How to set up a low-radiation phone system when there is no landline

Landline telephones are disappearing. What to do if you have electrical sensitivity (EHS), or simply want to lower your exposure to microwave radiation? We show how.

Keywords: low radiation, mobile phone, cell phone, electrical sensitivity

Landlines are disappearing

In 2009, the American telephone giant AT&T asked the U.S. Federal Communications Commission to set a “sunset date” for all traditional landline service in the United States. The request was denied, but the writing was on the wall that landlines were dying out.

By 2017, half of the households in the United States no longer had a landline phone. The phone utilities have steadily lost customers since, making maintaining their landline systems less and less profitable.

Some telephone companies have announced they will no longer repair broken lines. Newly built homes and apartments usually do not have telephone cables in the walls. Some companies won't extend their landlines anymore.

In some cities telecom firms have replaced the old copper wires with fiber optic cables that carry television, telephone, and internet into the homes. They are likely here to stay. But in smaller towns and rural areas, the only option will soon be wireless.

What should people who get sick from wireless radiation do? Or people who don't want to irradiate their heads and bodies with microwaves that may give them cancer?

Fixed wireless

A fixed wireless system can solve the dilemma. It is a wireless system that is stationary, with an ordinary telephone attached to it. Most of them are designed so the transmitter part is separate and can be placed well away from the person using the phone, thereby greatly reducing the exposure.

To the user, it looks like an ordinary landline phone. In fact, you can use your old landline phone, which is plugged directly into the fixed wireless transmitter, using a standard telephone extension cord (preferably a long one).

The Verizon transmitters

In the following we will refer to this device as the "transmitter," as it will have different names in different countries.

In the United States, telecom provider Verizon has offered their Home Phone Connect system for several years. The firm StraightTalk also offers one, which uses Verizon's network.

Verizon currently (2024) supports two transmitters: T2000 and LVP2. We have used both. Both work only with 4G service, so far no 5G model is available.

The LVP2 is newer and better designed. It is easy to turn off from a distance and it is more reliable when the towers are congested. The LVP2 is shown in a picture later on.

The only advantage of the T2000 is that it allows the use of an external antenna, which is rarely necessary, even in rural areas.

They are rather small. The T2000 is shown to the left in the picture at the top of this article. It has a small antenna that sticks up, and newer models have a little status display. It is very easy to use.

If it is not available in your area, we describe an alternative later on, which is installed and used in a way that is very similar.

How much does it radiate?

When there is an active call, it transmits continuously, just like any other mobile phone. During calls is the most important time to keep a distance from the transmitter.

Whenever the device is turned on, but there is no active call, it transmits very briefly now and then. These signals last a fraction of a second.

The strength of the signal depends on how far away the tower is, but should be similar to what a cell phone sends out.

Sound quality

The sound quality is decent, but if the tower gets congested the sound quality gets worse than for a regular cell phone.

Even under optimal conditions, the sound is not as good as for a good landline. To a few people, this does make a difference in how well they tolerate the phone, even though it is hard to really notice the difference.

Reliability

These systems are reliable, but only in areas where the towers are not congested.

In areas where the towers are busy, our T2000 model was unable to make a connection for hours at a time, even entire days. This despite cell phone users could still get through, while users of the 4G data service have very slow service.

We found out that it uses a wireless data connection, instead of a regular cell phone voice channel. That offers more opportunities for dropped “packets.” It explains the lower sound quality, the lower reliability and why some phone menus get confused.

We’ve had much less trouble after upgrading to the newer LVP2.

How far does the transmitter need to be from you?

In general, the further, the better. But it doesn't make sense to go too far if there is a lot of radiation from other sources anyway.

If you live in an apartment where the neighbors use mobile phones and wireless networks, they will soon drown out your own transmitter as you move away from it.

Perhaps 20 feet (7 meters) is a good compromise. More is always better. Less may be all you need, depending on your level of sensitivity.

Where to place the transmitter

The transmitter can be placed almost anywhere. You'd want it to be away from where you spend a lot of time when not using the phone, as it does send out brief microwave bursts to inform the cellular network that it is still there. Its internal electronics also radiate a little, like all electronics do, but that doesn't reach far.

