



RF



ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. LX NO. 08

P.O. BOX 3454, TUSTIN, CA 92781

August 2019

The Prez Sez..... by Dan KI6X



We are in what seems like the slower part of the year (the summer) but then it is almost over and I have no idea where it went. I had two radio related "outreach" towards me this summer which I think are great. One was a business card from an amateur radio club in New Brunswick, Canada left on my car in Orange County. The other was a ham from Japan (also with a Hawaiian call) stop me in Sequoia National Park and talk and take selfies. Both were initiated by my amateur radio license plates, but also an idea for our outreach. I have already talked to the OCARC Board about leaving our club business cards around the area when they see amateur plates. I think we could get a couple cards to those of you that would be interested in doing the same (ask a Board member). Also, if you end up saying hi to a ham you do not know, invite

them to a club meeting and mention the website (w6ze.org).

The Board is also working on updating and simplifying the OCARC By-laws. We will need to bring those changes to two consecutive membership meetings so expect getting that first reading at the September or November General Meeting (Oct is auction, Dec is dinner and no meetings either month). You can see the current By-laws on our website under "Items of Interest".

In addition, the Board has had some talk about whether a "Special Event" station could be supported. I think our main concern is coming up with an event to honor. Since there is a lot of behind the scenes work involved, even if the operation is only say a Saturday in length, we need a theme to make it worthwhile.

I hope every member is getting something out of your club. And as with any club, the "leaders" try to keep things running smoothly, but the members are the most important part and the Board needs to hear your thoughts, ideas, etc.

Dan, KI6X, President

NEXT GENERAL MEETING:

Friday, August 16, 2019

ENTER from the WEST SIDE entrance of the
Red Cross Building, Room 208

Take Elevator to the 2nd Floor.

Presenter will be
David Rector, KG6GiA

His TOPIC will be on:
**Building A Tape Measure Yagi
for Direction Finding**
See page 3 for more information

In This Issue

The Prez Sez	1
Club Information.....	2
Speaker for	
August 19 OCARC Mtg	3
Officer Position of the Month	4
HeathKit Article	5-12
N6GP's 6m Road Trip	13-15
RadioActive.....	16
General Meeting Minutes.....	17
Board of Director Minutes	18-19
Wedding at HRO Anaheim.....	19
MiniTiouner-Express.....	20



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Monthly Events:

General Meeting time & location:
Held third Friday of the month
at 7:00 PM held at:
American Red Cross
600 Parkcenter Drive
Santa Ana, CA
(Near Tustin Ave. & 4th St.)

Club Breakfast (Board Mtg): **Held the First Saturday***

of the month at 8am
Marie Callender's Restaurant
307 E. Katella Ave
Orange, CA 92867
*unless otherwise advised

Club Nets (Listen for W6ZE):

10M: 28.375 ± MHz SSB
Wed- 7:30 PM - 8:30 PM
Bob AF6C, Net Control
Alt: Corey, KE6YHX, Net Control

2M: 146.55 MHz Simplex FM
Wed- 8:30 PM - 9:30 PM
Corey, KE6YHX, Net Control

80M 3.883 MHz LSB
Wed- 9:00(+-) PM
Follows right after end of 2M Net
Corey, KE6YHX, Net Control

2019 DUES:

OCARC Membership period is:
1 January to 31 December

Individual New or Renewal: \$30
Family New or Renewal: \$45
Teen New or Renewal: \$15

New Member Dues are prorated quarterly and includes a badge:
Additional Badges¹ \$3

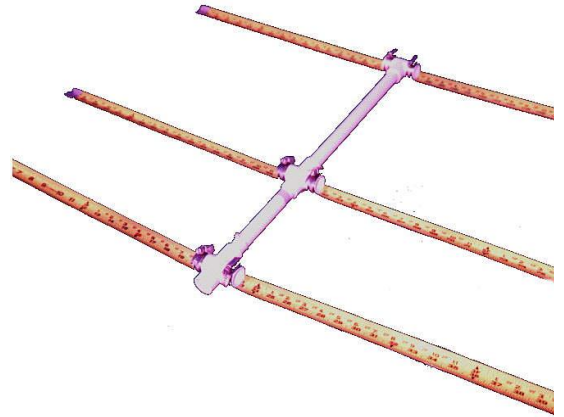
Use one of our interactive on-line forms to calculate current prices, join, renew, or order badges:
[Dues and Badges Forms](#)

¹ \$3 or less + mailing. See form.

The August 16th General Membership Meeting is:

Building Tape Measure Direction Finding Antennas

**Presented / facilitated by:
Dave Rector KG6GIA**

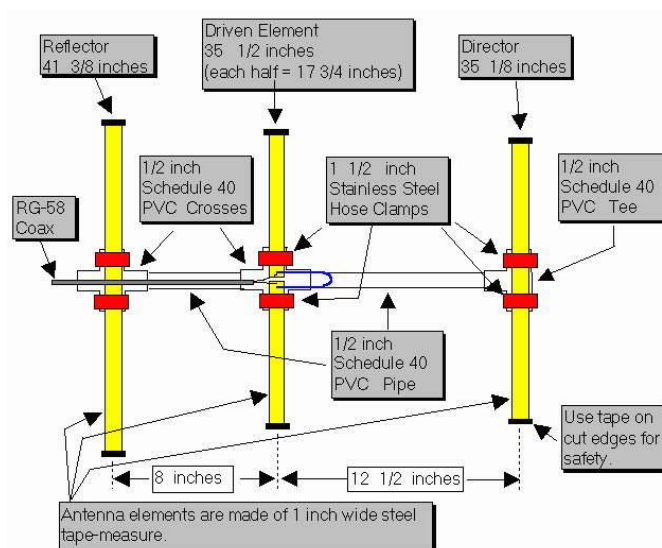


"Come one, come all to the Tape Measure Antenna Building night! Bring your own kit and work with others to see how well you antenna tunes. Dave Rector - KG6GIA, hopes to have several examples of tape measure antenna's on display and talk about useful hacks to add that will increase your antenna enjoyment. Soldering station will be available along with limited tools.

Who's antenna will resonate best on the 2 meter frequency? It could be yours but we won't know if you don't come on down. See you there.

If you don't already have a kit to assemble the weblink below shows the required parts to make a simple antenna http://theleggios.net/wb2hol/projects/rdf/tape_bm.htm

Additional short talk by Chief Radio Officer, Ken Bourne of OC RACES, inviting us to their next monthly T-Hunt.





Note: This months' Newsletter highlights an OCARC officer position of **Secretary**. It includes but not limited to the duties of this office and where we, the Board of Directors of the OCARC encourage its **members to get involved by offering their assistance** in the performance of his tasks..

It shall be the duty of the secretary to:

- Keep a written record of all proceedings of all regular, Board, and special meetings. To provide a copy of each record to the editor of the club bulletin for publication.
- Receive and send all club correspondence. Read all correspondence of general interest to the members at a regular or Board meeting.
- Perform other duties required by the president or the Board.

Note: OCARC By-laws are being revised. The revised by-laws will be presented to the membership this fall.

Current Secretary:: Ken Konechy, W6HHC, w6hhc@w6ze.org

Areas that club members may assist the Officer: Volunteers are needed especially when the Secretary is unavailable for a meeting. Volunteer when you hear there is an opportunity to assist with the Secretary role.

By Dan Violette, KI6X ki6x@w6ze.org

2019 President of the OCARC

Heathkit of the Month #094: by Bob Eckweiler, AF6C



[ELECTRONIC TEST EQUIPMENT

Heathkit IP-27 Regulated Low Voltage Power Supply.

Introduction:

A Lambda dual low voltage power supply with two independent current limited outputs, each rated at 0 - 20 VDC and 0 - 1.7 amps, supplies power for most low-voltage projects on this bench. Some years ago a used Heathkit IP-27 Power Supply was purchased at a local garage sale to supplement the Lambda supply. It ended up on the shelf without so much as being given a “once-over”, where it sat until recently. Finally it’s being checked out and getting some respect; it is the subject of this month’s Heathkit article. See **Figure 1**.

