

September, 2001



Portland Marathon Preparations Under Way

By Patrick KD7HDP

Once again, PARC is coordinating Amateur Radio communications for the Portland Marathon -- considered one of the best marathons in the country. This marathon is a non-profit event, staffed completely by volunteers, with any profits going to local charities. The Ultimate Guide to Marathons has declared the Portland Marathon "the best organized marathon in North America". Amateur radio plays an important part in that organization by providing communications support between the various checkpoints covering the 26-mile course.

Bruce Cheney, Communications Director for the Portland Marathon, had these kind words to say about our club, "PARC has provided the Amateur Radio support for the Marathon for almost as long as I can remember (15 years?), and has done an excellent job. Your group has the experience and expertise, along with a sizable corps of excellent operators. From an amateur radio perspective, I believe the Marathon is an excellent activity for a club to focus on."

The Marathon also provides us with an excellent opportunity for emergency preparedness training. Cheney described it this way; "The Marathon combines community service with an emergency communications exercise that is perfect for simulating communication needs in a situation analogous to a natural or man-made disaster. All the elements of such an emergency situation are there. There are a lot of people moving from one point to another in the city. Normal transportation is disrupted. The people are thirsty, ill clothed, too cold, or too hot, in need of medical attention and transportation. Communication links must be maintained between key city service providers (ambulance, medical teams, police, Tri Met, ODOT, etc.). I'm not sure you could design a better training exercise."

Yet, this year's project has an additional challenge because Hugh KB7LJV isn't able to coordinate the Amateurs as he has so many times before. Pete W7PR and Patrick KD7HDP have stepped forward to recruit volunteers, but lack the benefit of Hugh's experience, so your help is needed. Kevin WA7VTD, EC/RO of Oregon City ARES/RACES, put it this way, "The Marathon really needs you! This is one of the biggest public service communications events in the state, of the entire year. The City of Portland essentially goes under a benevolent form of martial law during the Marathon. Numerous hams are needed to man checkpoints, control traffic, report medical emergencies, obtain police assistance, report lead runner times, sweep the course for stragglers/injured or ill folks, facilitate transportation, assist logistics, etc., etc., etc. It's a big deal but you can be done by noon. You do get a nice T-shirt and it's a fabulous experience. There's also usually a volunteer's appreciation meal afterwards. Communications wise, it's one of the best training events around. This event could easily use 50 hams."

This year the Marathon will be held on Sunday, September 30th. To be a part of this exciting annual event, sign up right away by contacting Pete or Patrick with your name, callsign, all telephone numbers, and preferred mile-post:

Pete, W7PR@Juno.com

(503) 771-8545, or

Patrick, KD7HDP@ARRL.net

(503) 221-6995 ext. 127

A number of people have already signed up but there's plenty of room for more. In summing it up, Kevin put it so well, "Thanks and remember that the early bird gets the tastiest worm. Most people who do this once are eager to do so again." Please sign-up today.

For more information on the Portland Marathon, please see their web site: www.portlandmarathon.org.

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PARC Frequencies

Voice:	146.840 -600 MHz
	146.940 -600 MHz
Packet	147.180 +600 MHz (repeater)
	144.910 (W7LT PARC Node)

Scout Group Learns the Power of Packet



Recently, a fellow ham, Joe Mohr (KB7ZZX, Pictured seated above) took his packet radio station to Camp Baker along with Boy Scout Troop 194 from Wilsonville. In the past, the scouts have been able to send a postcard home to their families to let them know what they've been up to. A long time tradition of camp, the postcards sometimes arrived after the scout had returned home. Joe wanted to try something different this year. Before his departure, he made arrangements with the parents to send email to the troop's email account with "Camp Baker Mail" in the header along with the name of the scout. He registered with the FLOMB packet node, and made arrangements with Ed Burress (KC7GFX) to pick up the mail from their troop's email account and forward it to the scouts via packet. This experiment worked well, and pretty soon, traffic was flowing in both directions 3 times per day. One of the scouts became ill during the trip, but managed to bang out a short message to his parents from his bunk. The idea of the scouts sending and receiving email messages from a table in the woods seems like a perfect setting for an introduction to amateur radio. Take that Nintendo, and well-done Joe!

Calendar at a Glance

Regular Club Meeting	Sept. 21 st
ARES/RACES Meeting	Sept. 27 th
Club Net	Sept. 10 th , 17 th , 24 th
ARES/RACES Net	Sept. 12 th , 19 th , 26 th
Club Breakfast	Oct. 6 th

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September Meeting:

This month's meeting will have two main topics. Lea (AL7W) will be demonstrating his PSK31 digital interface project (see construction article, page 2).

