

Calling 911 With a Cell Phone Tips That Might Save Your Life

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Below are important tips if you ever need to call 911 with a smartphone. I decided to put this report together after realizing that much of this information is not well known. These tips were developed in part by reviewing documents posted on the FCC website. The search ability on the FCC site is quite good once you figure out how to use it. Here is the main FCC search page: <https://www.fcc.gov/ecfs/>. The two FCC dockets with most of the relevant information are 07-114 and 94-102.

In addition to the list of tips, this report also has details about each tip. Those details will help you understand the reason for each tip. Some of those details include links to documents posted on the FCC website.

Please feel welcome to share/repost this information. You might help save someone's life.

Part 1 - Tips

--- Tip #1 ---

If you need to call 911 and your cell phone shows 'no service', then you should call 911 anyway and let it ring 45-60 seconds before hanging up.

--- Tip #2 ---

You should give the 911 dispatcher your location by providing (1) a street address, or (2) a verbal description the dispatcher understands, or (3) your latitude longitude coordinates expressed as decimal degrees and the accuracy value for those coordinates.

--- Tip #3 ---

FindMeSAR (<https://findmesar.com>) is a browser app that I developed as a public service specifically to provide an easy and 'no cost' way for anyone with a smartphone to display their coordinates and accuracy value while their phone is either online or offline.

--- **Tip #4** ---

When you call 911 with a cell phone the wireless carrier handling the call might not produce *any* coordinates for your location.

--- **Tip #5** ---

Even if the wireless carrier handling your 911 call does produce coordinates for your location, the coordinates you can obtain from your smartphone are either (1) more accurate or (2) a lot more accurate than the coordinates produced by the wireless carrier.

--- **Tip #6** ---

If (1) your phone is not within range of a cell tower and (2) your phone does not have a current copy of the satellite 'assistance' data, then it will take 15 to 20 minutes before your phone will produce coordinates for your location.

--- **Tip #7** ---

No one is monitoring the wireless carriers to see whether or not they are in compliance with the standards and requirements that the FCC has adopted regarding wireless calls to 911 and coordinate data for the caller's location.

--- **Tip #8** ---

If you have an android phone then to get the most accurate coordinates set the location mode (or method) to "GPS only".

--- **Tip #9** ---

If you have an Android phone then there is a free and easy way to find out if your phone can produce more accurate coordinates by using data from both the USA satellites (GPS) and the Russian satellites (GLONASS).

--- **Tip #10** ---

Phones that have no service plan at all can still (1) call 911 and (2) run an app that displays coordinates and accuracy on the phone's screen.

--- **Tip #11** ---

If at all possible, make a voice call to 911 instead of texting.

--- **Tip #12** ---

If you do text to 911, then the dispatcher is most likely not going to have *any* location data for you unless you include it in your text.

--- **Tip #13** ---

After you contact 911 take steps to make your phone's battery last as long as possible.

Part 2 - Background On Wireless Calls to 911

There are over 6,000 Public Safety Answering Points (PSAPs) in the USA. This section provides some background on what usually happens at most of these 911 call centers regarding coordinate data when you call 911.

Don't assume that the wireless carrier handling your 911 call is the carrier where you have your calling plan. Depending on the circumstances, the carrier handling your 911 call might be any carrier that is compatible with your phone. Your 911 call will be processed according to the technology and ability of the carrier handling your call.

When data for your call first appears on the dispatcher's screen, it will include "phase 1" coordinates. These coordinates are in latitude longitude and shown as decimal degrees. Phase 1 coordinates are the location of the cell tower carrying your call. Your emergency might be several miles away from that tower.

If the dispatcher only has phase 1 coordinates related to your call and you cannot adequately describe your location, then the dispatcher likely cannot route responders directly to you.

The wireless carrier handling your 911 call (remember - this might not be the carrier where you have your calling plan) will usually (not always!) produce "phase 2" coordinates and an accuracy value. If you draw a circle centered at the phase 2 coordinates and use the accuracy value for the radius, then there is supposed to be a 90% chance that you are inside that circle.

The accuracy value is called "uncertainty". The smaller the uncertainty value the more accurate the coordinates.

