

THE STRELOK'S GUIDE TO HAM RADIO



**THE POLITICALLY INCORECT GUIDE TO HAM
RADIO.**

**APROVED BY IVAN THE REMOVER AND THE
/K/OMMANDOS OF FULLCHAN.**



**FOR THOSE INTERESTED IN HAM RADIO OR
SHTF,
YOU WILL FIND A PLETHORA OF BASIC
INFORMATION NEEDED TO KICKSTART YOUR
NEW HOBBY**

/k/

WARNING: UNTILL SHIT HITS THE FAN, THE FCC REQUIRES THAT YOU OWN A HAM RADIO LICENSE (Technician Class and up) BEFORE OPERATING A HAM BAND RADIO SUCH AS THE BAOFENG UV-5RA. IF YOU GET YOUR ASS HANDED TO YOU BY THE FCC BECAUSE YOU WERE CARELESS AND STARTED BROADCASTING FART NOISES THROUGH YOUR LOCAL REPEATERS, THAT'S ON YOU. JUST REMEMBER, EVERY TIME YOU KEY THE MIC WITHOUT A LICENSE, YOU'RE PLAYING RUSSIAN ROULET WITH A SWAT TEAM AND A 5 FIGURE FINE, SO GET A LICENSE AND HAVE YOUR CALL SIGN MEMORIZED!!!

ALSO, THIS GUIDE IS ONLY TO HELP SPARK YOUR INTEREST IN RADIO TECH AND TO HELP DURING A SHTF SENARIO. MUCH OF WHAT IS SAID HERE IS OPEN TO CORRECTION, AND SHOULD BE TREATED AS SUCH. I EXPECT YOU ALL TO DO YOUR OWN FUCKING RESEARCH BEFORE COMMITTING TO THIS GUIDE. BECAUSE SHTF OR NOT, HAM RADIO IS JUST FUCKING FUN. IF DRAGON DILDO FUCKING FURRIES CAN DO IT, SO CAN YOU!!!

The Strelok's Beginner's Guide to Ham Radio and Antenna Theory.

Okay Strelok. You want to learn how to shoot skip on 10 meters on a sunny day to get the latest QSOs? Well too bad! Here Bomb! Fuck you! Cause Shit just hit the fan and you're out innawoods with a shitty Baofeng and a slavshit SKS!!! Better make the best of what you've got! Hope you memorized your phonetic alphabet and Morse code. You'll need them...

UNDERSTANDING HOW RADIOS WORK

Radios don't run on magic you moron! They rely on an invisible force called, THE ELECTROMAGNETIC SPECTRUM! Or radio for short. Radio waves are a form of radiation. Relax silly, it's not "Hiroshima" radiation. Electromagnetic Radiation is a non-ionizing radiation that doesn't fuck with your DNA. So no grandpa, cell phones don't give you cancer! But if you're close enough to an exposed antenna that has a 1.5 kilowatt transmitter going, you're going to get real toasty real fast. Remember, it's the same shit you warm your breakfast burritos with every morning. So be careful regardless.

HOW RADIO WAVES TRAVEL

Well, chances are you bought yourself a 30 dollar ching chong radio called a Baofeng UV-5R. This is a Frequency Modulated (FM), VHF/UHF (Very High Frequency/Ultra High Frequency), dual band, Hand Transceiver (HT) radio. VHF and UHF are very good for basic "Line of sight" field communications. Line of sight means exactly that. These radios operate best when the users are within eye shot of each other, thus "Line Of Sight". HOWEVER!! There are ways of extending the range of these radios by way of better propagation and MORE radios. Once you push the transmit button (Key the mic) your radio will release an electromagnetic wave called the "carrier wave" and it does just that! It carries your voice in the form of a Frequency Modulated signal, out your antenna. Picture a Sine Wave (you know, that line that goes up and down in waves), that's your carrier, and the distance between the peaks of the waves is the wavelength. If you've ever seen an oscilloscope, you'll know what I'm talking about.