Patrick (KD7HDP) and Pete (W7PR) will be discussing coordination and operation for the upcoming Portland Marathon. The meeting will be held at 7:30 PM, Sept 21st at:

**One Liberty Center
650 N Holladay Street
Portland, Oregon
(A few blocks SE of the Lloyd Center)**

All are welcome to attend. Updates and changes will be announced on the PARC net, Monday at 7 PM on the 146.840 Repeater. All hams are encouraged to check in!

Radio Nets

Here is a Schedule of Nets for all interested. All Nets are handled on the 146.840 repeater.

Sunday:	Handi-Hams Net 7 PM
Monday:	PARC Weekly Net 7PM
Wednesday:	ARES/RACES Net 7PM
Thursday:	Youth Net 7PM

All Hams are welcome to check in to any Net

Presidents Message:

A little shorter message this time: I have received several boxes of club archives for long term storage. There are SPARC Gaps and pamphlets dating back to the 50's. I want to thank everyone who kept these archives all the years, they arrived in great shape, and my plan is to select articles from the past from time to time to publish in the new issues of the SPARC gap. They certainly make for interesting reading both from a historical perspective, as well as some technical articles that I think could be re-circulated again. (And hey, I'm not beyond a series of articles about the many wonders of Hartley oscillators and grid leak biasing if I don't get enough new articles for the newsletter...;^)

I am also planning to scan them in, burn CD's of the information, and distribute them to club officers and the Oregon Historical Society for long term archival. If you have old stories or articles about the club, send them along, and I'll try to get them all in.

Also, Neal Sacon (N7RX) made a good point in the email reflector and on the air the other day about our next year's budget. It's probably a good time to start thinking about what we should focus on in the next year. Topics of discussion so far are (in no particular order): finding a reliable replacement repeater for our 146.840 machine, doing some work on the club trailer to make more useable space for operators, coffee stops, field day's, training, and emergency operations. Be thinking about what you would like to see us do next year, how much it might cost, and how important it is for the club. We'll discuss it at one of the upcoming meetings, December is just around the corner...73's Ed - KC7GFX

Going Digital on the Cheap

By Lea AL7W

Psssst!!!! Wanna know one of the best-kept secrets of ham radio? The digital modes don't cost an arm and a leg to use, when you have the right stuff on hand, and most of us have Pentium 100 or better computers, and radios that are stable enough to use these modes..

I always associated the digital modes with boat-anchor Teletype machines or Robot interfaces and quite a bit of money. Getting on PSK31 or SSTV or RTTY only requires an inexpensive interface and easily downloaded sound card software written for it. This software is generally available as freeware or inexpensive shareware. You will, of course, need to hold at least a General-class license to go on the air with most of what is outlined here.



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Jules Jenson **KC5MGE**
www.mge3234.com email.info@mge3234.com

In theory, one could connect his sound card directly to his radio, either through the accessory jack on the back or through the mike and headphone jacks. The only thing that would need anything special would be the means of actuating the PTT line of the radio (see fig. 1). Even that can be finessed by using VOX, but it's not the most reliable. Most simple interfaces for which I've seen diagrams also include a simple adjustable attenuator for each of the audio lines involved. Typically, this consists of a pot (at least 10K) and a 1:1 isolation transformer for the individual circuit. The particular wiring depends on which direction the signal's going (see the diagram for the whole unit, in fig. 2). I built mine for a probable total expenditure of about \$15, buying most of the parts at Radio Shack.

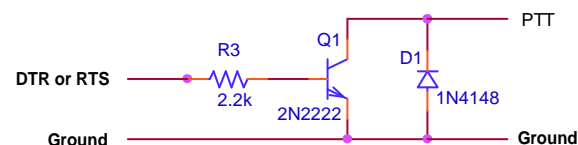


Figure 1: A simple PTT circuit (not recommended)

The Circuit

Figure 2 shows a very good way to hook up the PTT switching interface, using an optoisolator to completely separate the ground buses of the computer and the radio. I am deliberately not including instructions on how to hook it up to your radio, because different ones do things differently. A quick perusal of your radio's user manual should give you the means to connect up.

I prefer to connect to the accessory jack on the back of my IC-735, and those connections are model-specific. With the exception of the Optoisolator (which can be gotten at Norvac Electronics), all the parts can be gotten off the shelf from Radio Shack (their part numbers are included).