The carrier does not send the phase 2 coordinates directly to the PSAP. Instead, the carrier 'pushes' phase 2 coordinates for your location into a database. It is up to the 911 dispatcher to take steps to 'pull' your coordinates out of the database. Getting your phase 2 coordinates out of the database is referred to as a "bid" or "re-bid". Here is a 2013 letter from Verizon describing this process in detail.

<https://ecfsapi.fcc.gov/file/7520942964.pdf>.

If you provide the dispatcher with either (1) a useful (i.e. dispatchable) street address or (2) a sufficient verbal description of your location, then it simply does not matter whether the carrier put any phase 2 coordinates into the database or their accuracy value. Since you provided enough useful location information in the form of a street address or verbal description, the dispatcher has no real reason or need to try and pull your phase 2 coordinates from the database.

However, if you cannot give the dispatcher a useful street address or sufficient verbal description, then the fastest way for help to reach you is if the dispatcher has accurate coordinates for your location. Coordinates for your location can either come (1) from the wireless carrier via the

database or (2) from you by using an app on your phone. As explained in the detail section of this report, the **self-help approach will produce more accurate coordinates**.

Wireless carriers produce phase 2 coordinates using mainly either a network method or handset method.

The **network method** does not use satellite data. Instead the network approach includes various technologies related to cell tower triangulation. In order for this to work at all, your phone has to be able to see enough of the right kind of cell towers. T-Mobile is the only nationwide carrier currently using the network approach. Many smaller carriers also use the network approach.

The **handset method** is based on satellite data. Verizon, Sprint, AT&T and various smaller carriers use this method for producing phase 2 coordinates for your location when you call 911. Most smartphones produced within the last ~6 years use data from both the USA satellites (GPS) and the Russian satellites (GLONASS) to determine coordinates with about a 5 meter accuracy. But if you **assume** that the wireless carriers use both GPS and GLONASS data to determine the most accurate phase 2 coordinates for your location, then you would be wrong. **The FCC rules *prohibit* wireless carriers from using GLONASS data to help produce phase 2 coordinates for your location.** To read about this, see pages 14-15, paragraphs 39 and 40 of the following 2015 FCC document.

https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-9A1.pdf.

In other words, Uber is allowed to use GLONASS data (via the location services in your phone) to send you a ride, but the wireless carriers are prohibited by the FCC from using GLONASS data to help save your life.

This issue of emergency responders having an accurate location for a wireless caller is such a huge issue that Google has put code into the Android operating system to help solve this problem. Google calls this Android feature “Emergency Location Service” and it is already working in parts of Europe.

<https://blog.google/topics/google-europe/helping-emergency-services-find-you/>

But do not expect to see this Android feature used in the USA anytime soon since the location services in Android phones use GLONASS data to help determine your accurate coordinates.

Wireless carriers that use the **handset method** to produce phase 2 coordinates cannot simply grab coordinates from your phone. Why? Because your phone likely used GLONASS data to help produce those coordinates and, as shown above, the FCC prohibits the carriers from using GLONASS data to produce phase 2 coordinates. Instead, the carrier grabs raw GPS data from your phone (no GLONASS data allowed) and sends that GPS data to some kind of hardware on the cell tower that calculates your phase 2 coordinates and accuracy value based on the raw GPS data. That hardware may or may not also use some triangulation related technology to help determine your phase 2 coordinates and accuracy value. See for example Verizon slide 2 from 2013:

https://transition.fcc.gov/bureaus/pshs/911/Phase%202/Workshop_11_2013/VZW_E911_Location_Overview_Nov2013.pdf

In many rural areas certain wireless carriers have **exempted themselves** from the requirement to ‘push’ phase 2 coordinates into the database. All the FCC requires is that the carrier file a report stating the reason for the exemption. Carriers using the **network** method can claim the exemption by stating there are not enough of the right kind of cell towers. Carriers using the **handset** method can claim the exemption by stating the area is heavily forested. Thus, if you call 911 from any of these exempted areas, it might be completely up to you to provide your location to the dispatcher. Note that if your phone supports both GPS and GLONASS then it will produce coordinates with good accuracy in heavily forested areas for the simple reason that there is a larger number of satellites your phone can see through the trees.

For more information on all of this, including more supporting links, please read the following details.

