

# Spurious Emissions



*The Newsletter of the South Bay Amateur Radio Society*



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Summer 2020





**SOUTH BAY  
AMATEUR RADIO  
SOCIETY  
(SOBARS)**

**K6QM**

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SOBARS is an ARRL-affiliated ham radio club with members from San Diego, National City, La Mesa, Chula Vista, Bonita, Imperial Beach, and San Ysidro, California.

#### OFFICERS

**President:** John Wright, K6CPO  
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**Vice-President:** Danny Lamb  
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**Call-Sign Trustee:**

Jim Beckman, N6RSL

**Emergency Coordinator:**

Ramon Dueñas, KJ6QQK

**Property Trustee:**

Louie Vignapiano, KI6SRR

SOBARS meetings are held at the Chula Vista Fire Station 4, 850 Paseo Ranchero, Chula Vista, CA 91910

See the website for dates & times.

#### Club Repeaters:

146.085 (+) PL: 100.0

448.340 (-) PL: 100.0

Yaesu System Fusion®

#### CLUB NETS

Club nets are held every Tuesday evening on the following bands:

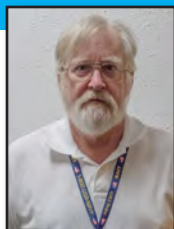
1830: (PT) 448.340 (-) PL 100.0

223.840 (-) PL 107.2

1900: (PT) 146.085 (+) PL 100.0

1930: (PT) 28.480 USB

7.240 LSB



## From The President's Shack

By John Wright, K6CPO

Summer is fully upon us and things haven't changed much from that last time I wrote for this column. The county tried an opening just before the July 4th holiday and it failed miserably. We're now back under closure restrictions.

It's been 117 days since I last left the confines of my own residence property and I'm sure there are other members who have been at home just as long. I've managed to stay busy with some projects and conducting the business of the club remotely.

The biggest piece of club news to report is that, as of this writing (July 7) our two meter repeater is off the air. We suspect antenna problems, but have been unable to confirm. We are going to fly a drone at the repeater site and see if we can see any obvious problems. Eventually someone is going to have to climb the tower and address the problem directly.

The two meter repeater being off the air has necessitated some changes in the net schedule. The 440 repeater is still operational so we are going to use it to take up the slack for the two meter machine. Until the two meter repeater is back on the air, the net schedule will be as follows: The 440 net at 1830 will be suspended. Our net schedule will start with the 2 meter simplex net at 1830 on 146.445 MHz, followed by the usual 220 and 6 meter nets. The 1900 net that usually takes place on the 2 meter repeater will be conducted on the 440 machine instead. That net will be followed by the usual HF nets.

We continue to conduct our monthly

meetings virtually using the Zoom platform. We have purchased our own copy of the full featured version of Zoom so we will be able to conduct meetings as long as we wish. Kudos to Secretary-Treasurer Fred Curtis, KI6GRO, for finding a deal that allowed us to realize a 50% discount on the software. Good job, Fred!

There will be an extra, informal Zoom meeting in July on the 13th. We will be using this just as a way to keep up with everyone and also discuss happenings outside of the formal 4th Monday meeting. The login information for this meeting has already been promulgated to the membership.

In other amateur radio happenings around the area, ARES continues to stay active with monthly Zoom meetings and on-the-air activities. Those activities have consisted of VHF and HF "rallies," Field Day and WinLink exercises. The VHF and HF rallies are local "mini-contests" designed to keep our skills sharp.

WinLink has undergone some updates recently and now included in the forms library is a "Did You Feel It?" form. This form can be used for reporting earthquakes and was tested recently in a simulated earthquake exercise.

Many ARES members look forward to working the MCAS Miramar Air Show every year. Unfortunately, the air show has been cancelled for 2020.

Included in this issue are three articles by John Lally, NB6B, Fred Curtis, KI6GRO and Danny Lamb, AI6JN. Thanks to all of them for their contributions.

Contributions from members are always welcome and also are outside articles if the topic is related to amateur radio.

The year is half gone and it's time to start looking towards our fall and winter happenings. It's unknown at this point whether we will be able to have our traditional holiday potluck get-together, but we will present the Ham of the Year award regardless. Nominations are usually due in November, so start thinking about potential nominations.