That IP-27 included the original manual and inside the manual was the bill of sale. It was originally purchased from the Heathkit store on Ball Road in Anaheim on November 18th 1972. It cost \$91 plus CA tax (4.9% back then.) The factory catalog price at the time was \$79.95 and UPS shipping (16 lbs.) was \$3.80 to 92667¹ zip code.

Important IP-27 Service Bulletin:

In 1973 Heathkit made an important modification to the IP-27 due to the frequent failure of the pass transistors resulting from



Figure 1: Heathkit IP-27 Regulated LV Power Supply. (See Figure 5 for detailed view.)

rapidly switching the **COARSE VOLTAGE** switch. The modification is documented in Heathkit service bulletin IP-27-1 (dated June 24, 1973), and service centers were told to modify any Heathkit IP-27s returned for service. If you have an IP-27 check that the modification has been done. If not, it is easy to do and parts are readily available. (See the sidebar for more details).

The IP-27 Regulated Low Voltage Power Supply:

The IP-27 was released in 1967, too late to make that year’s main catalog. In the 1968 factory catalog (610-68) it was marked as “New”. Its initial price was \$76.95.

The IP-27 is a styling change and circuit upgrade to the IP-20. New to the IP-27, now in the “New Look”² style with its beige paint and “low-boy” clamshell cabinet, is a zener diode regulated bias supply replacing the 0B2 gas regulator tube, a new power transformer that can be wired for 120 or 240 VAC operation, and two neon lamps that indicate whether the meter is reading voltage or current. The lineup of transistors were also updated. With the exceptions noted above, the IP-20 and IP-27 have identical circuitry; thus it is surprising to see a few significant differences between their specifications. Perhaps the IP-20 was specified with some added optimism, or perhaps a typo? **Table I** shows the specifications of the two units side-by-side.

Here is a link to the index of Heathkit of the Month (HotM) articles:

http://www.w6ze.org/Heathkit/Heathkit_Index.html

Specification	IP-20 Regulated LV Power Supply	IP-27 Regulated LV Power Supply
Voltage Range:	+ 0.5 Volts to +50 Volts	
Current Range:	0 to 1.5 Amps	
Load Regulation:	\pm 15 millivolts no load to full load for output of 0.5 to 50 volts.	
Line Regulation:	Less than 0.005% change 105 to 125 VAC line voltage	Less than 0.05% change with 5% change in line voltage
Ripple & Noise:	less than 150 millivolts	250 millivolts maximum
Transient Response:	> 25 microseconds	
Output Impedance:	Less than 0.1 Ω DC to 10 kHz, >0.5 Ω above 10 kHz	Less than 0.075 Ω DC to 10 kHz, >0.3 Ω above 10 kHz
Meter Ranges (A)	Four Ranges: 50 ma, 150 ma, 500 ma, 1.5 amps full scale	
Meter Ranges (V)	Three Ranges: 5, 15 and 50 volts full scale	
AC Power:	105 - 125 VAC 50/60 Hz 125 W at full load Two wire line cord.	105 - 125 VAC or 210 - 250 VAC 50/60 Hz 135 W at full load. Three wire line cord.
Dimensions:	9-1/2 H x 6-1/2 W x 11" D	5-1/8 H x 13-1/4 W x 9" D
Net Weight:	11 lbs. (13 lbs. shipping wt.)	12 lbs. (16 lbs. shipping wt.)
TABLE I Heathkit IP-20 vs. IP-27 Specifications		

IP-27 Front Panel Controls:

The IP-27 **COARSE VOLTAGE** switch adjusts the output voltage between 0.5 and 50 volts in ten coarse steps: 0.5 V to 5 V for the first step followed by nine 5 volt steps, the last being 45 to 50 V. An eleventh position, fully counterclockwise, is the **AC OFF** position. The meter range automatically changes with the **COARSE VOLTAGE** setting: Five volts full-scale for the first range, 15 volts full-scale for the second and third range and 50 volts full-scale for the remaining ranges. The meter scales and switch nomenclature are color-coded to aid selection. A **FINE VOLTAGE** potentiometer allows adjustment over the selected coarse range.

The IP-27 **COARSE CURRENT** switch selects the maximum current that can be drawn from the power supply. The four switch positions are: 0 – 50 ma, 0 – 150 ma, 0 – 500 ma

and 0 – 1.5 amps. The meter range automatically changes with the **COARSE CURRENT** setting and again the switch nomenclature is color coded with the proper meter scale. A **FINE CURRENT** potentiometer allows adjustment over the selected range.

The remaining items on the front panel are:

- The 3-1/2" meter with two scales: 0 – 15 in black and 0 – 50 in red.
- The meter rocker switch marked **CURRENT** to the left and **VOLTAGE** to the right
- A neon lamp above the **CURRENT** controls that lights to indicate the meter is in the **CURRENT** position.
- A neon lamp above the **VOLTAGE** controls that lights to indicate the meter is in the **VOLTAGE** position.

- A toggle switch marked **DC ON** (up) and **RESET-STANDBY** (down) controls the application of power to the supply's output terminals. It also resets the overload relay should an overload have occurred.
- Three binding posts arranged in a triangle on 3/4" centers. They are marked (L to R):
 - – (Negative output terminal)
 - \perp (Chassis Ground) The power supply output is totally isolated from ground.
 - + (Positive output terminal)

IP-27 Rear Panel:

The IP-27 rear panel contains three screwdriver adjustable controls and a slide switch; these are used for calibration. Also mounted on the rear panel are three TO-5 power transistors, with insulating covers, and two line cord retainers that the power cord can be wound on for storage - a nice touch. The line cord exits the rear panel through a line cord strain relief grommet.

One of the three rear panel adjustments is located at the left (as viewed from the rear) below the two output transistors that mount on an aluminum heatsink. This is the **DC REGULATION** control. Under the current limiting transistor near the right side of the rear panel are the remaining two adjustments, located side-by-side. The left adjustment is the **VOLTAGE CALIBRATE (ADJUST FOR 50 VOLT OUTPUT)** control. To its right is the **ZENER CURRENT (ADJUST FOR 5 ma)** control. To the left of the current limiting transistor is a recessed **METER** toggle switch. This switch remains in the **NORMAL** position except during calibration. Then it is moved up to the **ZENER CURRENT** position and the meter reads the reference voltage zener current so it can be set properly. Adjustment of the IP-27 is well documented in the manual.

IP-27 Service Bulletin No: IP-27-1 (6/24/73)

Heathkit required that this modification be done on any IP-27 that came to a repair shop for service. It involves the addition of two wires and two components: a 56 volt zener diode and a 0.015 μ F 600 V capacitor. A PDF copy of the service bulletin is available at:

<http://www.w6ze.org/Heathkit/TN/SB-IP27-1.pdf>

Has my IP-27 been modified or not?:

To see if your kit has already been modified, remove the bottom cover (four screws). Orient the chassis so it is upside down and the rear is facing you. In the front righthand corner is a four lug terminal strip (designated CA in the manual). This is the terminal strip closest to the corner with the output binding posts. Terminal 1 (closest to the front panel) has a black wire and the negative end of two electrolytic capacitor connected to it. In an unmodified IP-27 the two inner terminals (2 and 3) have nothing connected to them.

Continued...

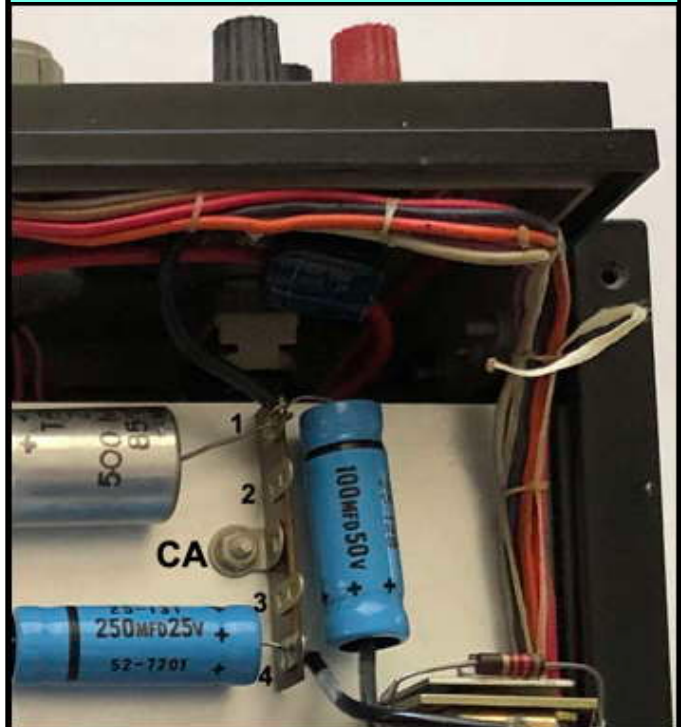


Figure shows an unmodified IP-27. Note terminals 2 and 4 of CA are unused.