There are 3 parts to the circuit, and the first 2 are virtually identical, except for how they're wired up. We need to get audio from the Line-Out (or speaker) jack on your sound card to the input of your radio (either mike or accessory jack, your choice). We also need to move signals in the other direction, either from the accessory jack or the headphone jack of your radio to the Line-In or mike jacks of your sound card. If you're using a laptop computer for this, you'll be using the latter connection points in both cases, since there is no line-in or -out point on most laptops. The third part of the circuit is, of course, the Push-To-Talk switching done by the serial port on the computer. The 2 1N914 diodes, D1 and D2, are put in to capture both the RTS and DTR lines of the serial ports, without them feeding back to each other. This is to make less critical the assignment in software (they can default to either or both) of the switching line. R3, the 2.2K resistor, is there for current limitation.

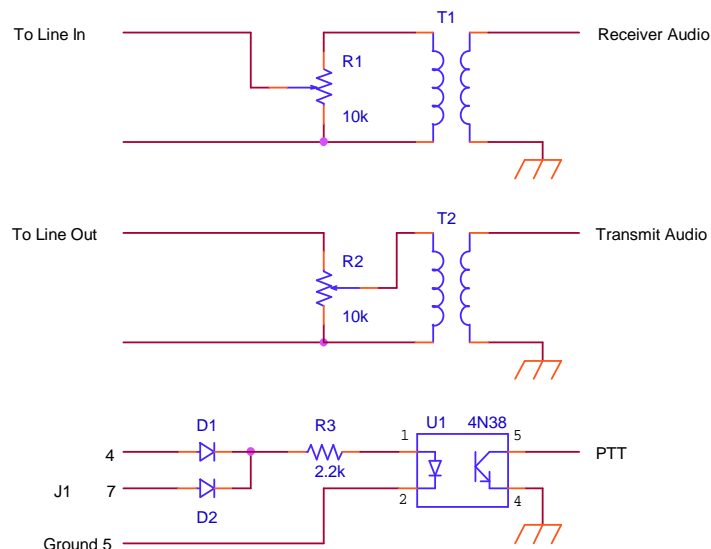


Figure 2: The complete interface

(503) 224-0115

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310 S.W Fourth Avenue, Suite 1101
Portland, Oregon, 97204

James H. Walters WB7AAK

Parts List

D1, D2 - 1N914 diodes (RS276-1122, pk. of 10)
 D3 - 1N4001 diode (optional, used with Q1)
 J1 - DB9F serial connector (with cable)
 P1, P2 - 3-circuit 1/8-inch phone plugs with cables (see text)
 Q1 - 2N2222A transistor (optional) (RS 276-1617)
 R1, R2 - 10K PC-mount pot (RS 271-282)
 R3 - 2.2k resistor (RS 271-1325)
 T1, T2 - 600-Ohm 1:1 isolation transformers (RS 273-1374)
 U1 - NTE-3083 (available at Norvac Electronics; a socket is advised).

Construction

I built my interface on a piece of Radio Shack 276-148 perfboard. Since we're working entirely at DC and audio frequencies, things are relatively uncritical as to layout, as long as there are no solder bridges between critical pieces. We want to not make common ground connections on the computer sides of the 2 isolation transformers, T1 and T2. I also used pc-mount pots on my interface. These would allow the unit to be housed in an Altoids™ box, using double-stick foam tape to mount the board. If you connect the cables directly to the board, you'll want to employ some form of strain-relief where they exit the box. You'll also want to label them for their appropriate functions. A circuit board is being prepared for members' use.

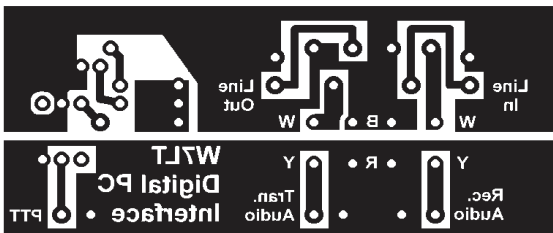


Figure 3: Circuit board pattern

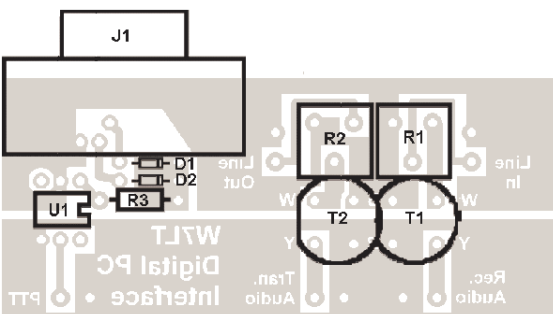


Figure 4: Parts Placement

Software

This is another area where personal choice runs rampant. There are several good packages of software for PSK31 that are available for download, free of charge. My initial choice, based on the recommendation of Steve Ford, WB8IMY (now the Editor in Chief of QST), was *DigiPan*, which allows panoramic display of the passband of the IF of your receiver (and usually encompasses the PSK31 activity on that particular band)