Part 3 - Details for the tips

--- Tip #1 Details ---

Tip #1: If you need to call 911 and your cell phone shows ‘no service’, then you should call 911 anyway and let it ring 45-60 seconds before hanging up.

If your phone cannot connect to your primary carrier within 17 seconds then your phone will try to connect to any other compatible carrier. All carriers are required to handle 911 calls irrespective of any issues regarding roaming agreements. Below is a link to the 1999 FCC order that established this 17 second rule back in the earlier days of analog wireless phone networks. Those analog networks went away in 2008 but the rule has carried over to the digital networks we use now.

<https://transition.fcc.gov/Bureaus/Wireless/Orders/1999/fcc99096.txt>
https://apps.fcc.gov/edocs_public/attachmatch/FCC-08-171A1.pdf

This is the reason why your 911 call might connect via a different carrier even when your phone says there is ‘no service’ from the carrier where you have your calling plan.

It will take a different carrier a little bit of time to process and route your call. And then the 911 call center might be particularly busy and perhaps even short-handed when your call arrives. Add all that up and now you know why you should call 911 even when your phone says ‘no service’ and let it ring 45-60 seconds before hanging up.

Sometimes a cell tower will see that a phone is trying to make a call but the signal will be too weak to actually let the call happen. That cell tower will still create some data records that can be analyzed by experts to help narrow the area where you are located. If the problem is that you are lost, then even if you cannot actually make a call or text there might be cell tower data records being made that will help searchers identify the most likely areas to search first.

--- Tip #2 Details ---

Tip #2: You should give the 911 dispatcher your location by providing (1) a street address, or (2) a verbal description the dispatcher understands, or (3) your latitude longitude coordinates expressed as decimal degrees.

911 dispatchers prefer that you give them a street address. Of course emergencies do not always happen at a street address. The second best way to describe your location is with a clear verbal description. For example, something like “south end of the Home Depot parking lot” should be sufficient. But if (1) you are not at a location that can be easily described and (2) the wireless carrier does not produce accurate coordinates for your location, how is the dispatcher going to know where to send help so that help reaches you as quickly as possible?

The answer to the above question is that you should give your coordinates and the equally important accuracy value to the dispatcher. Of course this means that you need to have an app on your phone that can display your coordinates and accuracy value. And you need to be comfortable using that app so you can do so in a stressful emergency situation.

And in order to minimize confusion and possible mistakes, you should definitely state your coordinates using the same type of coordinates that the dispatchers use every day. That coordinate system is latitude longitude expressed as decimal degrees. If the wireless carrier handling a 911 call produces any coordinates, they do so as latitude longitude using decimal degrees. You should do the same.

--- Tip #3 Details ---

Tip #3: FindMeSAR (<https://findmesar.com>) is a browser app that was developed as a public service specifically to provide an easy and ‘no cost’ way for anyone with a smartphone to display their coordinates and accuracy value while their phone is either online or offline.

Whether you put FindMeSAR on your phone or instead use some other app is not important. **What is important is that you do something rather than nothing.** You should have an app on your phone that meets the following criteria:

- * Truly easy to use in the middle of a stressful emergency.
- * Displays your latitude longitude as decimal degrees.
- * Displays the accuracy value for the coordinates.
- * **Only** displays your current coordinates and does *not* have any feature that could cause confusion or that might delay response by displaying old or saved or cached coordinates.

Here is how to use FindMeSAR to provide your coordinates and accuracy value to 911 or to anyone else:

1. Make sure your phone’s location services are turned on.
2. Browse to findmesar.com

3. Tap the “Next format” button until the yellow screen appears. The yellow screen shows your location in latitude longitude expressed as decimal degrees. This is the coordinate format that 911 dispatchers are trained to use.
4. Wait a few seconds for the accuracy to improve to 10 meters or better
5. Tap Stop.
6. Read off your coordinates, accuracy value and (optionally) elevation.

If you see an error message then make sure your location services are turned on. If you are using an iPhone then make sure that you have given permission to your browser to use location services.

Full disclosure: I am the developer of FindMeSAR. This is a 100% volunteer project. Over the years I have traveled in the back country a fair bit by foot, skis and horseback. Fortunately I have never needed to call for help, but I know others who have not been as lucky. Developing FindMeSAR is part of my way to “pay it forward” to honor everyone involved in first response. Anyone is welcome to use it. There is no cost. And to make it easy to launch, the app includes an icon that you can save on your screen.