Circuit Description:

The IP-27 manual has a good circuit description chapter so this section will be brief. A schematic of the IP-27 is available online³.

Power Source:

The power transformer has three secondary windings, the top winding (on the schematic) produces about 9 volts at low current; this is a bias source for the current limiter. The middle winding is multi-tapped and produces the voltage that is regulated and appears at the output. The multi-tap limits the voltage drop across the regulating transistors at the lower voltage settings, reducing heat and wasted energy. The third winding produces 170 Vac for the reference source. This reference is accurately known and is compared to the output voltage by the regulating circuit that then corrects the output voltage.

Reference Voltage Source:

The 170 Vac voltage is rectified and regulated in three stages by zener diodes, first to 110 volts, then to 68 volts and finally to 56 volts. R3 (ZENER CURRENT ADJ.) allows the current through the final zener diode to be set to the optimum point for temperature compensation. R14 (VOLTAGE CALIBRATE) sets the top of the divider chain to 50 volts. The chain, composed of R33 through R50 and the FINE VOLTAGE pot provide a fixed 2000 Ω load to the reference supply. The voltage at the wiper of the pot can be adjusted over a six volt range below the maximum voltage set by the COARSE VOLTAGE switch.

Current Limiter:

Germanium transistor Q1 is normally biased on by the current limiter bias source. A resistor network consists of R5 control (FINE CURRENT) and R7, R8, R10, R11 and R12; this network is different for each of the four current ranges. The load current passes through the network and a voltage is devel-

Service Bulletin cont....

A modified IP-27 will have a diode and capacitor connected between terminals 2 and 3 and a jumper between terminals 1 and 2.

Parts for the Modification:

The service bulletin gives Heathkit part numbers for the diode and capacitor. Unfortunately, these parts are no longer available, but good substitutes exist:

A substitute for the 56-13 diode is DigiKey 1N4758AFS-ND (ON Semiconductor 56V 5% 1W zener diode DO41 package - 25¢)

A substitute for the 27-107 capacitor is DigiKey EF6153-ND (Panasonic ECQ-6153KF 0.015 μ f 630 V metallized polyester film radial capacitor $\pm 10\%$ - 41¢)

You will also need some #22 insulated wire, (use solid in keeping with Heathkit custom!)

A step-by-step set of instructions (à la Heathkit manual) is available at:

<http://www.w6ze.org/Heathkit/TN/SB-IP27-1A.pdf>



oped at the FINE CURRENT pot wiper. In each current range, near the full CW position, and the load drawing maximum current, about 0.4 volts with respect to the emitter of Q1 appears. Q1 has an emitter to base drop of about 0.2 volts so the voltage across D7, connected to the wiper sums to 0.6 volts and the diode starts conducting, stealing bias from Q1, causing it to limit the current passing through it. As the pot is moved CCW less current is required to reach the 0.4 volt level, causing the current to limit at a lower value.

Voltage Regulator:

The error detector transistor Q2 provides voltage to amplifier Q3, which, in turn provides bias to Q4 and Q5 which are effectively in parallel; the small Q4 and Q5 emitter re-

sistors, force the transistors to share the load even if their parameters vary. Q2 varies its drive level depending on any error between the reference voltage and the actual voltage. Should the output voltage rise too high the error detector reduces the drive and the voltage drops, and vice-versa. Some positive feedback is provided to the error detector through R23 (D.C. REGULATION) and R24. This helps keep the voltage from dropping between no load and full load. It is normally set to perform best at 15 volts output. This results in less than a 15 mV change between no load and full load across the full voltage range of the instrument. The D.C. REGULATION control can be adjusted to keep any specific voltage constant from no load to full load. Just remember to set it back when you are done or the regulation will suffer at one extreme or the other.

Meter Circuit:

The IP-27 comes with a 1 milliamp meter, with an internal resistance of 50 Ω . Normally it can be switched to measure the output voltage or output current. The ZENER CURRENT switch on the rear panel also allows setting the reference zener diode current for best accuracy over its temperature range..

Three voltage ranges exist. The coarse voltage switch selects the correct range. In the 0.5 to 5 V position R53 (4,950 Ω 1%) is in series with the meter. It, along with the 50 Ω internal to the meter, results in 1 ma flowing in the meter at a voltage of 5 V. In the next two meter positions R54 (10K Ω 1%) is added in series with R53 and the meter, resulting in 15K Ω total. Now, 15 volts drives the meter to full-scale. Finally, for the remainder of the ranges R55 is added in (an additional 35K Ω 1%) resulting in 50K Ω total and the meter reads 50 volts full-scale.

	Meter Range			
	50 ma	150 ma	500 ma	1.5 A
R Series Leg* Ω :	147.0	149.0	149.7	149.9
R Shunt Leg Ω :	3.0	1.0	0.3	0.1
R Total Ω :	2.9400	0.9933	0.2994	0.0999
I (Full scale) A :	0.05	0.15	0.50	1.50
V Total (Volts) :	0.147	0.149	0.1497	0.1499
I Meter leg (mA) :	1.0	1.0	1.0	1.0
I Shunt leg (mA) :	49	149	499	1,499
* Includes 50 Ω meter resistance				
TABLE II: Meter Current Calculations				

When measuring current, R17 through R21 form a series – shunt 1% resistor network that includes the meter resistance. **Figure 2** shows the basic circuit (in this case the values when in the 500 mA full-scale range). **Table II** shows the calculations for each of the four ranges.

When the ZENER CURRENT switch on the rear panel is on, the zener current is measured in the same manner, with R32 (10 Ω)

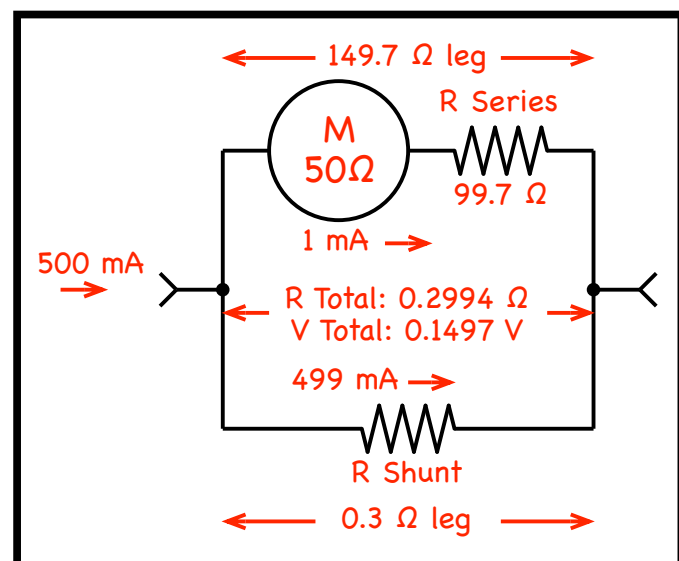


Figure 2: Basic current meter circuit when in the COARSE CURRENT switch is in the 500 mA full-scale position. (See Table II)

and the meter resistance forming the series leg and R13 forming the parallel leg. The meter reads the zener current with 5 mA full scale on the meter.

With the ZENER CURRENT switch in the NORMAL position, the current or voltage function of the meter is selected by the meter rocker switch below the meter. This switch also selects one of two neon lamps that indicate the meter is reading either current (amber) or voltage (red). These lamps are above the COARSE CURRENT and COARSE VOLTAGE switches respectively.