DUAL BAND RADIOS

2 Meters and 70 Centimeters. These are the bands that your Baofeng HT can transmit and receive on. The 2 Meter band is 144 - 148MHz, and 70 Centimeters is 420 - 450MHz.

REPEATERS

Repeaters are essentially two radios: One that receives and one that transmits. They are connected together and once the receiver picks up your signal, the transmitter will re-transmit (or Repeat) your signal on a different frequency. Most if not all repeaters are usually set up on mountain tops, overlooking a town or city so that anyone within range of the repeater may communicate freely.

METHODS OF PROPOGATION

Another way of getting a signal out farther is by either;

1. Climbing a damn tree or mountain to get better Line of Sight Propagation.
2. Finding a clearing in the dense woods or city so that the signal carries farther. (Usually this isn't a problem as VHF/UHF is known for cutting through dense objects and foliage better than High Frequency signals.)
3. Moving your antenna to a horizontal or vertical position. (This is known as Changing the Polarization)
4. Pray to god that the Ionosphere is giving off Sporadic E. (See Below)
5. Increasing Radio Output Power
6. Making a better antenna. (more on this later)

THE IONOSPHERE AND YOU

Did you pay attention in earth science while you were in 5th grade? I hope so. Because there's this thing that surrounds the earth in a nice warm glow that makes radio waves horny as fuck! It's called the Ionosphere. Think of it as a giant trampoline that bounces radio signals around the earth. Now, VHF/UHF signals are special in that they can pass through the Ionosphere and into outer space. In fact, if you have a Technician's license, you can talk to the crew aboard the International Space Station. YOU HEARD RIGHT STRELOK! YOU CAN TALK TO ASTRONAUGHTS!!

Where was I...?

Oh yeah, so Sporadic E! This is a phenomena that happens every so often to the ionosphere. In simple terms, it gets a huge lady boner for VHF signals during this time. She starts to squirt sporadic E all over the place, and you'll be able to get signals WAY beyond Line of Sight. How this works is that when Sporadic E happens, the ionosphere refracts the radio waves coming off your radio and scatters it like a beam of light through a prism to make a gay rainbow of jolly communication. But it only works a short time, as the layer likes to move around. Kind of like a cloud on a windy day.

ANTENNAS: THE EYES AND MOUTH OF YOUR TRANSCEIVER!

One thing about your radio is that in order for this fucker to work, it has to have a decent way to "see" the signals you want it to. Like your eyes, the antenna is designed to "see" a specific part of the Electromagnetic spectrum. Human Eyes are essentially antennas that can see the 390 to 700 Nano Meter band. (Yeah that's right, visible light is electromagnetic radiation. Humans work like radios. Did I just blow your fucking mind or what?) Anyway, the antenna is a very important part of your radio.

Now I know what you're thinking. "But Strelak, I just clipped a mile long piece of wire I found in my garage to my car radio plug and that worked out great!" Well shut your diarrhea spewing sewer, and listen here you little shit... You clip any length of wire to a radio and there's no doubt that it's going to "work". But the big question is: Is it going to work PROPERLY?! You might be receiving well, but once you key the mic, and you get no reply from your comrades, because they couldn't make out heads or tails of what the hell you just said. They're going to be the ones who find your brutally raped and shot up corpse in a wheat field because you had the bright idea of putting a shitty speaker wire antenna on your radio, with no knowledge of how antennas work.

So what was the problem? Your antenna wasn't tuned to the right frequency! Now don't get confused when I say tuned, I don't mean the radio, I mean the antenna. The antenna of your radio has to match the wavelength of the frequency you're using to talk to your fellow comrades. In the case of your hand held transceiver, the antenna it came with is what we hams call a, "Rubber Duck". It's neither the best, nor the worst kind of antenna to use. But if you want better performance out of your hand held, then you better invest in a nice aftermarket ¼ wave or full wave VHF/UHF antenna.

