April 2026

Ø BEAT

PIKES PEAK RADIO AMATEUR ASSOC.

Antenna Building Workshop

by LD Steiner W0XLD

The PPRAA event for March was an antenna-building workshop hosted by Paul/K6IG and Tracy/KF0MVS. The antenna design they chose is a “cubical quad,” which has directors and reflectors like other beam antenna designs, but the radiating element is a loop antenna in a square rather than a dipole. The advantages of the loop design is that they show a few more decibels of gain than a dipole, and also that they are circularly polarized. This makes them particularly well-suited for satellite work. Paul’s antenna design is for a 70-cm band antenna, which is often used either for the uplink or downlink of amateur radio satellites, or even the ISS. In conjunction with a 2-meter directional antenna, this design will give excellent results on U/V or V/U satellites. **Cont. pg 2**

Paul Wilkinson

K6IG

What's Inside

Contact *Zero Beat*

Do you have photos of PPRAA events you'd like to share, or news from the ham radio world that the club might like to hear? Please email zerobeat@ppraa.org

MEGAFEST RAFFLE TICKETS ARE NOW AVAILABLE!

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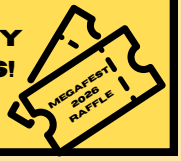

Cubical Quad Antenna Build Workshop

March 2026 PPRAA Club Event cont...

Paul provided excellent documentation for the antenna design, and Tracy 3D printed the hubs and corner wire standoffs for the elements of the antenna. Paul, Tracy, and nine antenna builders occupied a meeting room at the Colorado Springs downtown library on Cascade Avenue and had fun measuring, cutting, and building to create this useful antenna.

PPRAA would like to thank Paul and Tracy for providing the parts and expertise to make this workshop a success. Paul has written the documentation that we can pass on to other PPRAA members if they would like to build this antenna as well. Email zerobeat@ppraa.org if you would like a copy, or to Paul directly: he has a lot of useful knowledge about the design and implementation of this antenna.

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ARRL Sanctioned Hamfest

Board Member Spotlight

Jon Cashatt - KJØCFW Boardmember

Although close to being an "Old Timer" with turning 60 in 2026, I am not an Old Timer ham. I got my Technician in May of 2015, my General in March of 2016 and my Extra in May of 2016.

I was an avid off-roader and had always used a CB for vehicle-to-vehicle comms in the backcountry. While at an overlanding seminar in April of 2015, I was enlightened to the capabilities of ham radio and particularly APRS. I started studying for my license the next day. My first "shack" was my Jeep Wrangler. I had mobile dual band and HF rigs for almost two years before I ever started setting up my base station at home. My vanity callsign KJØCFW was chosen for "Colorado Four-Wheeler".

I am an active volunteer/member (and current Director) of the Pikes Peak Regional Office of Emergency Management's Special Communications Unit which is a small group of volunteer amateur radio operators that are vetted by and work directly with the Office of Emergency Management to provide alternate and auxiliary means of communication during incidents and emergencies. I was proud to have been a part of the Pikes Peak FM Association. I am a member of the Pikes Peak Radio Amateur Association - PPRAA, the Mountain Amateur Radio Club - MARC, Cheyenne Mountain Repeater Group - CMRG and Tri-Lakes Monument Amateur Radio Club - W0TLM

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Board Member Spotlight

Board Member Spotlight cont..

I support the Colorado Connection Repeaters Incorporated - ColCon and I am a volunteer monitor with the Colorado Emergency Reporting Network - CERN. I am also an accredited VE with both the ARRL and LARC VECs and I am the Team Leader for the PPRAA VE Team. I am also involved with Pikes Peak ARES Region 2 District 2 ppares.net including Skywarn weather spotting. For several years I operated a mobile ham radio checkpoint at 13,185ft at the top of Mosquito Pass the last weekend of July and the first weekend of August for the Fairplay and Leadville Colorado Pack Burro Races.

My first Elmer KØHY (now a Silent Key) was a Kenwood guy and now so am I. His name was Jim Jones, so I joke that I drank the Kenwood Kool-Aid.

Home HF: Kenwood TS-480SAT into a Chameleon Emcomm III as a sloper for 160m thru 10m with an Arrow GP52 for 6m, plus an Icom IC-706MKIIG with an LDG Z-100A autotuner into a Tak-Tenna 40 at 20 feet for 40m thru 6m. I have a second TS-480SAT connected to a handstick dipole that is a dedicated Winlink RMS gateway for 20 and 40 meters.