You can also see when someone's running a really lousy signal, because you'll see more than 2 parallel lines for that guy's signal, indicating splatter. Tuning in a signal using *DigiPan* is easy, because you use your mouse to drop your cursor in the space between the parallel lines in the waterfall display. Since the signal is only 31.5 Hz. wide, a large number of signals can be accommodated in the 2.4 kHz. passband of most people's SSB receivers. The current release is 1.6d, and it will be posted on the club's website for download. (as soon as we can).

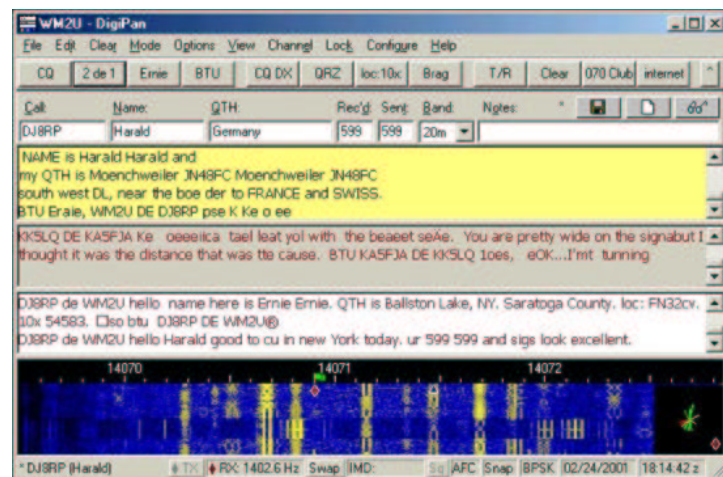


Figure 4: A typical PSK31 Display (from WM2U's website)

I have also used my interface for RTTY and SSTV, and there are a couple of downloadable freeware packages, of Japanese origin, that I'm using for these modes. These are *MMSSTV* (reviewed in the August QST by WB8IMY) and *MMRTTY*. Both are available for download from www.geocities.com/mmhamsoft/mmsstv/index.htm, or from the club website.

ARES MEETING: Thursday, Sept 27th at Fire Station 2 4800 NE 122nd at 7PM. All hams are invited to attend!

Adjustment

Once you have your unit constructed, it is pretty easy to adjust it for proper use in PSK31 (which will also set it up properly for the other digital modes). The following procedure for setting it up assumes that you're using *DigiPan*. For receiving, R1 should be tweaked up to the point where the background changes from blue to yellow, showing background noise for the bandwidth of your IF filter (in my case, about 2.4 kHz, out of a display width of 3 or 4 kHz, depending on the resolution of your screen). If it turns yellow all the way across, you're overdriving your sound card, or there are a lot of strong signals about.

For transmission, you are trying to get a clean sine wave from your sound card to the audio input of your transmitter. In stubborn cases, you may need to use an oscilloscope to set the output level from your computer (especially from a laptop). R2 is what you are using to adjust the audio level to the transmitter. You want to go into transmit mode (preferably into a dummy load), with the transmitters metering set to ALC. You want the highest setting that doesn't deflect the meter when transmitting (have your software call CQ and monitor the ALC). Monitoring power output should show a little bit of deflection, but it's nominal. You want to shoot for IMD readings on the other end of less than -20 dB. If you're at all nervous about getting it right, get hold of me. I (or someone else on the air) can give you a fair assessment of the quality of your signal. Great gobs of output power are generally unnecessary with PSK31: people generally throttle their signals way back on that mode; claimed power levels of 20 or 30 watts are quite common. It does pull the weak ones out: people do get copy on signals that only put ghost traces in the waterfall display that aren't audible at all. I did try using this lashup in the North American RTTY QSO Party, at the end of July, but it turns out that power does matter more on RTTY than in PSK31. I did get some contacts on 20 meters, but they were sporadic, and there was at least one local station (K7ZUM) that didn't hear me (or maybe Ken was ignoring me, I don't know).