## **We're Stuck Here? Now What Do We Do?**

By John Lally, NB6P, SOBARS Emergency Coordinator

When a disaster strikes, it "usually" occurs with very little notice or no notice at all. As vast portions of the nation discovered over the last three plus months, when the alarm is sounded is NOT the time to begin getting ready. In our last article, we discussed the need for a disaster plan, and considerations relative to an evacuation from our homes. But what if we can't or aren't allowed to evacuate or relocate? This situation, although sharing similarities with evacuation plans requires significantly more planning and preparation.

In the early days and weeks surrounding the onset of the COVID-19 pandemic, tens of millions of Americans, many who never experience natural or man-made disasters, experienced live in the time of empty supermarket shelves, rationing, and the effect of the hoarding of supplies. During the month of March and the beginning of April, most of the nation learned that "three days of food and water" in an emergency kit just isn't sufficient. As inconvenient or frightening as life was in Southern California during the COVID pandemic, it was nothing compared to what the Northeastern portion of the nation experienced. Many cities, counties, and even entire states were ordered not to leave their homes, or had travel within the state restricted (Michigan banned travel between the Northern Peninsular and the Southern portion of the state, the Carolinas and Massachusetts restricted travel between the mainland and the coastal islands).

As bad as these past few months have been, it could have been significantly more serious, even catastrophic. There are many natural and man-made disasters which can restrict or even prevent your ability to leave your home and prevent deliveries for days or even weeks. No take out, pizza delivery, no shopping for supplies on-line, and the forced closure of even those businesses deemed "essential" by the authorities. Blizzards,

This is also an election year for SOBARS. All of the three board positions will be up for election. I will appoint a nominating committee in September as per the SOBARS Bylaws. If you are interested in running for a board position or know someone who might be interested, do not hesitate to submit a nomination.

This is all I have for this issue. I will see you again in October for the Fall issue. ✍

hurricanes, volcanic eruptions, chemical spills, toxic gas leaks, and prolonged large-scale disruptions to the power grid can, at the very least, restrict outside access to supplies or even prevent you from leaving your house.

The situations which can prevent you from leaving your house are broken down into two specific categories, "Stay-at-Home" and "Shelter-in-Place" orders. Although these situations are similar, the levels of preparation for each are significantly different and require unique steps to be ready. The main differences between Stay-at-Home orders and Shelter-in-Place orders are the duration of the situation and the level of isolation. A Shelter-in-Place order is typically measured in hours, whereas a Stay-at-Home order may be placed for an indefinite length of time (days, weeks, or even months).

Of the two orders, the most common and the one requiring the broadest preparation is the Stay-at-Home order. A Stay-at-Home order directs all individuals to remain indoors as much as possible and try to only leave your home when necessary. Under a Stay-at-Home order the use of outdoor spaces such as patios, porches and yards is acceptable depending on local directives. Additionally, outdoor activities such as walking, jogging and exercise are fine if you practice social distancing (distances can differ depending of the specific pathogen or contaminant involved). When outside, try not to touch anything (light signals, poles, signs, playground equipment, benches, etc.) because certain pathogens or contaminants can survive on certain surfaces for extended periods of time.

A Stay-at-Home order does not require total isolation, but allows for "essential" travel to grocery store, the gas station, pharmacies, Post Office are still fine to do. Travel for the purpose of employment is allowed on a case by case basis and if the employment is deemed



critical or essential by the local jurisdiction. As many have witnessed in the recent months, the term “essential” is particularly vague and differs from jurisdiction to jurisdiction. As such, individuals should consult local directives before engaging in any travel during a Stay-at-Home order. Preparations for this type of situation are similar to basic disaster preparations, but require a bit more attention to detail.

When ensuring your household’s readiness for a Stay-at-Home order places a higher priority on the tracking of your household’s supply inventory, amounts and expiration dates are extremely important to track. As is the case with standard disaster preparation, attention to expiration dates and the constant cycling of household essentials are a must. A useful tool to track this information is a simple spreadsheet listing the item, quantity, date of purchase, and expiration date.

