 10 and 8 on March 4-9, 5 on March 10-11, then 12 and 10 on March 12-13, 5 on March 14-17, then 12, 16, 12 and 8 on March 18-21, 5 on March 22-25, then 15, 18, 18, 12, 8 and 5 on March 26-31, then 8, 5, 8, 10, and 8 on April 1-5, and 5 on April 6-7.

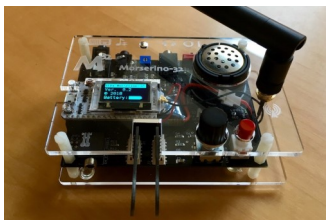
Morserino-32

The brainchild of Willi Kraml (OE6WKL), the Morserino-32 is an entirely new way to learn Morse code. Developed in conjunction with the Graz Morse Code School, the prototype was unveiled at Friedrichshafen 2018 and the first early bird production run has now successfully shipped. The echo trainer mode: one of the most important functions offered by the Morserino-32 and a very powerful tool for anyone hoping to improve their ability to copy Morse code in their head. Echo trainer mode is, however, just one of a very rich set of features available on the Morserino-32, for more information please see the official website:

http://www.morserino.info/morserino-32.html

I am contemplating purchasing one of these to experiment with. If anyone else would like to purchase one, send me an email. The company is willing to offer a discount on multiple items sold, and shipped with one shipping cost. The cost of each kit is $90.98 US, with a shipping cost of $11.37.

I can be reached at kb0fxk@gmail.com



Morserino-32

SMARTS Radio Club

SMARTS Radio Club
535 Concord Circle
Chaska MN, 55318

Email: president@smartsonline.org

Connect with us on social media:
Facebook: @SmartsRadioClub
Twitter:@SMARTSradioclub

Check our website:
www.smartsonline.org
for the latest information

The Zero Beat is the official newsletter of the South-west Metro Amateur Radio Transmitting Society (SMARTS). This newsletter is published Quarterly and is available to anyone with an interest in Amateur Radio on our website www.smartsonline.org/newsletter.

Builders Corner

Receiver, built by Solomon Wiff, KE0SAO

My name is Solomon (KE0SAO) and I received my Technicians license on June 4, 2018. I was interested in ham radio because of the different things one could learn and do with a radio. It not only gives you a way to interact with different people, but also teaches you about electrical components and their use.

My Dad suggested that we build a receiver kit as a way to get to know about components, how radios work and how to solder. We started with an MFJ World Band Short Wave Radio Receiver. The kit was relatively inexpensive and used through-hole parts to build. It uses a 9VDC cell battery for power and a standard set of ear phones for speakers. It receives stations on 3.5 MHz up to 22 MHz and it uses a regenerative circuit to tune in the radio stations.

The build went OK. I didn't know how to solder so dad taught me. It was a challenge at first keeping the soldering iron steady. After a while it went better. I was very satisfied when we finished. It was surprisingly easy for the first kit. It worked right after we powered it up.

We used WWV at 10 MHz as a frequency standard to "calibrate" the front dial which is very "rough". With a 15' single wire antenna we received stations in GA, KY, and TN in the 13 to 14MHz frequency range in the day and stations in the 6 – 7 MHz at night.

This project whets my interest in ham radio and I am looking to get a full transceiver and antenna in the near future.