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Conclusions

I've been a ham for 40 years. In the past 10 or 15 years, I've not spent a whole lot of time on the air. It would be safe to say that in most of that time, I've signed W7KYC or W7LT more than I have my own callsign. Moving to the digital modes has started to tip the balance in the other direction.

The thing of it is, had I realized this 2½ years ago, I'd have been one of the first people in town on PSK; instead of a Johnny-Come-Lately. For the first time in a long time, I'm enjoying ham radio again.

-AL7W

Bibliography

Ford, S., WB8IMY: "PSK31-Has RTTY's Replacement Arrived?" *QST*, May, 1999, page 41.

Ford, S., WB8IMY: "PSK31 2000" *QST*, May, 2000, page 42. Ford, S., WB8IMY: "MMSSTV Version 1.01" *QST*, August 2001, Short Takes, page 61.

Kruis, R., K8CAV, "Clean Up Your PSK31 Signal" *QST* February, 2001, Technical Correspondence, page 88.

Kruis, R., K8CAV, "Revisiting 'Clean Up Your PSK31 Signal'" *QST*, April, 2001, Technical Correspondence, page 83.

Editor's Note: I did a board layout for this project, and am planning to etch several copies of them for the club. They will be available at the regular meeting on a limited basis.

For the ease of board layout and etching, I omitted the holes for all but the necessary pins on the 9 pin RS-232 connector. It is intended that you cut the unused pins off before soldering the connector to the board. If you prefer, a cable may be substituted for the connector, soldering the cable connections directly to the board and supplying a strain relief for the cable.

It is also believed (but not tested by the time this went to press) that this same interface will work with 1200 and 9600 sound card based packet applications on Pentium 166 and above PC's.

This could become a clean sweep on entering the digital communications on a whole bunch of fronts! It is my intent also to provide on a limited basis CD's containing the software mentioned in this article, as well as a few others that are free, or provided on a shareware basis by the authors.

If you have an idea that would make a good construction, or technical project, please drop me a line: kc7gfx@arrl.net

Congratulations Bert!

Bert Younglove, WA7AXO was the winner of the door prize at the August club meeting. Bert took home our first (well, our first in quite awhile) prize of a Compaq laptop computer. Bert plans to use the laptop for packet radio and teaching at the ARES meetings. Door prizes are planned for each of the meetings. Prizes may be hardware, gift certificates, kits, accessories, or the ever favorite gag gift. Each person signing the roster at the meeting is eligible for the door prize. Bring a friend, you each get a chance!

Wanted:

Articles for the sPARC gap. Any size will do, pictures (digital or analog) are a nice touch. Send them along to me, Ed Burress, kc7gfx@arrl.net

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(503) 684-5201

**Last Month's Guest Speaker:
Scott Etlinger, KC7ZUH - American Red Cross**



Scott Etlinger (above, left) from the American Red Cross spoke at the September meeting about the role of the Red Cross during normal, and emergency situations. He discussed preparedness for Earthquakes, wind and ice storms, and other natural and man made disasters. I think that all of us associate the Red Cross with blood drives, handing out blankets and establishing shelters during floods, mudslides, tornadoes, and hurricanes, but the Red Cross does much more than that on a daily basis. Did you know that they respond to single dwelling house fires? How many of us knew that they provide vouchers for motel rooms, hand out bedding and clothing for families who have lost everything in a fire? They also maintain a fleet of food service vehicles to provide food and liquids for fire fighters that are called out on three alarm fires. They were present during the Portland flood, providing hot coffee and food for the folks filling and placing sand bags down at the waterfront district. The Red Cross is always looking for more volunteers to help establish a network of ham operators for their emergency operations. Volunteers get free (or greatly reduced cost) training on first aid and CPR, and provide a valuable service to the community in times of need. If you're interested in becoming a volunteer, give Scott a call at (503) 280-0205. Our many thanks to Scott. for a great presentation, and for the donation of coffee for the coffee stops.

BBC, The End of an Era.....

On June 30th, 2001, the BBC discontinued its World Radio Service broadcasts to North America and most of the Pacific. As an early short-wave listener, this used to be one of my favorite stations, listening to it on a surplus BC-348 receiver out of a W.W.II bomber. A reflection of the changing times, the BBC is modernizing its business model and now relying on it's Internet broadcast feature to reach our portion of the globe. The reasons are simple, the cost of internet broadcast is much lower than continuing to maintain and operate it's high powered transmitter, provides much better audio quality, free from fading and static, and more people in our region have internet connected computers than short-wave receivers. Another service, Worldspace utilizes the digital satellite radio broadcast method. I've listened to the BBC over a DSL line, and I have to admit the quality of the audio is good, but somehow lacking the magic that kept it alive since my childhood. Modern technology is a wonderful thing.....right up until the phone lines go down.