It is worth noting that about 2 mA of the current read on the meter is consumed internally and is not part of the external cur-

rent used. Current readings should be adjusted accordingly when on the 50 mA and possibly on the 150 mA ranges in critical situations.

IP-27 Construction:

Figure 3 and **Figure 4** are photographs of the top and bottom of the IP-27 respectively with the clamshell covers removed. Note how the power transformer is part of the chassis structure and mounted to allow a low overall height. Also note how the front panel is mounted separate from the chassis.

The IP-27 uses five transistors. Three are TO-5 power transistors and mount using sockets with the rear panel as a heat sink. They are covered with insulating cases since

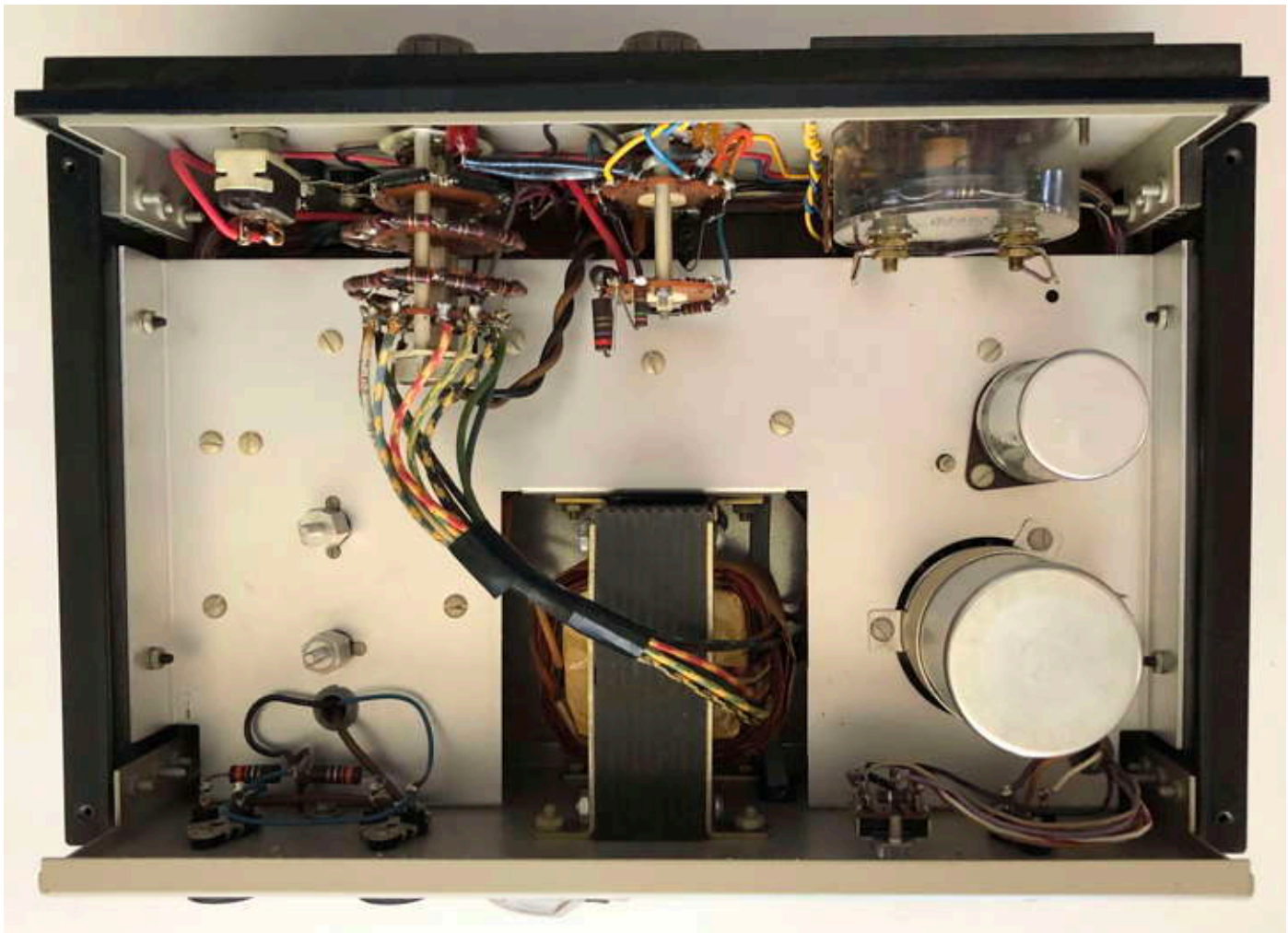


Figure 3: Top View of The Heathkit IP-27 Regulated LV Power Supply

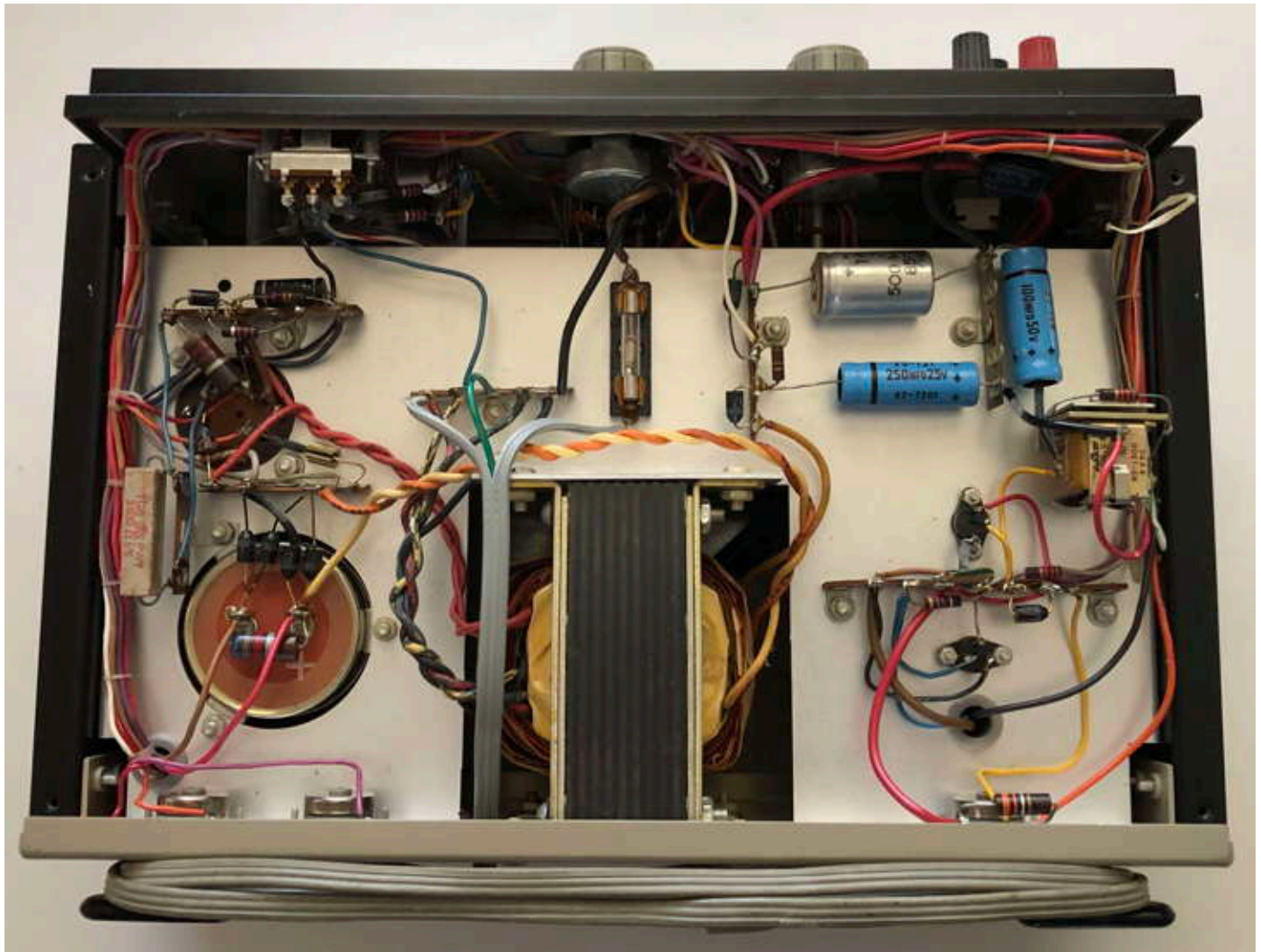


Figure 4: Bottom View of The Heathkit IP-27 Regulated LV Power Supply

their metal case is not at chassis potential. The remaining two transistors are internal.