The first time you open FindMeSAR your browser must be online. But after you open the app the first time, it will then work when your browser is offline. This offline use is possible since this browser app uses a coding technique called appcache that causes its files (just over 100KB) to be saved in a special part of your browser’s memory.

FindMeSAR will not work if its files on your phone get corrupted. If the app stops working on your phone, then here is how to reload the app’s files to your phone so it works again.

1. Delete the app.
2. Browse to findmesar.com.
3. Wait for the app to open.
4. Reload the app.

And for those savvy about such matters, FindMeSAR uses the browser geolocation API (Application Program Interface). It is also open source. Anyone that can read code can look at it and confirm there is no evil intent.

For more information please open FindMeSAR and tap the “**About**” button.

Note that FindMeSAR does not work on flip phones since they do not have a browser.

--- Tip #4 Details ---

Tip #4: When you call 911 with a cell phone the wireless carrier handling the call might not produce **any** coordinates for your location.

The FCC regulations allow wireless carriers to **exempt entire counties** from the requirement to produce coordinates for the location of someone who calls 911 with a cell phone.

Each wireless carrier has to submit a report to the FCC stating whether it will use either a **network** method or a **handset** method to try and produce phase 2 coordinates for a wireless 911 caller. Carriers that use the network approach (related to cell tower triangulation) can exempt areas where there are not enough towers for this technology to work. Up to 40% of the counties or PSAP service areas can be exempted for this reason. Carriers that use the handset approach (GPS) can exempt areas that are heavily forested. Up to 15% of the counties or PSAP service areas can be exempted for this reason.

Carriers taking advantage of these exemption rules must file a report with the FCC identifying the areas where they will not produce phase 2 coordinates for wireless 911 callers and specify the reason. The State of Colorado maintains a spreadsheet sorted by state that shows the details of those reports. Here is a direct link to that spreadsheet:

https://docs.google.com/spreadsheets/d/1HbBgD2KKx_umIOEYZx0UgBMu3Vg0t7nztBTI5jpJJ_uM/edit#gid=0

If the above spreadsheet link does not work, then go to

<https://sites.google.com/a/co911rc.org/co911rc/resources/wireless-9-1-1>

and near the bottom of that page follow the link that says “Click here for a spreadsheet of current exceptions.”

The “Notes” column of the spreadsheet usually shows if the exemption is claimed since there are not enough cell towers of the right kind or because the area is heavily forested. Since T-Mobile is currently using the network method for producing coordinates for wireless 911 callers, all of the T-Mobile claimed exemptions are because there are not enough cell towers of the right kind.

Note that the network method for determining a caller’s coordinates is being phased out by the FCC in favor of the more accurate handset (GPS) method. See P.7-11 (Unitary Location Accuracy Standard) in the following 2011 FCC order:

https://apps.fcc.gov/edocs_public/attachmatch/FCC-11-107A1.pdf

Also the following link is a letter from Verizon comparing handset to network location technology and stating at the bottom of p.3 that “[l]ocation measurements become less accurate as more reliance is placed on cell site triangulation.

<https://ecfsapi.fcc.gov/file/6520174263.pdf>.

The exemption for heavily forested areas was adopted before it became common for cell phones to support the satellite constellation operated by Russia (GLONASS) in addition to the satellite constellation operated by the USA (GPS). Even in heavy forest such phones can usually see enough satellites to display coordinates with excellent accuracy. That has been my experience using an iPhone 4s on the west slopes of the Cascade Mountains in old growth forest. If you have a phone that supports GLONASS and some heavy forest handy, then you can conduct your own test. And if you have trouble getting a location fix in heavy forest, then just move a few feet so your phone has a different view of the sky.

Key point: Remember, if you call 911 from any area that appears on the exemption spreadsheet then your call might be handled by a carrier that is not going to produce any phase 2 coordinates for your location. If this happens to you, then it will be up to you to tell the dispatcher where you

are located. If you are not at a street address and cannot adequately describe your location, then you need to be able to give the dispatcher your coordinates and the accuracy value for those coordinates.