The most common example of a Shelter-in-Place order is an active shooter or armed suspect situation, but may also be issued for gas leaks, chemical spills, and industrial accidents. Besides the length of time, a Shelter-in-Place order can be issued with little or no notice and may occur outside the home, and require unique preparations. While a Shelter-in-Place order typically lasts a matter of hours, but require complete isolation. This isolation may even require the sealing of doors, windows, air vents, and even electrical outlets. Given the level of isolation, there are very unique preparations which need to be taken. These preparations may include; a quick reaction disaster bag, sealing materials, sanitation considerations. A quick reaction bag should include at a minimum 24 hours of required medications, flashlight, emergency radio, cellular phone charger, bottled water, meal replacement bars, and handy wipes. Given that these situations may be complex and fluid, the need to have an emergency radio cannot be over emphasized. Up to date information from applicable emergency management entities can be a matter of life and death.

Household Shelter-in-Place preparations may be more extensive than those occurring outside the home. Household preparations require the designation of a room, preferably an interior room without windows, large enough for all family members. FEMA manual number 453, *Design Guidance for Shelters and Safe Rooms*, recommends 5 square feet per standing adult, 6 square feet per seated adult, and 10 square feet per wheelchair user. An additional recommendation (STRONGLY recommended) is that your family’s safe

room is equipped with a functioning carbon dioxide detector. This recommendation becomes a matter of life or death if you need to occupy a sealed room for more than an hour.

An additional requirement for any room designated for in home Shelter-in-Place is the ability to prevent or limit the flow of outside air into the room (be advised that if this becomes necessary, it will directly impact the length of time your family will be able to occupy this room. If sealing the room is required, the Department of Homeland Security recommends using plastic sheeting with a thickness of 4 to 6 mil (0.004 in - 0.006.) or greater. This is of significant consideration, since commercially available sheeting is typically sold at 0.7, 1, 1.2, 1.5, 2, 2.5, 3 (all of these thicknesses fall below the recommended safe thickness), and only the 4, 6, and 10 mil thickness can be used. DHS further recommends using duct tape with a minimum thickness of 10 mil (0.01 in). Plastic sheeting should be precut plastic to fit over the entire openings of windows and doors, including the frames. In addition, plastic should be cut to cover vents and ventilation fans. Cut the plastic a minimum of 6” wider than the opening. This will make it easier to put up the sheets if needed. Duct tape plastic sheeting at corners first and then tape down all edges. Finally, these precut sheets should be stored in the designated room for rapid use. If the need to seal the room becomes arises, make sure to watch for the symptoms of carbon dioxide poisoning, according to the Mayo Clinic these symptoms may include but are not limited to; dull headache, weakness, dizziness, nausea or vomiting, shortness of breath, confusion, blurred vision, and loss of consciousness.

There are precautions and preparations which you can take to lessen the impact of these situations, but as we discussed in the previous article, any matters pertaining to safety and survival of you and your loved ones, it is critical for YOU to continue to research various aspects of disaster planning and preparation to develop a plan suited for you and your household. All of the information discussed here is derived from open source governmental readiness manuals and websites. This is just a starting point and you should review the information on the websites listed below, especially if your family has unique considerations such as elderly family members or those with access and functional needs requirements. There are large amounts of FREE information available from governmental and recognized non-governmental sources. We ended the previous article with warning “You shouldn’t buy a car, a laptop,

or other high value items based solely on one source of information”. This article reiterates that warning, do your own research now, when the alert notifies you of a chemical spill or a terrorist attack is NOT the time to wonder if you’re ready. Remember the lives of your loved ones WILL depend on it.

Links to help you plan for situations discussed above:

- [www.ready.gov](http://www.ready.gov)
- [www.fema.gov](http://www.fema.gov)
- [www.redcross.org](http://www.redcross.org)

- [www.militaryonesource.mil](http://www.militaryonesource.mil)
- [www.readysandiego.org](http://www.readysandiego.org)
- [www.usa.gov](http://www.usa.gov)

*\*The information contained in this article is the opinion of the author based on their experience and education. As such it should not be substituted for proper research by the reader. ✍*

**HT Island**  
By Fred Curtis, KI6GRO

**Part 1**

It is said that buying handheld transceivers (HT’s) is synonymous to eating Lay’s® potato chips. You can’t buy just one. In my case I have four HT’s [*Only four? —Editor*] with the associated chargers and extra batteries on my desk. All of these items on my desk turned into a hot mess (see figure 1). I was also tired of having my radios fall over due to their narrow bases and long antennas. I used a power strip for charging which was somewhat problematic. I went in search of a solution to keep them upright and stored together.