The top view (Figure 3) shows an uncluttered layout. The two smaller transistors mount atop the chassis on the left. They have a hexagonal case with a stud for heat dissipation. The two large electrolytic capacitors are on the right. The smaller of the two is a three section electrolytic (100 μF @ 250V / 40 μF @ 250 V, 40 μF @ 200 V) that filters the reference supply. The other capacitor is a single 3,000 μF 75 V electrolytic that provides filtering for the main power supply. The two-deck COARSE CURRENT switch is above the power transformer. To its left is the four-deck

COARSE VOLTAGE switch, and to the left of that is the RESET-STANDBY switch.

The bottom view (Figure 4) shows the component wiring for the reference voltage source in the upper left, the fuse holder center, above the transformer, and AC voltage selection wiring terminal strip to the right of the fuse holder. On the far right center is the overload relay, above it is CA, the terminal strip mentioned in the service modification, and below it is the regulator wiring including the sockets for the two small transistors. The three calibration potentiometers can be seen along the back edge at the bottom (two to the left and one to the right).



Figure 5: Front View of The Heathkit IP-27 Regulated LV Power Supply

Closing Comments:

Inspection of the IP-27 shows it still needs to have the modification added. Parts are in queue for ordering. More disheartening, a deposit on the inside of the bottom clamshell reveals possible leaky capacitor residue. After an examination, it appears the leakage is coming from the three-section can capacitor. Since it is shorter than most can capacitors it may be hard to replace, and may either have to be re-stuffed or new capacitors will be installed under the chassis.

The builder of this kit did an excellent job with soldering and lead dress. Internally, everything looks clean and neat. The outside clamshells are a little scuffed up and worth painting if a reasonably matching paint can be found. Those horrible stick-on rubber feet have migrated off their base pads and are beginning to turn into goo. I see these stick-on bumpers in the local hardware store; those are sold by 3M, I'd like to know if they are the same as Heathkit uses? I'll pick some up to replace these, but why have 30 year stick-on feet used by Heathkit on kits like the HD-1420 and HD-1424 turned to goo,

when their 70 year old thru-hole feet (V-4A and others) are still doing their job?

73, from AF6C



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Remember, if you are getting rid of any old Heathkit Manuals or Catalogs, please pass them along to me for my research.

Thanks - AF6C

Notes:

1. 92667 is the Zip Code for a southern section of the City of Orange back in the early 70's. It is now 92869
2. In his book **Heathkit Test Equipment Products** author Chuck Penson WA7ZZE defines the six styles that the Heathkit line of test equipment went through over the years. See page iv for the list and description of the styles.
3. www.w6ze.org/Heathkit/Sch/IP-27-Sch.jpg

6 Meter Fun During a 2800 Mile Road Trip from Pittsburgh, PA to Orange County

by Tim Goeppinger, N6GP

In the week immediately following Field Day, my wife Edna and I made a very fast decision to join our daughter in law and 8 year old granddaughter on their road trip from Pittsburgh to Orange County to transport their Audi Q7 SUV across the country. Edna's son had already driven his car here, as part of his family's move back to California.

Edna and I booked a flight for the following Tuesday (July 2) from John Wayne to Pittsburgh. Edna suggested that maybe I should bring a radio along for the trip, and that got my brain thinking. With Sporadic E season just after its peak in early July, I thought that 6 meters in the car might be a great idea. I dashed out to my garage to grab my 1/4 wave 6 meter mag mount antenna and brought it inside. I detached the whip from the base, and carefully tested it to see if it could be temporarily bent in a U shape inside a large suitcase without permanently damaging it. YES! It fit perfectly, and it sprang back to its normal straightness when I took it out of the suitcase.

The next issue I tackled was how to power my Icom IC-7000 rig in the back seat of the Audi. The 12AH Bionenko Power battery that I won at last year's Ham Jam was the obvious choice. While a lithium ion battery of this capacity is perfectly fine to carry onto a flight, I made the decision to not have any problems with the TSA at the airport, and ship it back to Pittsburgh via UPS Ground. I had 1 week – just enough time. The light 3 pounds of this battery kept the shipping cost down.

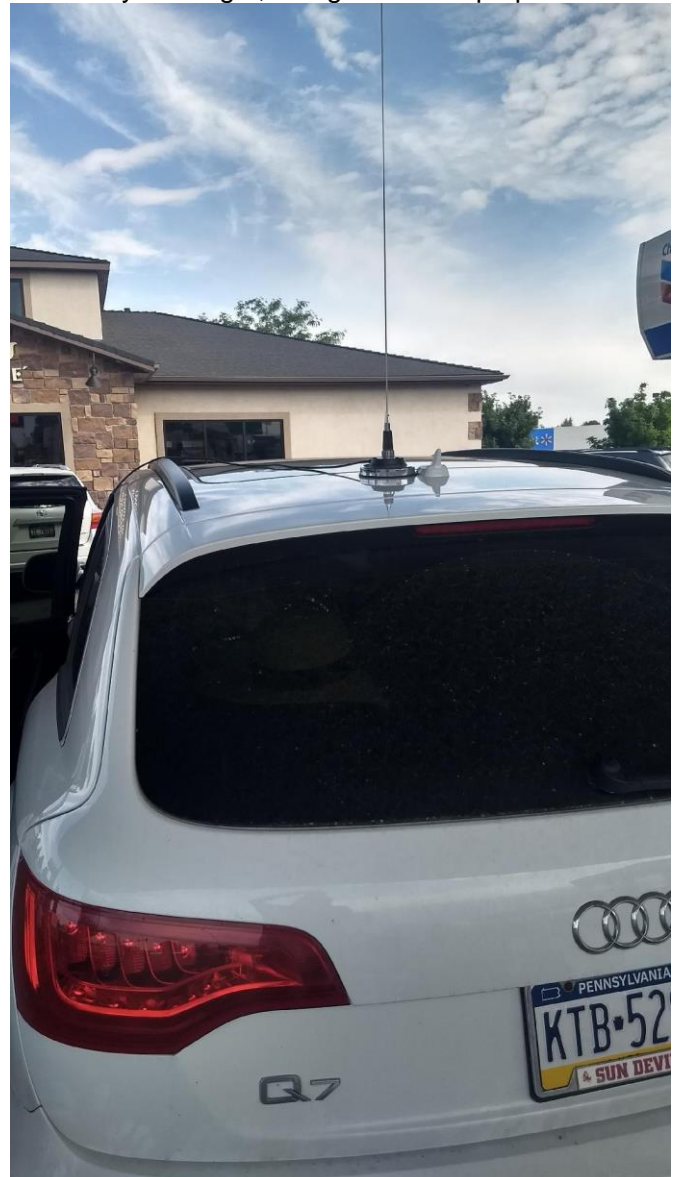
This road trip had 3 purposes in this order:

1. Transport the Audi back to California in a safe and expedient manner, driving about 6 or 7 hours a day.
2. Do some sightseeing along the way, such as Chicago, Mt. Rushmore, Yellowstone, the Great Salt Lake & Zion NP.
3. Operate on 6 meters, making contacts when the band is open.

We packed for our trip the night before. In addition to the mag mount and the whip, I put the Icom IC-7000 inside a leather backpack, along with a Signalink interface wrapped in bubblewrap, and the Bionenko charger, and placed it in the very center of our soft-sided luggage. All of our clothes were packed around it. Again, I was avoiding issues with TSA by packing the rig in checked luggage, rather than carry-on. I did however decide to carry on my laptop, and had no issues at the airport.

Our flight left John Wayne early July 2nd, and we had a layover in Chicago O'Hare. While in Chicago, I heard the good news that my daughter-in-law had picked up the battery! Our flight to Pittsburgh was delayed by about an hour and a half, so we arrived about 7PM. We got our luggage and hit the road in the Audi Q7 on this rainy night. We crossed the border into Ohio, and drove 2 hours to Strongsville, which is southwest of Cleveland.