--- Tip #5 Details ---

Tip #5: Even if the wireless carrier handling your 911 call does produce coordinates for your location, the coordinates you can obtain from your smartphone are either (1) **more accurate** or (2) **a lot more accurate** than the coordinates produced by the wireless carrier.

First, let's look at the accuracy of coordinates produced by your phone. Most smartphones produced within the last ~5 years can show your coordinates with an accuracy of **about 5 meters**. The main reason for this reasonably good accuracy is that these phones can get data from both the USA satellites (GPS) and the Russian satellites (GLONASS). For example, the iPhone 4s (introduced in 2011) and all subsequent iPhones support both GPS and GLONASS. A great many Android phones also support both GPS and GLONASS since the same location-aware chips from Qualcomm or Broadcom are inside both iPhones and Android phones.

USA satellites + Russian satellites = more data = better location accuracy.

If you do not know what kind of location accuracy your phone produces then you can browse to findmesar.com, tap the "Next format" button to go to the yellow screen and then wait a few seconds until the accuracy value stops getting smaller. Be sure that your location services are turned on. If you have an iPhone then you might need to give permission to your browser to use location services.

Second, now let's compare the accuracy of coordinates produced by a wireless carrier when someone calls 911. If you have not read the "Background" section of this report (see above), now would be a good time to do so.

Keep in mind that using data from fewer satellites (GPS only) to determine your coordinates will produce less accurate results than using data from more satellites (GPS + GLONASS). That is simply how this stuff works.

If the wireless carrier handling your 911 call does produce phase 2 coordinates for your location, then depending on various factors the current FCC regulations require those phase 2 coordinates to have a 90% chance of accurately showing your location to within 50 meters to 300 meters. The regulations also allow a certain amount of these phase 2 coordinates to not comply with any accuracy standard at all. You can read the FCC regulation that is summarized in this paragraph by visiting the following link. Scroll down to section "(h) Phase II accuracy".

<https://www.law.cornell.edu/cfr/text/47/20.18>

The carriers do not usually make information publically available that shows how well or poorly they are doing in meeting the above-stated accuracy requirements for phase 2 coordinates.

The following link is a series of graphs and data from the City of Philadelphia covering 9 months in 2014. Here are two examples for what this data is telling us. If you look at p.15 you will see some Verizon data. Verizon uses the **handset** method to produce phase 2 coordinates. For example, the charts on p.15 show that during September 2014 Verizon produced phase 2 coordinates with an accuracy value of more than 50 meters 11% of the time and more than 150 meters 6.42% of the time.

<https://ecfsapi.fcc.gov/file/60001034274.pdf>

The Philadelphia report also includes data for T-Mobile on p.17. T-Mobile uses the **network** method to produce phase 2 coordinates. The charts on p.17 show that during September 2014 T-Mobile produced phase 2 coordinates with an accuracy value of more than 100 meters 36.87% of the time and more than 300 meters 21.90% of the time.

Note that in 2014 AT&T was also using the **network** method. AT&T has now switched to the more accurate handset method. T-Mobile will be making the same switch over the next few years. Meanwhile, if you have a calling plan with AT&T and you call 911 and your phone cannot see an AT&T tower, then your life-or-death 911 call might be handled by T-Mobile. You should be ready to provide your location to the 911 dispatcher in case T-Mobile cannot.

If anyone has access to other data showing details about the accuracy of phase 2 coordinates produced by wireless carriers, I would enjoy seeing a copy of that data.

Bottom line: Most smartphones in use today support both GPS and GLONASS and will produce coordinates with an accuracy of about 5 meters. In many rural areas certain wireless carriers do not provide any coordinates for your location (i.e. phase 2 coordinates) to the PSAP. Carriers that use the handset method are prohibited by the FCC from relying on GLONASS data and as a result the coordinates they produce are significantly less accurate than coordinates most people can obtain from their phone. Phase 2 coordinates produced via the network method are even less accurate than those produced via the handset method.

--- Tip #6 Details ---

Tip #6: If (1) your phone is not within range of a cell tower and (2) your phone does not have a current copy of the satellite 'assistance' data, then it will likely take 15 to 20 minutes before your phone will produce coordinates for your location.