Portland Amateur Radio Club
4110 S. E. Hawthorne Blvd. PMB #211 Portland, OR. 97214
Membership Application

Name: _____ Call sign: _____
Address: _____
City: _____ State, ZIP: _____
Home Phone: _____ Check here if you don't want this number published.
Work Phone: _____ Check here if you do want this number in the club roster.
Class of License: _____ ARRL Member? Yes No Exp. _____
E-mail address: _____

Class of Membership:

Pick One
 Full or Associate \$18.00 Student \$12.00
 Full Family membership \$24.00

Membership is from January to January and prorated the first year.



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WA7VTD

Psycho Appliances:

The following article is from the September 2001 issue of "Highways", a publication of the Good Sam Club. The original article was in their Tech Topics column and titled "Psycho Appliances".

I enjoyed the article in the April issue on the Good Sam chapter in Arkansas that is made up of ham radio operators. I've been a licensed ham since the mid-1950's and am a member of the Good Sam amateur radio chapter here in Texas. I have a recurring problem that has me really puzzled, and with which I have had no real help from the manufacturer. I own a 1998 Chateau travel trailer that I purchased new and that has a Duo-Therm air conditioner and thermostat. The thermostat and the control panel are "solid state." When operating my amateur radio transmitter from the trailer, the air-conditioner compressor will engage, regardless of the temperature setting of the thermostat. I have talked with other RVers with similar problems. One even told me that the automatic steps on his motor home would extend or retract during his radio sessions. Most, however, seem to have the same or similar problem with their refrigerator controls. Early on, I placed several calls to the manufacturer of the air conditioner, and was told what could be done to solve the problem, and that there were no alternative control devices available. One person I spoke with sent me a relay with no instructions on its installation or purpose. I have done extensive troubleshooting myself with very poor results. The most frustrating part of the matter is the apparent lack of interest in helping from those who presumably are in the best position to do so. I would appreciate your help. Fred Zimring, Richardson, Texas.

Consider yourself lucky, Fred. There have been cases where the windshield wipers activate on their own or the engine stalls because the radio-frequency emissions make the engine computer suddenly change the air/fuel mixture. You only had to put up with a cold interior and melted ice cream. The first step in diagnosing this problem is to double check the ham radio antenna system radiating element, as well as the necessary metal ground plane below it. The antenna must be isolated as far as possible from the control electronics inside the trailer. If it's within 12 inches of a control unit, or even a wire to the control, you'll experience operational problems. It's best to locate the mobile antenna on the roof ladder, if your rig is so equipped. The ladder will act like a form of ground plane. In your case, I suspect you have a rubber roof that will allow radio-frequency emissions to radiate inside the trailer and mess with the appliance controls. This situation is unhealthy for the occupants, to boot. If you don't have a metal roof and/or rear-mounted ladder, you can try a couple of fixes. You can shield the electronic controls inside the rig with lightweight copper screen (hard to find, but available at some hardware stores). This can be difficult without easy access to the controls – especially inside the refrigerator – and you must be careful not to make contact with any part of the control components. You can also place small .01 uF capacitors on those leads that may be picking up the induced radio waves from each lead wire to the chassis ground.

If you still can't make the system work, contact electronics guru Gordon West (WB6NOA) at (714) 549-5000. West has written a number of electronics-related articles. If he doesn't have the answer, you'll have to quit transmitting – Just kidding. As a ham operator I know words are golden.

Editors note: *I've heard stories of anti-lock brakes going on, air bags deploying, and surge problems during transmitting with poor mobile installations. I don't know of any occurrences personally, but this article serves a purpose in illustrating that problems like this can in fact occur. Bert Younglove (WA7AXO) reminded me of a story about one of our common friends, Ed Burke (K17KW) trying out a new mobile for the first time. He took the microphone and held it outside the door of his vehicle and keyed down several times at the limit of his transmitter. He was trying to see if the air bag would trigger before he got behind the wheel. Many of us have been bit by "RF in the Shack". I guess that having the airbag go off when in the middle of a QSO is just the car's way of saying "ouch!"*

Thanks to Max, KB7TMH who gave me a copy of the article to include in the sPARC gap.

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