I anxiously opened our suitcase in the hotel room to see if my rig made it OK. Yes it did (disclaimer: your experience may vary if you pack your rig like this) I then charged the battery overnight, along with the laptop.



6m mag mount on the Audi Q7

The next morning I started to grapple with the problem of setting up the mag mount antenna on the Audi, and routing the coax inside the car. At first the large glass sun roof scared me into thinking there was no metal to stick to, but I found about 1 foot at the very rear of the car to use. There are no windows that open in the very rear of the car, so I had to roll down the window in my side door. It took about a day to master the electric window so it would stop just before squeezing the coax.

We got on I-80 on our first leg to Chicago. My strategy was to conserve battery as much as possible, so I only operated when 6 meters was open. I frequently checked www.dxmaps.com on my phone for openings. Around 11AM local, DXmaps showed a bunch of activity with red lines everywhere. I hurriedly booted my laptop to get the GPS running for an accurate clock. Precariously balanced my IC-7000 on my other knee, and connected the system together. When I turned on the rig and tuned to 50313 (FT8 frequency), I could hear many signals from the Interstate in Ohio.



“Knee-top” operating position with laptop and IC-7000 in the back seat

To my dismay, the entire East Coast and Midwest was calling “CQ DX” on FT8, and they were working Europeans that I didn’t hear. I saw a station in Florida that was doing a normal CQ, and I called him. After a couple of calls, he came back to me, and I made my first contact of the trip. I heard KP4EIT in Puerto Rico, so I called him. He came back to me, but we did not complete the QSO with the full signal reports. Further on down the road in Indiana, I worked a station in Mississippi. Not a bad start.

We had a nice stay in Chicago that night, and hit the road for Iowa the next day, which was July 4th. Conditions on 6 were similar to the previous day, in that the big stations were all gunning for Europe. I managed to work AD1C in Colo, and WO7R in Arizona. It was interesting

To drive through the beamwidth of the signal of a ‘big gun’, Craig K9CT, who was south of us, and was beaming Europe. At mid-day my phone was “blowing up” from all the texts about the first Ridgecrest quake.

That evening we stayed in Fort Dodge, Iowa. At about 10PM, I noticed a lot of activity on 6, and I went out to the car to get on the air. With amateur fireworks going off in the area to celebrate the Fourth, I made 5 contacts with New Jersey, Eastern Pennsylvania, and Maryland. It was a pipeline with strong signals. This grid, EN22 was the best of my trip, as I worked 10 more from the road the next day, from Alabama to Arizona, and even one on SSB Phone to New Mexico. The band stayed open as we travelled thru eastern South Dakota. I worked San Diego VHFers Bruce KG6IYN and Jim K6ZH. Then the band closed for the next 24 hours or so.

Late that afternoon, we got into a pretty bad thunderstorm near Rapid City, SD. For a few moments I wondered if the glass sunroof was going to survive the hailstones. We saw Mt. Rushmore right before sunset, and then started looking for a hotel. It being a holiday weekend, everything was booked up in the vicinity for 100 miles or so. I knew that Chip K7JA has friends in the Wyoming area, so I texted him for help in locating a place in Sundance or Gillette. His friends Katie and Dwayne Allen (WY7YL and WY7FD) suggested the Best Western in Gillette, which had vacancies. They also invited me to their weekly club (NEWARA North East Wyoming Amateur Radio Assn) breakfast at that same Best Western the next morning at 7:30AM. We pulled into Gillette about 11:30 PM, and got our room. It was great to see Dwayne and Katie at their breakfast, and to meet the other members of their club. They are very warm, down-to-earth people.

We took U.S. Route 16 over the Bighorn Mts, reaching an elevation of 9,600 feet. It was a miracle in this mountain pass, but I managed to make a QSO with N7ZO in the Portland area with a short-hop 6m opening. He thanked me later via email, because the DN64 grid was a new one for him. I met a N9 ham from Wisconsin at our motel in Cody. His Tarheel antenna in the parking lot was hard to miss. On Sunday July 7th we were busy touring Yellowstone, and I don’t think either the propagation nor the terrain allowed any contacts.

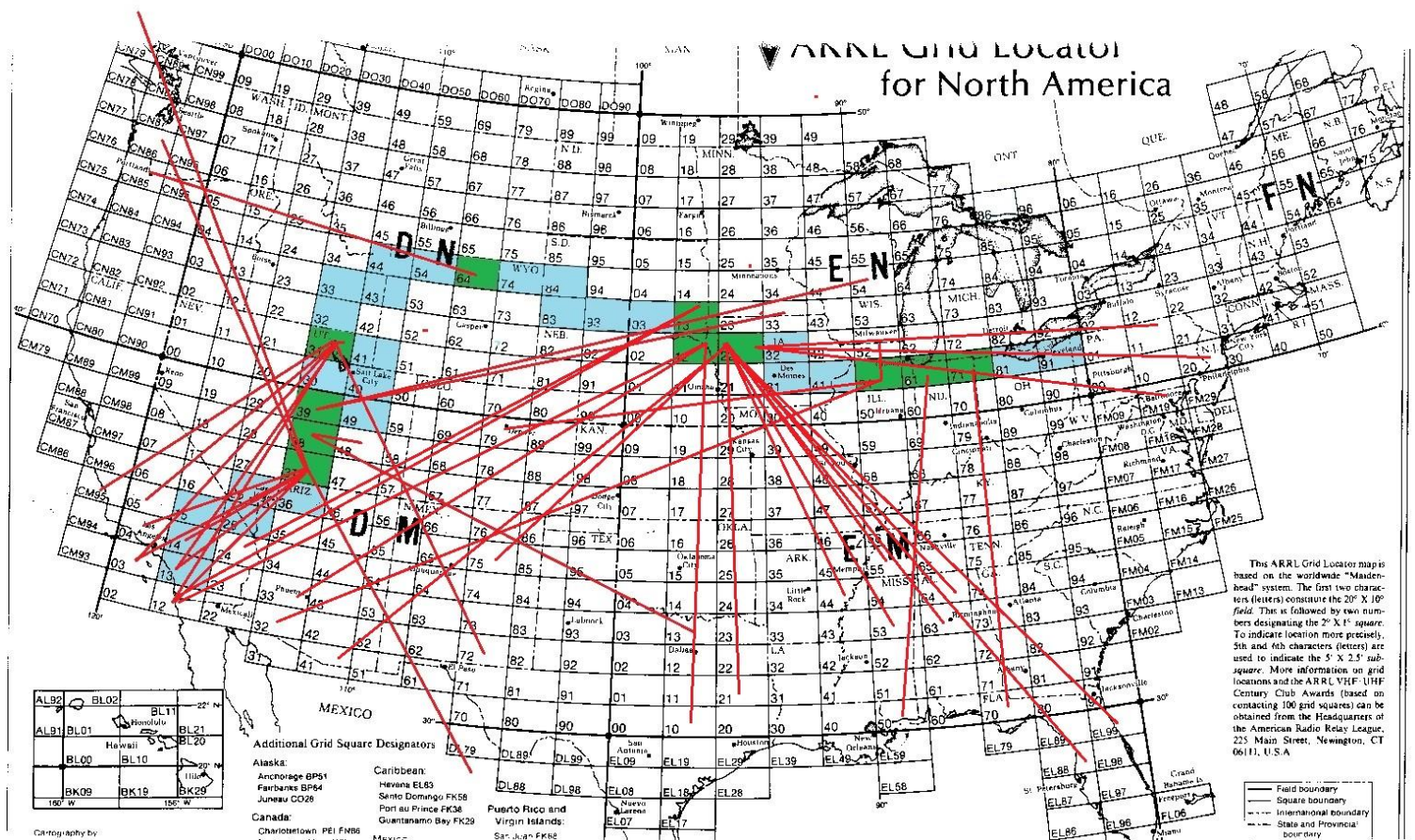
On Monday I was able to make a lot of 6 meter contacts with all the Southern Calif grids from southern Idaho and northern Utah. Got a lot of friends back home like K7JA, K6JO and XE2CQ. We saw Salt Lake City, then ventured about 2 hours south on the I-15 to a town called Fillmore, UT. What was cool about that place was that it is only about 1 mile from a rare grid – DM39. Before we

settled into the motel about 6PM, I advertised on a lot of VHF websites and reflectors that "I am going to be on from DM39 in about an hour". The [Fred Fish](#) Yahoo Group was very excited. I drove to a safe spot to operate from, and I was excited that I was activating a rare grid! I set my rig up like I did hours before, and started to CQ. Wait a second! No power out on the meter. Infinite SWR! I checked and rechecked the coax connectors, the coax, and the antenna. Everything looked fine. I then took out my keys and tapped on the antenna with them, knowing that usually makes some noise in the receive audio. The tapping did nothing. Very mad, embarrassed and dejected, I returned to the hotel. I borrowed a Philips screwdriver from the front desk and opened up the mag mount. Sure enough! The solder connection from the coax to the mount was broken. I had no soldering iron with me, so I press-fit it back together, and closed it up. It seemed to work!