Terminology:

GPS = USA satellite constellation

A-GPS = Assistance data for USA satellites

GLONASS = Russian satellite constellation

A-GLONASS = Assistance data for Russian satellites

A-GNSS = Assistance data for both USA and Russian satellites

The “assistance” data is the almanac and related information for a satellite constellation. If your phone does not have a current copy of the assistance data for a given satellite constellation, then your phone cannot use data from that constellation to help determine your location.

Typically cell phones receive the assistance data very quickly from the cell towers. However, if you leave your phone’s location services turned off, perhaps to conserve the battery, then your phone will not have a current copy of the assistance data. If you are then someplace where there is no cell service and you turn your phone’s location services on, your phone will not display any coordinates since it does not have a current copy of the assistance data and cannot download that data from the cell towers. Instead, your phone will start to download the assistance data directly from the satellites. But due to the slow transmission rate doing this will take **15 to 20 minutes**. After your phone has a current copy of the assistance data then whatever app you are using to display coordinates will work fine.

Note that once your phone has a current copy of the assistance data it is not clear how long that data is valid before it must be refreshed. Also, the assistance data is likely only valid within a certain area. If you travel outside that area (100 miles? 200 miles?) then your phone will need a current copy of the assistance data for the new area before your phone will produce coordinates.

--- Tip #7 Details ---

Tip #7: No one is monitoring the wireless carriers to see whether or not they are in compliance with the standards and requirements that the FCC has adopted regarding wireless calls to 911 and coordinate data for the caller’s location.

The following FCC regulation requires wireless carriers to maintain records on 911 calls for two years and to provide that data to a PSAP (911 call center) upon request. 47 CFR 20.18(k) provides:

“Provision of live 911 call data for PSAPs.
Notwithstanding other 911 call data collection and reporting requirements in paragraph (I) of this section, CMRS providers must record information on all live 911 calls, including, but not limited to, the positioning source method used to provide a location fix associated with the call. CMRS providers must also record the confidence and uncertainty data that they provide pursuant to paragraphs (j)(1)(3) of this section. This information must be made available to PSAPs upon request, and shall be retained for a period of two years.”

Apparently the FCC is assuming that individual PSAPs would obtain these reports and monitor the wireless carriers for compliance with the regulations adopted by the FCC. Earlier this year I wrote to almost all the PSAPs in Washington State and requested a copy of any such reports that had been obtained. The replies I received showed that none of the PSAPs had requested the wireless carriers in their service area provide the report described above. Several PSAPs indicated they had no intention of asking carriers in their service area for the report. The King

County Sheriff's office (Seattle) replied that they did not know it was even possible to get a report as described above.

If anyone reading this has a copy of any PSAP report as described by the above regulation, I would enjoy seeing a copy.

--- Tip #8 Details ---

Tip #8: If you have an android phone then to get the most accurate coordinates set the location mode (or method) to "GPS only".

Android phones have three different ways to produce coordinates. To find this set of options, open your settings and go the screen where you can turn location services on/off. Either that same screen will display the three location modes (aka methods) or you will need to tap a button to display the three modes.

The names of the three modes vary across different Android models but their definitions are always the same.

1. High accuracy. Your phone determines your location by using everything it can use. This may include GPS, GLONASS (if supported by your phone), cell towers, wi-fi hot spots, blue tooth, and maybe other location aware technology. This choice should really be called **medium accuracy** since these other data sources can degrade the more accurate data from the satellites.
2. **GPS only**. This setting will give you the **most accurate coordinates** since your phone will only use data from the satellites to determine your location. If your phone supports both GPS and GLONASS then your phone will use both satellite constellations to determine your location.
3. Power saving. This setting ignores the GPS in your phone. This setting will give the worst location accuracy.

--- Tip #9 Details ---

Tip #9: If you have an Android phone then there is a free and easy way to find out if your phone can produce more accurate coordinates by using data from both the USA satellites (GPS) and the Russian satellites (GLONASS).

Terminology:

GPS = USA satellites

A-GPS = Assistance data for USA satellites

GLONASS = Russian satellites

A-GLONASS = Assistance data for Russian satellites

A-GNSS = Assistance data for both USA and Russian satellites

The “assistance” data is the almanac and related information for a satellite constellation. If your phone does not have a current copy of the assistance data for a given satellite constellation, then your phone cannot use data from that constellation to help determine your location. Typically cell phones receive the assistance data very quickly from the cell towers.