Home VHF/UHF: Two Kenwood TM-D710Gs into Diamond x50 dual band base antennas at about 20 feet each with the ability to switch to dual band roll-up slim-jims during the spring and summer lightning season while spotting for Skywarn. One of the 710Gs is running a Winlink RMS Gateway for Packet and Vara FM. There is an Icom IC-2730A dual bander on another x50 for Winlink messaging, monitoring or scanning a couple more local frequencies.

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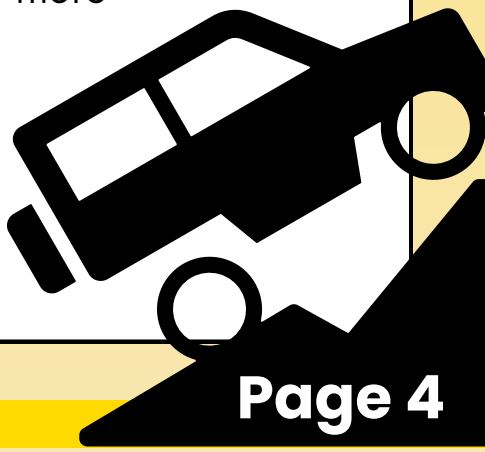

Board Member Spotlight

Board Member Spotlight cont..

The “Shack” also has an Anytone AT-D578UVIII Plus into an Ed Fong tri band antenna for DMR and 220MHz, a Kenwood TK-8180H into an Ed Fong for GMRS and a TYT TH-9000D Plus/Pro VHF for an APRS iGate and digipeater and a second TYT TH-9000D Plus/Pro VHF radio for a pending All Star Link node for the SCU’s 146.760 repeater.

I also have a pair of stacked 2m halo loops on the roof for working horizontal 2m SSB into the IC-706MKIIG. A Yaesu FT-2800M with KPC 3+ on another x50 is running a packet station on 144.930MHz. Plus, I have another Anytone AT-D578UVIII Plus and a couple Anytone AT-778 radios scattered around the house and garage for monitoring multiple frequencies in multiple locations including DMR and D-Star using an OpenSPOT 4 Pro hotspot.

Mobile HF: A second Icom IC-706MKIIG with another LDG autotuner usually connected to a 20m or 40m hamstick for daily driving but also carry 6m, 10m and 75m hamsticks. Plus, I pack a Wolf River Coil SB Platinum Mega TIA, a Chameleon Emcomm III Portable EFHW, or a Little Tarheel II for HF operations when I’m no longer “mobile” but still out in the middle of nowhere.

Mobile VHF/UHF: I have another Kenwood TM-D710GA usually running APRS and a Midland MTX575 for GMRS and an Anysecu WP-9900 in the Grand Cherokee.

Go Kit HF/VHF/UHF: For HF I use a Xiegu X6100 with a Gabil telescopic antenna for 75m-6m or a Wolf River Coil SOTA Special. For VHF/UHF I use an Anysecu WP-9900 25w dual band radio with options of a Signal Stick, an Ed Fong roll up, or an Elk Antenna log periodic in a separate go box. If DMR is needed I add one of my Anytone AT-D578UVIII Plus radios into the kit.

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Board Member Spotlight

Board Member Spotlight cont..

I have three 25ft collapsible masts with Diamond x30 antennas, one set is always in my Jeep and the other two are stand-bys for special event or emergency support.

Portable VHF/UHF: I have a Kenwood TH-D75A and an Anytone AT-D890UV as my daily carries for analog, D-Star, DMR and NXDN, a Yaesu FT5DR for C4FM, plus a couple Kenwood TH-D72s, one is always part of my everyday carry kit (for extra APRS etc.) and the other is used for playing with satellites paired with the dual bander Elk log periodic. I also have a couple of Quansheng UV K5(8)s for experimenting with. I even own a couple Baofeng UV-5R+ and Mini HTs and a DM32UV to keep in 72-hour bags or hand off in an emergency.

I also have a GMRS license: WQYZ561 with the Kenwood TK-8180Hs and a TK3180-K HT, a Midland MXT575 mobile and a couple Wouxun KG-UV9G HTs.

FREE Radio Licensing Test Sessions
Second Saturday of every month
Testing begins at 10 am
Please arrive by 9:30 am
to get signed in and get instructions.
Location: Pikes Peak Regional
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Colorado Springs, CO 80907
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Baofeng DM-32UV: The Budget-Friendly DMR Powerhouse That's Redefining Entry-Level Digital Communications

by Paul Wilkinson / K6IG

Baofeng DM-32UV Review

Introduction

Digital Mobile Radio (DMR) has long been a realm reserved for operators willing to invest in premium hardware. But the Baofeng DM-32UV has shattered that expectation—bringing full-featured DMR capability, GPS tracking, APRS, and 10 watts of dual-band power into the hands of everyday amateurs between a price point of $50 to $100; depending upon source and promotions. At that price point, many hams expected another "basic Baofeng." Instead, the DM-32UV delivers a genuine surprise: a capable, professional-feeling handheld that bridges the gap between budget analog HTs and top-tier digital portables.