You see, when you have an antenna that's out of tune, your transmitting effectiveness will suffer horribly, unless you either cut or lengthen your antenna to the proper wavelength. Antennas need to be AT LEAST a 1/8 wavelength in size to be moderately effective in the field. Bonus points if you can make a full wavelength antenna. Here is a SUPER EASY mathematical formula that YOU can use to find the proper length of wire IN FEET, for the frequency that you and your buddies will be operating on, so that you can build your own antennas!

Full Wave Antenna Length = 936 / Frequency (in MHz) You Want to Talk On

BURN THIS FUCKER IN YOUR HEAD!!! IT WILL SAVE YOUR LIFE ONE DAY!

If you're from Europe then: Full Wave Antenna in meters = 300 / Frequency (in MHz) You Want to Talk On

I will also include the formulas for making shorter antennas. They are as follows:

½ wave = 468 / frequency

¼ wave = 234 / frequency

1/8 wave = 117 / frequency

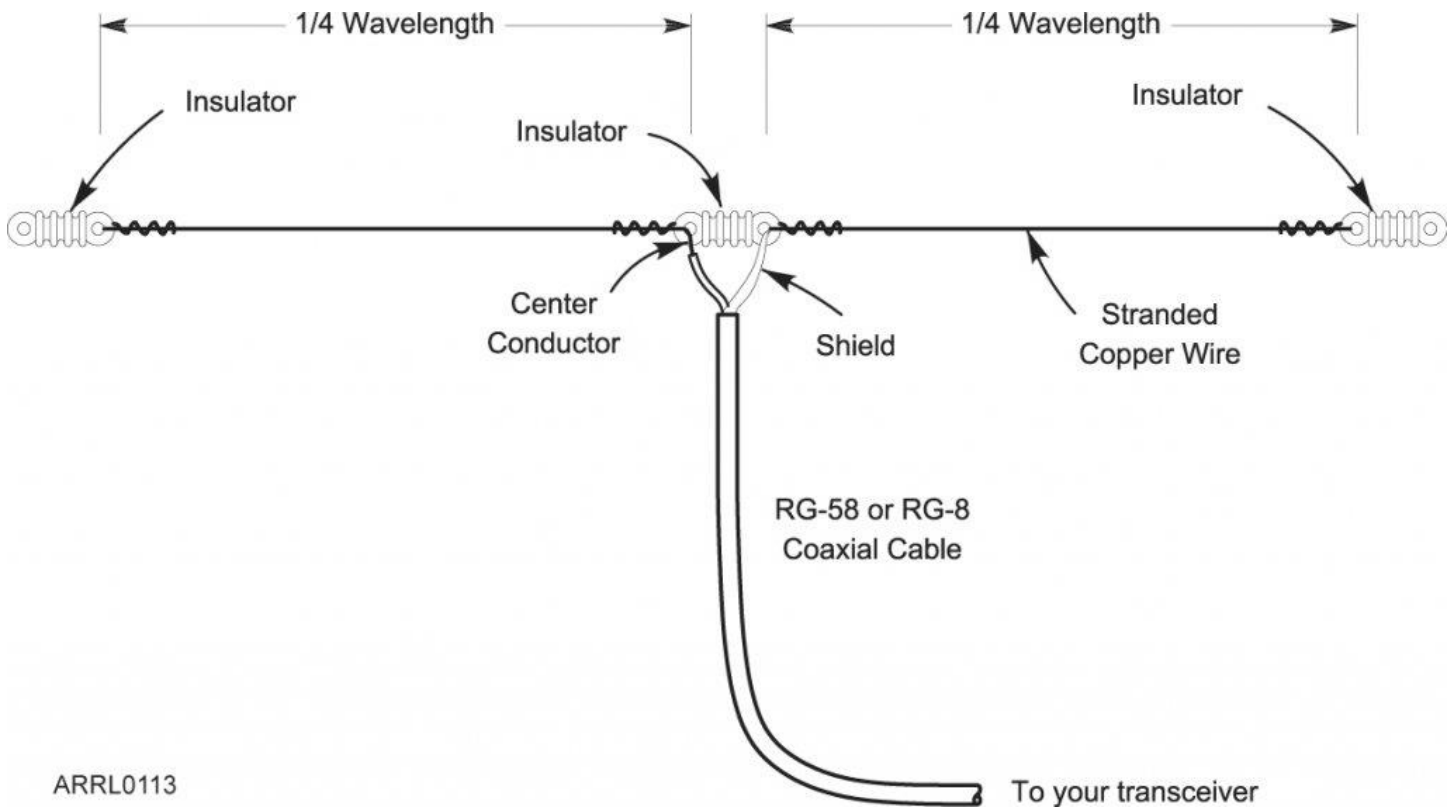
Now, so far I've only shared with you information on building a simple a VERTICAL antenna (See pic below). This is as simple as an antenna can get. But did you know that there are different kinds of antennas that can do different kinds of jobs? It's true! Here are just a few that you can look up how to build on the internet.