Here is an easy way to test an Android phone to see if it supports A-GLONASS and GLONASS.

1. Important! Go into the phone’s settings and set the location mode to “GPS only”. This is done via the same screen where you turn location services on/off.
2. Install the free app “GPS Status & Toolbox”.
<https://play.google.com/store/apps/details?id=com.eclipsim.gpsstatus2&hl=en>
3. Visit the website for this app so you know how to read the symbols and colors on the main screen. <https://mobiwia.com/gpsstatus>
4. Open the app and tap the screen to display the status bar for the app.
5. Tap the stacked bars and then tap Manage A-GPS state
6. Tap Reset to delete all satellite assistance data.
7. Let the app find your location.

In well under one minute you will see **green circles** on the screen indicating that the phone has (1) obtained A-GPS data from the cell towers and (2) is using USA satellite data [GPS] to help determine location. If at about the same time the green circles appear you also see **green rectangles** then your phone (1) obtained A-GLONASS data from the cell towers and (2) is using Russian satellite data [GLONASS] to help determine location. In other words, your phone supports both A-GLONASS and GLONASS.

If you do not see green rectangles then let your phone sit for 20 minutes. If you then see green rectangles you know that your phone does not support A-GLONASS but does support GLONASS. Your phone downloaded the A-GLONASS data directly from the Russian satellites and doing so took 15-20 minutes due to the slow transmission rate.

I bought a used Android phone for testing. After running the above test I can report that the Samsung Galaxy S6 Edge+ does support A-GLONASS and GLONASS. The phone obtained A-GPS and A-GLONASS data from the cell towers even though the phone is not currently activated. The S6 I bought is a Verizon phone but it does not have any calling plan or any data plan.

--- Tip #10 Details ---

Tip #10: Phones that have no service plan at all can still (1) call 911 and (2) run an app that displays coordinates and accuracy on the phone’s screen.

Any cell phone with a charged battery can call 911. A deactivated phone can call 911. A phone that has never been activated can call 911. A cell phone with no calling plan can call 911. Note that if the call gets disconnected then you will have to call 911 back since they cannot call you.

If you have a phone with no calling plan you can still get online via wi-fi and put an app on the phone that will display your coordinates and accuracy value.

Although FindMeSAR (described above) is a browser app, it uses a special coding technique (appache) that allows it to work offline. For more information please open the app and tap the “About” button.

--- Tip #11 Details ---

Tip #11: If at all possible, make a voice call to 911 instead of texting.

By making a voice call to 911 you will be able to convey more information more quickly. And the 911 dispatcher will ask for certain information that you would not think to include in a text.

Also when a cell tower handles a voice call various data records are made. If you are lost and neither the wireless carrier nor you can provide accurate coordinates, then those cell tower data records can be analyzed by experts in order to narrow the area where the search team will try to find you.

--- Tip #12 Details ---

Tip #12: If you do text to 911, then the dispatcher is most likely not going to have *any* location data for you unless you include it in your text.

When you send a standard text message to 911 the wireless carrier does not produce any phase 2 coordinates as described elsewhere in this report. In other words, if you do not include your location in your text message the 911 dispatcher has no way to know where to send help.

Also, if you have little-to-no experience in sending or receiving text messages, you should really take the time to learn this basic skill which could save your life. If you have a weak cell connection you might be able to send a text message but not make a voice call. If your local 911 call center does not yet accept text messages then you could always send a text to a friend and ask them to call 911 and relay your message. Of course the text you send to a friend should include your coordinates and accuracy value.

--- Tip #13 Details ---

Tip #13: After you contact 911 take steps to make your phone’s battery last as long as possible.

Here are some easy things you can do to help make your phone’s battery last longer.

1. Turn location services off.
2. Turn down the brightness of your phone's screen.
3. Close all open apps.
4. Turn off Wi-fi, bluetooth, voice controls and anything else that runs in the background.
5. Turn off vibrate.
6. Refrain from posting on social media or doing anything with your phone unless directed to do so by someone involved in sending you help.

For an excellent article on extending the battery life of cell phones you can take a look at:
<http://thewirecutter.com/blog/what-you-should-and-shouldnt-do-to-extend-your-phones-battery-life/>

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