In homes with phone wires in the walls, it may be a good idea to place it next to a phone outlet, or the main phone box. That way the existing phone outlets can be used around the house, instead of using a loose cable.

The transmitter uses electricity, so it is best to place it near an outlet.

If there is a garage, that may be an excellent place to put the transmitter.

It can also be placed in the yard, which we'll discuss later.

Metal houses

The transmitter should not be placed anywhere inside a metal house, as the metal walls will reflect back the radio waves like a mirror. That means the radiation will bounce around the whole house; therefore, the radiation will no longer be less when moving away from the transmitter. Where the "hot spots" in the house will be is unpredictable.

Since the metal walls make it hard for the transmitter to reach the base station (tower) outside the house, it will also transmit more powerfully, further increasing the radiation inside the house.

A metal house is one that has large metal surfaces, especially metal walls. These can be siding made of steel or aluminum. Or they can be walls covered with aluminum foil wallpaper, including RF shielding materials.

A house that just has steel studs in the walls is not a metal house. The openings between the studs are so big the radio waves have no difficulty getting through the walls if they are made of glass, wood, or gypsum panels.

We are not sure whether a metal roof alone makes much of a difference.

Placing the transmitter in the attic

The attic may be a good place for the transmitter, unless the roof is metal.

The people will be below the transmitter, and there is no need for the signal to go that way. That means you can put an RF shield below the transmitter. It could simply be a plate of steel or aluminum, or even some layers of heavy-duty aluminum foil or copper mesh.

We haven't seen anyone do this, but a shield that is about three feet (one meter) on each side, should reduce the downwards radiation quite a bit.

Place a thick piece of wood or plastic in the center of the shield. Then put the transmitter on top. A little distance between the shield and the antenna makes the shield more effective (less likely to be saturated).

Placing the transmitter outdoors

If you live in a metal house, your household has multiple electrically sensitive people, or you simply want the transmitter further away, consider installing it in the yard, a balcony, a detached garage, or a non-metallic garden shed.

This is often rather simple to do. Buy a plastic cooler large enough to hold the equipment. Put a couple of bricks inside to weigh it down. Drill holes for a telephone wire and electric cable. You are almost there.

It is best to bury the wires. Wires can be above ground, but then make sure to wrap the wires in protective sleeves (sold at auto parts stores). Otherwise, rodents can chew on them. The electrical cable should be resistant to ultraviolet light, such as those long orange extension cords used by contractors.

Some coolers are not designed to withstand rain. Look at the lid; it should fully cover the top. You may need to build some sort of "hat" for the cooler if water still gets in. Drill a hole in the bottom so water can run out.

Solar powered transmitter

The transmitter can be powered by the sun (this is what we do). Then there is just a phone cable going to the house, and no dirty electricity.

You'll just need a small solar panel, a basic charge controller, and a 12-volt battery. Depending on what voltage the transmitter needs, you may also need a DC-DC converter (check the label on the power supply).

The solar panel should be nominally 12 volts. A power rating of 20 watts should cover all situations (except the Arctic).

A 12-volt lithium battery of about 10 amp-hours should work well. If you want to use a flooded lead-acid battery it must be in a separate cooler, as the acid fumes will otherwise corrode the electronics in the transmitter.

You'll need a small solar charge controller, like the one shown in the photo. Make sure it is suitable for the type of battery.

Such a solar system may add about a hundred dollars to the overall cost. It can be set up by a handy person in a couple of hours.

Components for a solar-powered fixed wireless phone system that can be placed well away from the house. The shown T2000 transmitter needs electricity at 5 volts, so a 12-to-5 volt USB converter is also shown in the picture. The LVP2 runs directly on 12 volts.

Unheated space

The fixed wireless transmitters are generally designed to sit indoors. They may not work in unheated spaces when it is extremely cold.

There may be problems early in the morning, while it works when it warms up during the day. It may help to even out the daily temperature swing by housing the transmitter in a cooler with a thawed ice pack (the ice pack won't burst if freezing).