(Vertical HF antenna)

DIPOLE

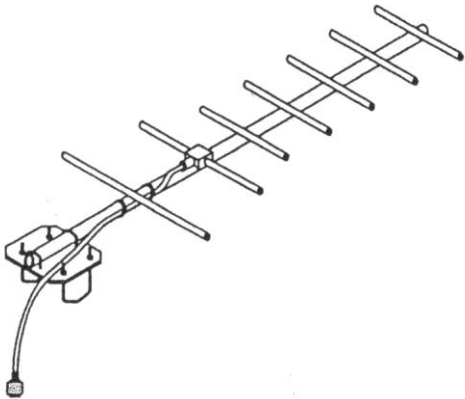
The dipole antenna is quite simply a “balanced” antenna that is probably the most easy to make antenna right next to the Vertical Antenna. Except this one is usually hung up high in the trees, horizontally polarized, so that it can pick up whatever it’s tuned to pick up. It’s uglier than your mom’s cottage cheese ass, but its simplicity makes it one of a kind for quick deployment. To make a Dipole, calculate the length of wire you need, and cut it in half to equal lengths. Then attach one length of wire to the shield of your coax, and the other length to the center wire of the coax.



ARRL0113

YAGI

If you've lived anywhere near a house with a TV, you already know what a Yagi antenna looks like. A Yagi antenna is simply a dipole with reflectors mounted in line on a stick. It was invented by a Japanese man by the name of Yagi Uda, who said one day that his dipole didn't have enough "shit" on it, so he put a bunch of metal rods in ascending order from largest to smallest on the sides of this dipole (because autism) and discovered that by doing that, he just increased the gain of his antenna! You see, the Yagi antenna is known for being kind of the "Sniper Scope" of radio antennas. A "High Gain antenna" means that it both receives and transmits in a narrow beam that can be directed toward where ever you want. In fact, this is what you want to use if you ever want to talk to Cosmonaut Ivan on the ISS. It's also useful for finding faint signals in a specific direction.



J-POLE

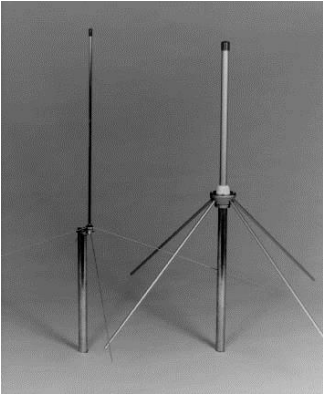
You like J-Pop right? Well just you wait until you've heard J-Pole! (Shut up, I thought it was funny...) To be fair, this design was made by the Germans for their zeppelins. So if it's good for the Luftwaffe, then it's good enough for me! A J-Pole is just a lopsided Dipole that's been vertically polarized. Meaning that the long end is pointed up and so is the short end. So it kind of looks like the letter "J" and provides a little more gain than a typical dipole.

Note: These are best built to $\frac{1}{4}$ wave length to save space.