My on-line search did not yield what I was looking for. Do I get 4 radio stands? What about the chargers? So off I went to Lowe’s® and Home Depot® for a solution. At Lowe’s®, I came across a plastic refrigerator container (see figure 2), that was wide enough to accommodate my 4 radios, with extra room for batteries and heaven forbid, another radio. I decided to buy the bin and make it work. The container measures 4” x 14.5” x 4”, which was good, except the radios would fall backwards inside the bin. I needed something to keep the radios from tipping over. I had some wood furring strips laying around, but they didn’t work well. I decided to go into the deep recesses of my garage and try to find something suitable. I came across an old cutting board that had not been used since our kitchen remodel. It was just long enough and was the right thickness.

I traced the outline of the plastic bin on the cutting board. I lined up the radios from thinnest to thickest and made a rough trace around them as well (see figure 3). I used a jigsaw and made the initial cuts on the board. I placed the newly cut board into the plastic bin and traced around each radio for a more detailed cut. Using a Dremel® tool with a small sandpaper wheel, I

sanded the cutouts for a more exact fit for each radio. I used wood filler to cover up the little mistakes made in the initial cuts and let the filler dry overnight. I then used a pad sander to sand the cutting board on both sides. Finally, I applied two coats of Krylon® Clear Glaze to both sides of the board to give it a little shine (see figure 4). The glaze was one of many cans of spray paint on my work bench.

I placed all the radios and the extra batteries in the bin and the radios stood up without falling over (see figure 5). The best part of this project was using things around the house to complete the HT Island, without spending much money. You would be surprised what you will find laying around your house or garage that you can use for projects!

Parts and Tools

Parts
Inter Design Fridge + Freeze Binz! – \$12.98
Wooden Cutting Board – Free
Sandpaper 80, 100, 120 grit – Free
Krylon® Clear Glaze – Free
Tools
Craftsman Jigsaw
Dremel Tool with sanding wheel
Black and Decker Pad/Orbital Sander

This is not the end of the story. There is another part to the HT island. As Paul Harvey used to say, “the rest of the story” is contained in HT Island Part 2.





Figure 1 Fred Curtis, KI6GRO



Figure 3 Fred Curtis, KI6GRO



Figure 2 Fred Curtis, KI6GRO



Figure 4 Fred Curtis, KI6GRO



Figure 5 Fred Curtis, KI6GRO



# HT Island

By Fred Curtis, K16GRO

## Part 2

If you are reading this article, hopefully you read HT Island Part 1. If not, you may be a little confused. In Part 1 of HT Island, I mentioned the clutter of radios and chargers on my desk. So, after solving the problem of a place to store the radios, I next had to solve the problem of how to charge all the radios. Previously I used a simple power strip which would not accommodate all the wall warts and chargers. Once again, I need a different solution.

During my quest for a piece of wood used in HT Island Part 1, I came across a Belkin® Computer power director (see figure 1a). It had been sitting in a cabinet in my garage for years and I decided to pull it out and test it. All the switches and outlets were in proper working order. I liked the fact that I could leave the wall adapters plugged in and select each charger individually or all of them at one time. The master switch allows me to turn the entire bank of outlets off. Again, I was able to re-purpose something taking up space in my garage and save some money.

The next task at hand was to arrange the chargers on the power director (see figure 2a). The arrangement

was somewhat dictated by the size of the wall adapters. I had enough cord length, but I didn't want wires running all over the place. I finally came up with a suitable arrangement of the chargers and attached them using double-sided carpet tape, which I also found in my garage (see figure 3a).

After taping down the chargers, I used some plastic wire ties and bundled up the power cords. I plugged in the power director and did a test and check of all the outlets, chargers, and switches. Everything worked as advertised. Finally, using the same double stick tape, I attached the refrigerator bin to the front of the power director and placed the cutting board, batteries and radios inside (see figure 4a).