If heating is necessary, a 5-watt heating element should be plenty for an insulated cooler. A lamp that consumes 5 watts could work. If on solar, a larger battery is needed (at least 40 Ah @ 12 volt) and a power resistor rated at 30 ohms and a heat rating of at least 10 watts.

External antenna

Some models have a connector for an external antenna. This is helpful in remote areas far from the nearest tower. It is also a way to move much of the radiation out of your home, especially if you can't place the transmitter outside.

To find a suitable external antenna, cable and connectors, a good place is usually a CB shop, or ask a local radio amateur. Or ask at a large truck stop.

Turn it off

If you have the transmitter inside your home, you may want to turn it off sometimes. For instance, so an electrosensitive person can sit next to it.

Some people leave it off most of the time and just power it up to check their voice mail.

If you plug it into a power strip, you can stand a little away when powering it up. It will transmit at the end of its boot process.

The models we've seen all have a backup battery so they can work even during a power outage. You'll need to remove the battery if you want to turn the device on and off with a power strip.

The T2000 model has a dumb design where it will not work if there is no battery inserted or the battery is worn out. The workaround is to install a switch on the battery too.

The newer LVP2 model is better designed and will work if there is no battery.

The model LVP2. It has an internal antenna and no antenna jack for an external antenna. But the backup battery does not have to be in place for it to work.

Optional ferrites

This optional feature only makes sense for a household away from other transmitters.

Very weak radio waves and dirty electricity may travel along the telephone wire from the transmitter to where the phone is. They might be a problem for extremely electrosensitive people.

They can be dampened by inserting ferrites on the telephone cable. The ferrites should be placed well away from the transmitter, perhaps halfway to the phone.

Ferrites are low-cost non-electric rings that are designed for this purpose. They are ceramic and very durable. They do not rust or decay.

They are designed to dampen different frequency bands (currently you'll need to cover from 900 MHz to 3500 MHz). The clamp-on types are less effective than the solid ones. Even more effective are solid rings large enough that the phone cable can be wrapped around them a few times, as shown in the picture.

Optional ferrites placed on the cable between the transmitter and the telephone to absorb dirty electricity. Multiple loops of the cable around each ferrite is best. This is an illustration, for best effect make the loops tight around the ferrites.

Use multiple ferrites, but keep them spaced at least a couple of inches apart (if close together, the microwaves may jump across and thus bypass the ferrites).

Avoid the contract

Some of these fixed wireless devices are given away for "free," but with a required multi-year service contract. It may be better to buy the same device used and then sign up for a monthly service instead. That gives you a lot more flexibility, and may save the sales commission.

If Home Phone Connect is not available

If you live in an area where this service is not available, or the company discontinues it, there are alternatives. They are just slightly less convenient.

Look for a wireless internet router that has outlets for a landline telephone. These devices use the cellular 4G/5G service to create a local Wi-Fi hotspot.

You'd want to disable the Wi-Fi, which is done by connecting a PC with a cable and then going through the configuration screens. It should stay disabled even if power is removed, but it will be put back on if there is a factory reset or software upgrade. Try to get a model with an indicator light so you can see whether the Wi-Fi is on or not.

We know one person doing this with an IFWA 40 and service from AT&T. He previously used an L1114.

If your local carrier does not support any routers with outlets for landline phones, it should be possible to use a regular router that just has outlets to connect a PC with a cable. Then get a VoIP device (such as Magic Jack) and connect it to the router. We don't know anyone actually doing this.

Case story: canyon dweller

We know a woman with MCS and EHS who has lived in an Airstream trailer for years. She camped for several months in a remote canyon in Arizona. Her Home Phone Connect transmitter had to be placed high up on the canyon wall to get a signal. She used a high-quality 400-foot (130 meter) phone cable down to her trailer.

The author's own system

Our system was first installed in 2010, and has been upgraded since. We are now on the fourth model transmitter. When it was built, the towers were so far away we had to install an external antenna to boost the signal.

This system is more complicated than described in this article. You'll need someone with serious engineering skills to build something like it. It is described in more detail in a separate article available via the link below.

More information

For more articles about low-radiation telephones, go to:
www.eiwellspring.org/telephone.html

2022 (updated 2024)