Design and Build Quality

The DM-32UV looks and feels impressive. Its styling takes cues from Motorola's APX series, with a rugged, purposeful stance and a color TFT display. Measuring 7.2 × 2.6 × 1.6 inches and weighing 12.4 ounces, it fits comfortably in the hand. It uses the K1 accessory connector for compatibility with standard mic and programming cables. The main drawback is screen brightness—difficult to read in direct sunlight.

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Baofeng DM-32UV: The Budget-Friendly DMR Powerhouse That's Redefining Entry-Level Digital Communications

Baofeng DM-32UV Review cont...

Feature Highlights

Power output: 10W (High), 4W (Medium), 1W (Low) — good range for 30-35 miles in open terrain.

Frequency coverage: VHF 136-174 MHz, UHF 400-480 MHz, plus AM aviation and FM broadcast reception.

Supports both DMR Tier I & II with TDMA dual-slot technology for BrandMeister and TGIF compatibility.

Auto mode switching between analog FM and DMR makes it flexible for field and mixed-mode operations.

Digital Features

The DM-32UV offers text messaging with up to 50,000 DMR contacts and 10 hours of recording accord to Baofeng.

GPS and APRS are fully integrated, and the fall-detection alarm adds safety during outdoor or emergency operations. USB-C charging supports both the radio and base, and the 2500mAh battery provided over 10 hours of use in DMR mode in my experiments.

On-Air Performance

Digital voice quality is crisp and natural. The internal speaker is powerful enough for noisy environments. Analog FM operation is reliable, and dual-watch mode allows simultaneous monitoring of analog and DMR channels.

Programming and Software

Programming is via Baofeng's Windows CPS software (not CHIRP compatible). Be sure to check 'Forbid Talkaround' for repeater use. Lower squelch to level 3 for best weak-signal reception. Firmware updates are frequent and steadily improving usability.

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Baofeng DM-32UV: The Budget-Friendly DMR Powerhouse That's Redefining Entry-Level Digital Communications

Baofeng DM-32UV Review cont...

Strengths

- Exceptional value for under $100. In my comparison to other DMR adios that I own, the DM-32UV performed as well, or better than, other radios that cost well over 340.00. Additionally, the included belt holster makes carrying, and using, the radio in the field very easy
- GPS, APRS, USB-C charging, text, recording, 10W power output
- Works with BrandMeister and standard K1 accessories
- NOAA alerts and fall detection add real-world practicality

Weaknesses

- Very dim to unreadable screen in bright sunlight
- Learning curve for DMR configuration
- Is not CHIRP compatible
- Limited third-party accessories currently available

Ideal Users

Perfect for new hams exploring DMR, emergency communication operators, and outdoor adventurers needing GPS tracking and APRS. Less suited for total beginners unfamiliar with digital setup.

Conclusion

The Baofeng DM-32UV redefines what's possible in a less than $100 handheld. With 10W output, GPS/APRS, dual-mode operation, and a color display, it brings digital communications to the masses. While its programming quirks and display brightness are hurdles, the DM-32UV remains an extraordinary value and a worthy addition to any ham's go-bag or EOC kit.

Hands-on experimentation with PPRAA part 2

Hands-on Experimentation part 2
by LD Steiner W0XLD

Last month, PPRAA members tested the "FreeDV" software-defined digital voice mode with the "RADE v1" codec over the air, testing its capabilities and learning about its benefits and shortcomings with real-world experimentation.

This month, John/AE0VE and LD/W0XLD set up two vertical antennas side by side in John's neighborhood park to make direct comparisons between slightly different configurations. John wanted to test a 17-foot whip with four radials that he intends to use on POTA activations, and LD wanted to see if his no-guys-needed approach could be used to make a non-penetrating antenna system for use on parking lots and rooftops. The no-staking, no-guys approach makes use of a screwdriver mobile antenna on a tripod, and nine quarter-wave radials anchored with sandbags.

The side-by-side comparison between these two antennas was performed with JS8Call software on the 20-meter band. Both antennas were connected to a coax splitter, and in JS8Call, we used John's call sign first, sent a heartbeat request, changed the call sign to LD's in the software, switched to LD's antenna, and sent another heartbeat request. With these immediate back-to-back heartbeat requests, we could compare the signal reports in decibels coming from the same stations within seconds of each other.