At about 7AM the next morning I drove back out to DM39, and made 2 contacts - W0VTT in Minnesota and W9JN

in Wisconsin. I don't think the band opening was very good, but these guys made it. I hope it's a new grid for them. In the words of Gen. MacArthur - "I will return". From DM38 and DM37 I worked a lot more Southern Calif, and even a VE7 in British Columbia. We stopped in Zion Nation Park for a while, and made the long rest of the trip home that evening.

The Bionenko Power battery was perfect for this trip. I limited my power out to about 50 watts to conserve power. There were days I operated for more than 3 hours, and never ran out of battery. The laptop style charger for the battery was very convenient. The 1/4 wave whip was marginal, but FT8 made up for it in coding gain. A Moxon antenna would have been a lot more fun, but it was not possible this trip. We never stopped at any good VHF sites because we had to keep moving. All-in-all it was a great trip. We moved a car across the country, saw a lot of beautiful and interesting sights, and I had a blast on 6 meters.



QSO Map for the trip. Blue - grid visited and not activated, Green - grid activated, Red shows QSOs



Upcoming Activities

August

- ****North American QSO Party / SSB:** 1800 UTC Saturday August 17 through 1800 UTC Sunday August 18.

September

- **ARRL September VHF Contest:** 1800 UTC Saturday August 8 through 0300 UTC Monday September 10.
- **All Asian DX Contest, Phone:** 0000 UTC Saturday Sept. 7 through 2400 UTC Sunday Sept. 8.
- **North America Sprint, CW:** 0000 UTC through 0400 UTC Sunday Sept. 8.

State QSO Parties:

- **Maryland-DC QSO Party:** 1400 UTC Saturday August 10 through 0400 UTC Sunday August 11.
- **Hawaii QSO Party:** 0400 UTC Saturday August 24 through 0400 UTC Sunday August 26.
- **Ohio QSO Party:** 0400 UTC Saturday August 24 through 0400 UTC Sunday August 26.
- **Kansas QSO Party:** 1400 UTC Saturday August 24 through 0200 UTC Sunday August 25 and 1400 UTC through 2000 UTC August 24.
- **Colorado QSO Party:** 1300 UTC Saturday August 31 through 0400 UTC Sunday Sept. 1.
- **Tennessee QSO Party:** 1800 UTC Sunday Sept. 1 through 0300 UTC Monday Sept. 2.
- **Nebraska QSO Party:** 1300 UTC Saturday Sept. 7 through 0100 UTC Sunday Sept. 8.

Repeating Activities:

- **Phone Fray** Every Tuesday night at 0230Z to 0300Z
- **SKCC** Weekend Sprintathon (Straight Key CW) on the first weekend of the month after the 6TH of the month. 1200 Sat. to 2359Z Sunday.
- **SKCC** Sprint (Straight Key CW) 0000Z to 0200Z on the 4th Tuesday night (USA) of the month.
- **CWops** Every Wednesday 1300 UTC to 1400 UTC 1900 UTC to 2000 UTC and Thursday 0300 UTC to 0400 UTC

Send an email to Ron W6WG, w6wg@w6ze.org to have your favorite activity or your recent RadioActivity listed in next month's column.



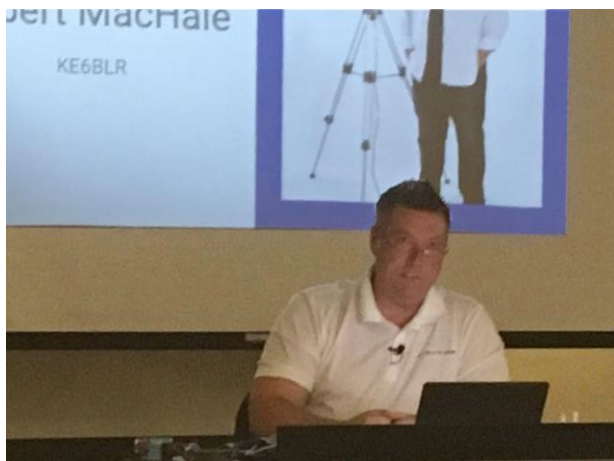
GENERAL MEETING MINUTES 2019-07-19

The OCARC General meeting was held at the Red Cross Complex in Santa Ana on Friday evening, July 19. Attendance was 35 members and visitors. All of the directors were present (except Dan KI6X and Nicholas AF6CF) to provide a Board quorum.

Program:

The main program for the evening was presented by Robert MacHale KE6BLR on

“APRS and Satellites / Space Station”. KE6BLR has provided TEXT (APRS) QSOs and VOICE QSOs with the International Space Station for local schools. Robert explained that VOICE QSO schedules take up to 6 months in advance to coordinate because of the astronaut rigid work schedules. Text messages via APRS are less formal.



Rob-

ert KE6BLR explained that most Satellite/SpaceStation QSOs are on 2 Meters

Future OCARC Programs:

Vice Prez, Tim N6TMT, explained that the:

- August Meeting will be on “Building Tape-Measure Antennas”
- September meeting will be Arnie N6HC on the Ducie Island DXpedition
- October meeting will be replaced by the “OCARC Yearly Radio Auction”.

Business:

• Field Day Results

FD Chairman Tim N6GP reviewed the great results of the OCARC summer Field Day effort as

results of the OCARC summer Field Day effort as published in July RF Newsletter and thanked all the people who helped with FD. The scores and bonus point support have all been submitted to ARRL.

• Ask the Elmer

Club members were looking for:

- Who has successfully configured using an IC-7300 transceiver with FT8?
- A concrete contractor who can build frames and pour concrete for a tower base,

• EmComm Preparedness Book

One of our meeting visitors, who goes by the “pen name” of Jack Babbage (aka K6NNL), announced he had just completed a book called: “The Pocket Encyclopedia on Emergency Preparedness” that is available on Amazon. Jack handed out several copies to interested members, and is looking for feedback and suggestions.

Show and Tell:



Corey KE6YHX showed the details of a Tape Measure Ant he just built for tracking satellites on 2 Meters

Good of the Club:

Janet KL7MF, manager of HRO Anaheim announced that two hams would be getting married “on the air” and “streaming” at the store on the morning of Saturday, Aug 17 at 9AM.. The two hams are Martin KM6PRA and Rosa KM6PRC (both of Fullerton).

Submitted by Ken W6HHC, OCARC Secretary

**OCARC
BOARD MEETING MINUTES
2019-08-03**

The August OCARC Board meeting was held at Marie Calendar's Restaurant at 307 E. Katella Ave. in Orange, CA on August 3, 2019. The meeting called to order at 8:17 am with a quorum.

PRESENT:

President: Dan KI6X,
Vice President: Tim N6TMT,
Treasurer: Greg W6ATB,
Membership: Corey KE6YHX\
Activities: Ron, W6WG,
Technical: Bob, AF6C,
Director at Large: Tim, N6GP,
Members: Rodger, N6GMT, Paul KB6OZZ,
and Jim, AF6N.

DIRECTOR REPORTS:

Activities: Ron, W6WG reported that the combined Picnic/Board Meeting is still planned for October. The Free Space site previously used has not been confirmed.