What was once chaos on my desk, was now a nice island for my HT's (see figure 5a)! All materials mentioned in this article were found in my garage and cost me nothing but a little time. The HT Island can also be picked up and moved easily without things falling off, an added bonus! While it may not look pretty, it is functional and cleaned up my desk!



Figure 1a

Fred Curtis, K16GRO



Figure 2a

Fred Curtis, K16GRO



Figure 3a

Fred Curtis, KI6GRO



Figure 4a

Fred Curtis, KI6GRO



Figure 5a

Fred Curtis, KI6GRO

## USB Charger For My HT

Article and Photos By Danny Lamb, AI6JN

USB chargers are just about everywhere these days. You see them at Airports, waiting rooms, new cars even have them built in and many of us have portable power banks to charge phones when away from civilization. They seem to be everywhere and are likely here to stay for years to come. But there's a problem. Phones are based on single or multiple cell Li-Ion in parallel, so a working voltage of 3.7 to 4.2 VDC. Most ham HT battery packs have least two Li-Ion cells in series giving a working voltage of 7.4 to 8.4 Volts, some may add additional sets of cells to increase the Amp hour rating of the battery pack with the same working voltage. This means a minimum charge voltage of 8.5VDC to charge the battery pack, and depends on the charging circuit in the radio. So those USB charge ports every where

are of little use to hams except for our phones, right?

Well, we can use a simple and cheap voltage Boost Module to make that 5v useful to charge an HT and that's what I want to cover in this article. So here's how:

Using a Micro USB DC Voltage Regulator Step Up Boost Converter Power Supply Module based on the MT3608 chip we can get up to 28 v at 10 Watts (we need to keep the USB power at 2A or less) however for most applications we should be at 12v or less. Using a Yaesu FT-2D as an example the charger power supply that comes with it is 10.5 VDC so we could get up to 1A of charging current for this HT from standard Chargers (many provide up to 2.1 amps)

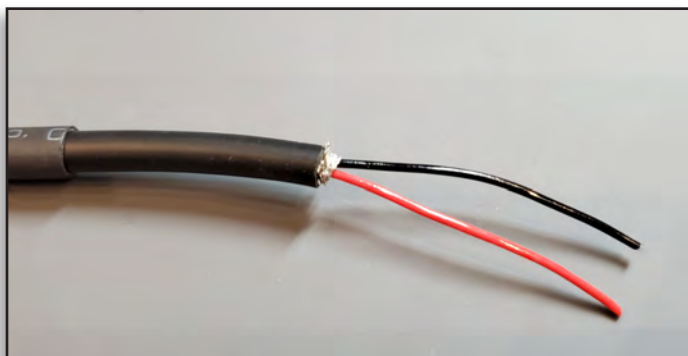
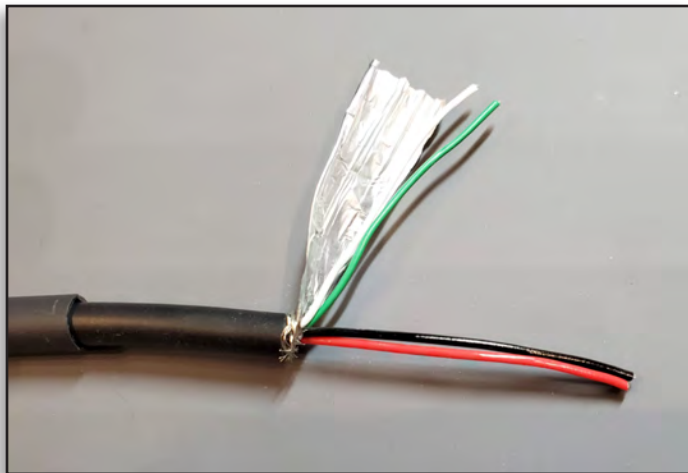


Here is a list of Material used for this project:

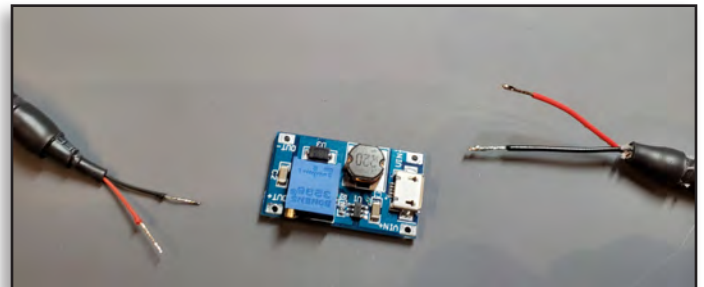
Item	Comments	Link
Old USB Cable(s)	I had many and used the cable for output as well	N/A
Micro Boost Regulator Adjustable	MT3608 Mico USB DC Voltage Regulator Step Up Boost Converter Power Supply Module 2V-24V to 5V-28V 2A	<a href="https://www.amazon.com/gp/product/B07DC5GPTT/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B07DC5GPTT/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&amp;psc=1</a>
In-Line ABS Plastic Electrical Project Case Power Junction Box, Project Box Black 2.36" x 1.42" x 0.67"	Or any other in-line housing you can find or create	<a href="https://www.amazon.com/gp/product/B07V3FQ5ZP/ref=ppx_yo_dt_b_asin_title_ooo_s01?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B07V3FQ5ZP/ref=ppx_yo_dt_b_asin_title_ooo_s01?ie=UTF8&amp;psc=1</a>
LED and resistor	Optional power indicator	See Text
4.0mm x 1.7mm Male DC Power Jack	Dependent on radio socket you are building it for	<a href="https://www.amazon.com/gp/product/B06XV9NM58/ref=ppx_yo_dt_b_asin_title_ooo_s02?ie=UTF8&amp;psc=1">https://www.amazon.com/gp/product/B06XV9NM58/ref=ppx_yo_dt_b_asin_title_ooo_s02?ie=UTF8&amp;psc=1</a>

Some items you may have around so feel free to make adjustments as needed; it will be your project.

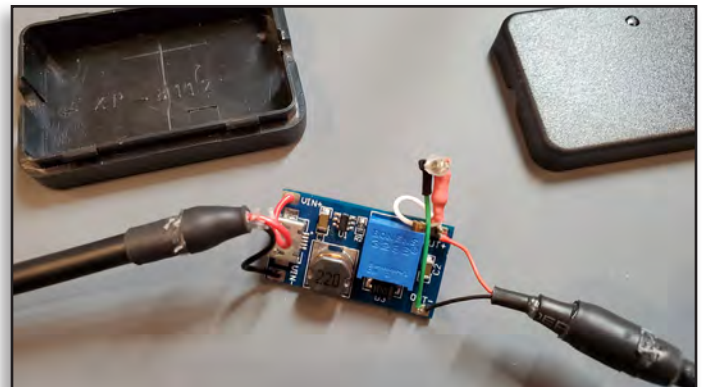
My first step was to acquire and prepare the USB cable, I cut off one end and removed the Shielding and the two data wires (power is all we need). See Photos.



I added Heat shrink to act as a strain relief and to insure a firm fit with the case. Pictured below you can see the Step Up Boost Converter with the pre-paired cables; a simple connection of Voltage In and Voltage Out.

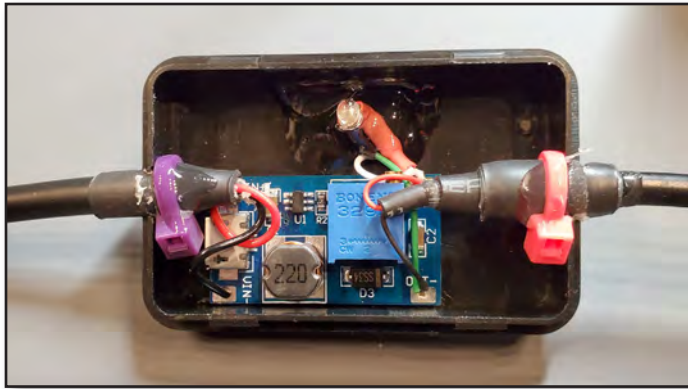


Now you can see the optional LED indicator and the wires soldered to the module, also pictured is the in-line case I selected for this project. Note that the top of the case (right side) you can see a small Raised Dot. This is to act as the power indicator. I drilled a small hole in the case. On the outside I covered the hole with some electrical tape then on the inside I filled the hole with clear UV Cured Glue which will act like an indicator



lens for the power LED. On the bottom inside of the case you can see scratch marks which match the hole on the cover so I could align the LED with the top. Note also at this time I adjusted the pot on the module for 10.5 volts to match the OEM Charger that came with the radio. (10.5V 1.0A)