The handful of responses were widely varied: some stations heard LD's antenna louder, some stations heard John's louder, and the grid coordinates of the responding stations seemed pretty random. So why the unpredictable variety of signal reports? It would make sense if one antenna had more lossy feedline, and got consistently lower signal level reports, but there was no such consistency.

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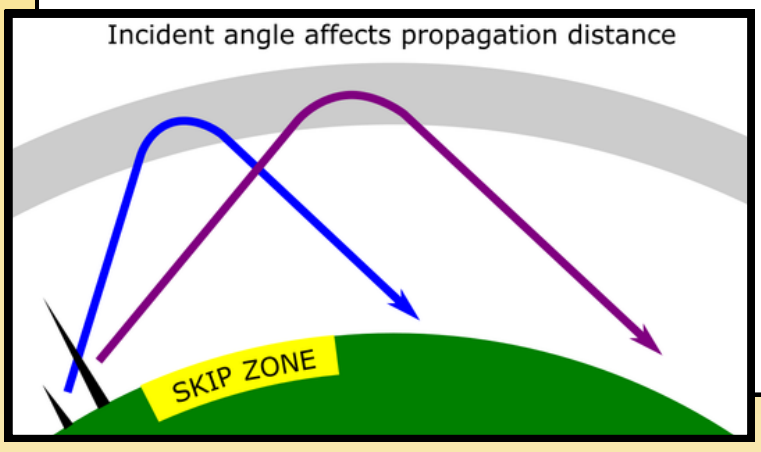
Hands-on experimentation with PPRAA part 2 cont.

The answer came from the PSKReporter.info website. Even when other JS8Call stations aren't configured to send heartbeat responses over the air, they may still report the signal level they heard over the internet to PSKReporter. This website kindly provides maps of such signal reports over the preceding few hours, so we could open two web browser tabs, and view signal reports for John's antenna and LD's antenna side by side. In doing so, we could see the expected skip zone with no signal reports, and beyond that, the difference between our two vertical antennas became quite clear.

A shorter vertical antenna has a higher incident angle than a taller vertical antenna. All else was pretty close to equal between the two antennas, so the heights of the two antennas were sufficient to explain different readings even from the same receiving stations.



We know about incident angles from studying for our license tests, and many of us have experimented with NVIS antennas to appreciate their closer-in performance, but two similarly-configured vertical antennas side-by-side can showcase the real-world difference in incident angles. John's taller antenna had a lower incident angle, so it traveled farther before bouncing off the ionosphere and returning to earth. Farther-away stations heard John's antenna better, and stations closer to the skip zone heard LD's short mobile antenna better because it radiated up at a steeper angle.

The side-by-side comparison between two antenna configurations, with many variables eliminated, the time of tests being identical, atmospheric and ionospheric conditions being the same, and the two maps showing receive measurements from the same stations, gave us an opportunity to quantify the difference between the tall and short antennas.

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Hands-on experimentation with PPRAA part 2 cont.

Such hands-on experimentation gives us confidence that the theory we learned was correct, and has reliable real-world implications for our station designs. And let's face it: doing a little scientific experimentation in the park on a beautiful spring day is always fun for us amateur radio hobbyists!

Do you have some hands-on experimentation you'd like to conduct, to test antenna designs, propagation concepts, new modes or tools? Get in touch: PPRAA would like to experiment with you. We can coordinate a day to get participants to help out, bring equipment, and have a good time together.

Mark Your Calendar ✔

General Membership meeting (13 MAY 2026)

Location: Golden Corral
1970 Waynoka Rd, Colorado Springs

The business meeting starts at 7 PM, but you may get your dinner and beverage of choice and check in any time after 6 PM for a social hour. Club members check your email for info or email Officers@PPRAA.org to receive the Zoom information.

PPRAA Thursday 10m & 2m Nets -

- (28.390MHz SSB at 1900 MDT)
- (147.345+MHz, 107.2ctcss at 2000 MDT)

Thursdays- Weekly Elmer Breakfast -

Village Inn, 535 Garden of the Gods Rd.
Meet between 0730-0800

Operation Crosstalk —
Colorado/Wyoming ARES NVIS exercise

– 9 May 2026, 0800-1100
– Hosted by Colorado and Wyoming ARES
– On the air
– More info https://coloradoares.org/operation-crosstalk-colorado-wyoming-ares-nvis-exercise-may-9-2026/