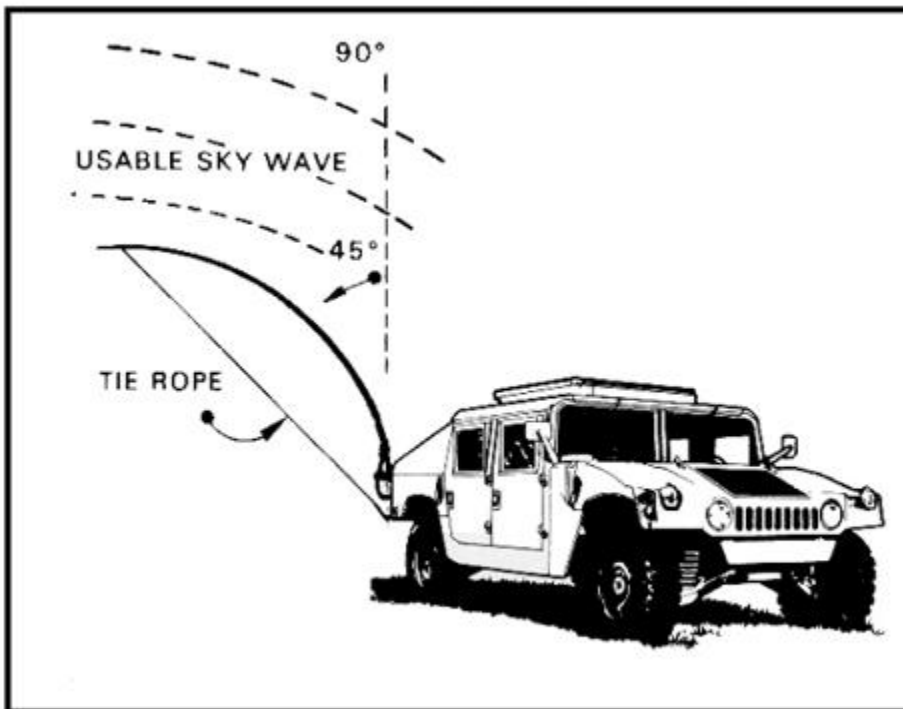
GROUND PLANE

Okay, this is really just a normal vertical antenna that has 4 or so reflectors connected to the ground on the coax. It's a little more involved than a vertical, but it's worth it for a little added gain.



NVIS

I'll get to this antenna when I get into HF propagation and the 80 meter band. Trust me though; it's a fun antenna to build!



Okay that should do it for a basic introduction to antenna theory. I expect you to google around and do more research on these antennas, as each antenna will suit a different need. Now that that's over with, we can finally get into some way more cooler stuff! That's right! I'm talking...

COAX CABLE: NOT JUST THAT UNPLEASANT TV WIRE ANYMORE

Of course, your nice, new, homemade, antenna would be absolutely useless without the proper coax to go with it! Coax is a special kind of cable that has a copper core, surrounded by a foam insulator, and has a metallic braid going the whole length around the cable. I will now explain the basic function of coax and explain the different types, as not all coax is made equal!

Look at the white letters on the rubber jacket of the cable. You will see the letters "RG", followed by an identifying number and another number followed by an Omega symbol. The RG rating is an old military rating that hasn't left the field since the 40's. The number with the horseshoe (Omega) is the impedance (or Ohms). Typically, the lower the impedance the better for radio transmissions, 50 ohms is the ideal number in this case.

Here are the three most common used coax you can find and use with your radio.

RG-6 75 Ohm

This is your typical television coax. It's possible for use in ham radio, but the impedance is too high. That means most of the radio energy is going to be converted into heat through the wire and will be wasted and might actually damage your transceiver. Use only if nothing else is available.

RG-58 50 Ohm

This is what you should be using for your radio. So use it faggot!

RG-8 50 Ohm

This is the fancy shit! It has less loss per foot, making it best suited for receiving and transmitting with higher quality base station radios. And it's thicker than RG-58, so take that into consideration.