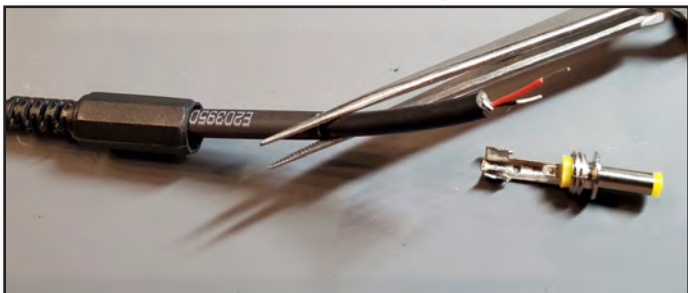
I used double stick tape on the back of the Step-Up Boost Converter module to mount it in the case and glued the LED in place again using UV Glue. As you can see, I also added tie wraps and glue to keep the cable from pulling through the holes. It may not look the best but it seems to work.



This is the finished enclosure with power applied



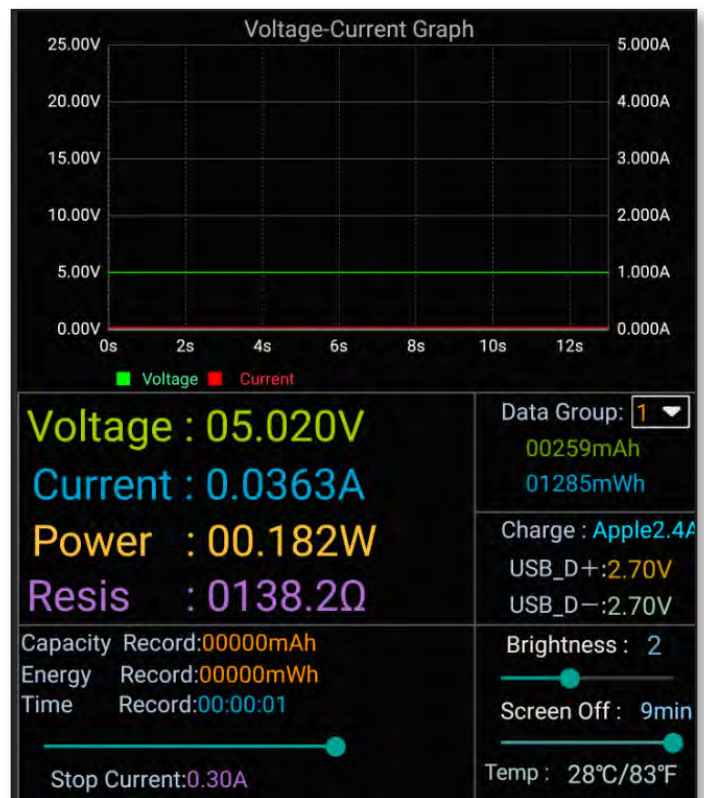
Next, I prepared the power jack connector for the radio in this case it is a 4.0mm x 1.7mm Male DC Power Jack, I verified this with the manufacture's website and measured the charger to make sure I had the correct connector. This is a center positive jack, I soldered and



put a relatively long piece of heat shrink to protect the connections and an extra bit of strain relief for the cable.



Below you can see the display from a USB Power tester, in the first picture the charge cable is plugged in with no load pulling about 36mA for the LED and standby current of the Boost module, the second picture it is plugged in to the radio and charging it. While charging it is pulling about 1.02A to charge the radio the voltage output dropped to about 10.1 volts with load. As it reaches the end of the charge cycle the Current dropped to 700mA then about 300mA, once charge completed it was about 90mA.







Below you can see the Radio indicating it is now charging, this like the OEM charger is slow compared to some Phone chargers, this charger seems to match the OEM wall charger in performance. It seems to work quite well and will charge your radio in the office or in the field with any USB power source. The picture is the finished project charging my radio in my office. I hope you find this information useful and if you need a mobile charger you will consider building something similar. Let us know. ⚡