Several other sites were suggested including: A park at the summit in Fullerton by Tim, N6GP and a park on La Veta in Orange suggested by Bob, AF6C. Both will be considered as well.

Treasurer: Greg, W6ATB reported the current club financial condition including \$241.21 positive cash inflow over outflow. He also received a \$37.50 check from a member that was determined to be dues payment for the remaining portion of 2019 and for upcoming 2020.

Membership: Corey, KE6YHX reported the July 19 meeting attendance was confirmed at 35.

On July 2, 2019 the second quarter roster was sent to the web masters and sorted by last name and call suffix.

OLD BUSINESS:

RF Editors: President Dan, KI6X listed upcoming RF Editors as:

Aug.- Tim N6GP

Sept. - Greg W6ATB

Oct. - Tim N6TMT

Nov. - Dan KI6X

Dec. – Open and unassigned.

Programs: Vice President Tim, N6TMT reported the following programs:

August – Tape Measure Antenna building by David Rector, KG6GIA. Several board members volunteered to bring soldering equipment for the kit building.

Ken Bourne, W6HK will be asked to invite members to participate in the upcoming RACES transmitter hunt.

September – Report on the Ducie Island DXpedition by Arnie N6HC.

October – Club Auction

November - Bioenno LiFePO4 Batteries by Kevin Zanjani.

December – Annual Christmas Dinner at Mimi's to be held Friday Dec. 7, 2019.

EMCOMM webpage update: In progress.

By-Law Update: A scheduling goal was established as follows:

1.0 Preliminary reading at the September Board meeting.

2.0 First reading for membership at the September General meeting.

3.0 Second reading and vote at the November General meeting.

Corey, KE6YHX suggested changing the Table of Contents format and color coding system and received general agreement.

A quorum definition addition to the By-laws was discussed and will be considered.

Field Day 2019: Tim N6GP reported that our submissions are submitted and that we expect to score highly in both the Orange Section and the 6A Division. ARRL reports 3113 total submissions received.

NEW BUSINESS:

OCARC Business Cards: Dan KI6X suggested depositing OCARC business cards on parked vehicles found with ham radio plates to help advertise OCARC locally.

Special Event Station: Ron W6WG suggested establishing an OCARC special on air event. Examples such as: OCARC's 90th anniversary, Swallows Return Day, etc. Ron will accept any suggestions for the membership.

Member Badges: Bob, AF6C requested approval to purchase a new supply of badge blanks and clips. The Board approved a \$100.00 budget for the purchases.

GOOD OF THE CLUB:

Corey KE6YHX reported sending a letter to Dr. Lucy Jones requesting reactivation of the San Sevine Radio Seismometer. Corey wrote in behalf of Bob Evans, himself, and Southern California radio amateurs. No response has been received as of this writing.

The meeting was adjourned at 9:38.

Submitted by:

Jim Schultz, AF6N in behalf of
Secretary Ken Konechy, W6HHC

Wedding at Ham Radio Outlet, Anaheim Saturday August 17, 9AM




Bride and groom KM6PRC, Rose Vazquez, and KM6PRA, Marty Lloyd of Fullerton

Please come help us celebrate the nuptials of Rose and Marty in person. If you are unable to attend in person, you can view the wedding live on this YouTube link

[HRO Wedding - Live Stream](#)

Sign the Guest Log Book while you're here, enjoy cake and special doughnuts, and wait until you hear "At Last" by Etta James sent at high speed CW by Chip Margelli, K7JA.

Congratulate the bride and groom and take advantage of **in-store special pricing** to celebrate the joining of two active hams, devoted to each other and to our most favorite hobby, Amateur Radio!




2 Meter Net
146.55 MHz Simplex FM
Wed- 8:30 PM - 9:30 PM
Corey, KE6YHX, Net Control

10 Meters Net
28.375 ± MHz SSB
Wed- 7:30 PM - 8:30 PM
Corey, KE6YHX, Net Control

80 Meters Net
3.883 MHz LSB SLX
Wed- 9:00 PM Following 2M Net
Corey, KE6YHX, Net Control

WWW.W6ZE.ORG



MiniTiouner-Express

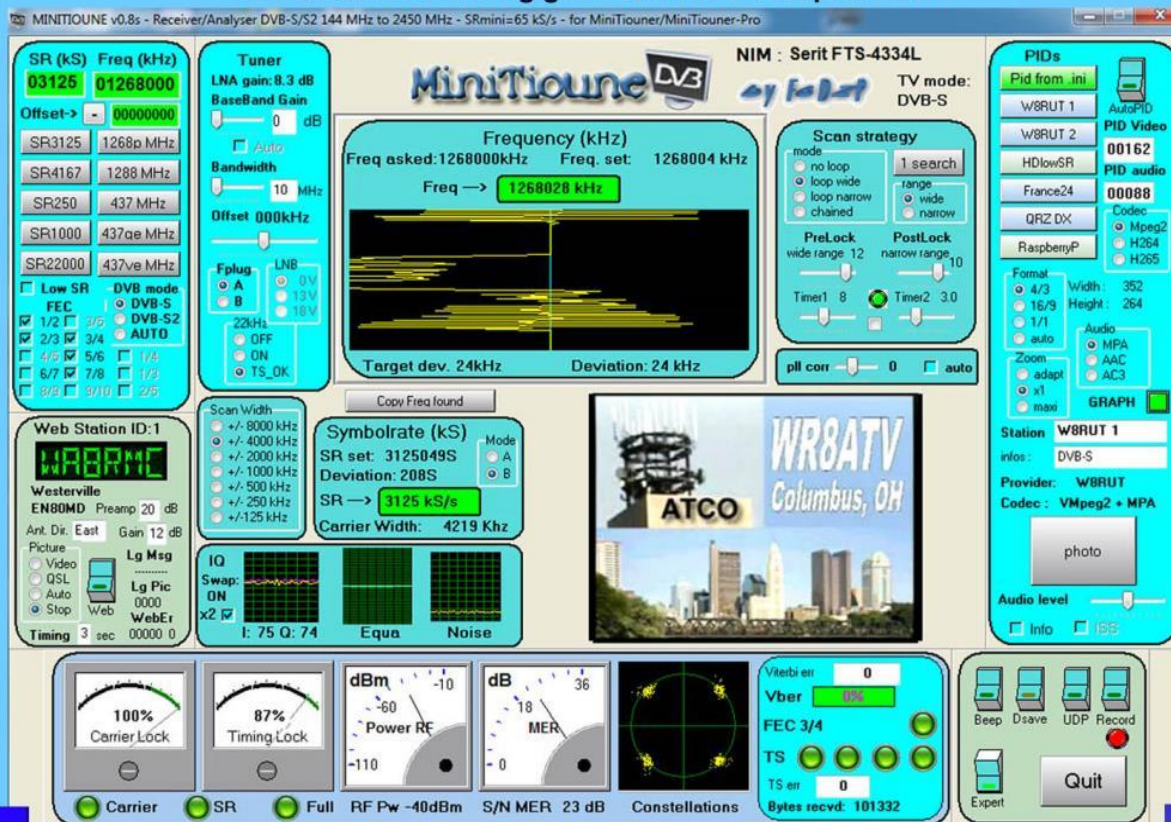
Digital Amateur Television DVB-S/S2 Receiver / Analyzer



Available at DATV-Express.com

- Operates with Windows PC using free MiniTioune software from Jean-Pierre F6DZP
- Smaller than a stack of 2 decks of cards (picture above is full size)
- Two independent simultaneous RF inputs with internal preamps
- High sensitivity -100dBm @1288MHz – at 1/2 FEC
- Fully assembled/tested in aluminum enclosure
- Covers 144-2420MHz (ideal for Space Station DATV reception)
- Symbol rates from 75 KSymb/s to >20 MSymbols/sec
- Uses external 8-24VDC supply or +5V from USB-3 port (with small modification)
- Real time signal modulation constellation & dBm signal strength display
- Price: US \$75 + shipping – order with PayPal

For details & ordering go to www.DATV-Express.com



(MiniTioune display above is the ATCO 1268MHz DVB-S repeater signal at WA8RMC QTH 15 miles away).