99 LUFT BALUNs

If you want to use one of those balanced antennas such as the dipole, you'll need something that will convert the "balanced signal" from the antenna to an "unbalanced signal" for use with your coax*. You see, a balanced line has two signals going where ground is not needed. Whereas with a coax cable; the signals going in and out are unbalanced and need a ground connected to the braid. While it is possible to just run the core of your coax in one direction and the braid of your coax in another and call it a dipole, you certainly can! But to get the most out of your antenna, you will need a balun to help ease the signal into coax, so it's easier for the radio to accept the signal.

*Note: A balun is totally optional, as this is mainly for HF radios. But they're nice to have for VHF/UHF as well.

OPERATING MODES: THE MANY LAUNGUAGES OF THE HAM

Okay. So after talking about your hand set and your antenna, now we can talk about how your radio can communicate with MORE than just your voice. But for the sake of starting simple, let's talk about Voice Modes!

FM

As you may or may not know, when you key the mic on your radio, you start transmitting a "Carrier Wave". Simply put, the carrier wave does exactly what the name implies. It carries your voice on an electromagnetic wave. With Frequency Modulation, your voice is converted into a varying frequency inside the wave when transmitted out by your transceiver.

AM

AM is much simpler compared to FM. AM is Amplitude Modulation. In this mode, you're literally imprinting your voice onto the carrier wave. Not much else to say really, other than it takes up less bandwidth than FM.

SIDEBAND

Okay, now we're going to have some fun! Sideband is like AM's dirty little secret. Yeah you thought AM was a plain and simple girl, well buy her a drink and watch her go wild! Because I would like you to meet AM's two sexy sisters; LSB and USB (Lower Side Band and Upper Side Band).

Think of them as a group of sub frequencies that are next to the primary frequency you're tuned to and are almost entirely their own thing. When you transmit on your radio, the carrier signal is radiated and if you observe the carrier on a spectrum analyzer, you'll see two lobes coming off the side of your primary signal. Those are the sidebands. A neat thing about sidebands is that they don't use nearly as much bandwidth as AM or FM, so not only are you going to have more room for communication, but you can also transmit farther without overdoing the power of your radio. HOWEVER! If you use a sideband frequency and some jackass transmits on AM near your sideband Frequency, you're going to get jammed up worse than an M16 in Vietnam.

Okay, that just about does it for voice modes. Now on to the Computer stuff!

DIGITAL MODES: HEY KID, I'M A COMPUTER! STOP ALL THE DOWNLOADING!!!

Okay, this has very little to do with "Innawoodsing" as you need a computer to operate on these modes. However, if the happenings happen, and somehow you end up on the /k/ARRIER or one of the well regulated militias that have a source of power to operate a functional base, then it's a good idea to know how to operate digital radio modes. They have an advantage over operating voice, by sending large amounts of data at a faster rate than the human voice will allow.

There's actually a radio program that comes on shortwave called VOA Radiogram. They broadcast world news in PSK with reports and pictures to go with them. Google them and find out more! It's really fun to decode, and all you need is

a shortwave radio and a "male to male" audio cable to connect the headphone out on the radio to your line in on your computer. To get started with digital packet radio, download a piece of software called; "FLDIGI".

<http://www.w1hkj.com/Fldigi.html>

It has almost everything you need for operating the most common digital packet radio modes.

CW

Or Continuous Wave is a mode for transmitting Morse code. It's known for having the absolute least amount of bandwidth for transmission. Because of this, it doesn't take much to get a signal out long distance with much power. Keep It Simple Stupid seems to be the best way for me to describe Morse code.

RTTY

Or Radio Teletype. Yes, THAT Teletype. Yes, from the 60's show Dragnet. No, it's not obsolete. Yes, it's still useful even today.

PSK31

Or Phase Shift Keying, 31 bps. Think of it as RTTY's more stable brother. It has a way of error correction upon transmission. So if the person receiving is having a sketchy time picking up your signal, he'll still be able to make out most of the transmission.

HELLSHREIBER

One of my favorites, because it reminds me of an Enigma machine for some reason. While mostly novelty, think of it as RTTY but with ticker tape instead.

AX.25

Okay, remember how you would sit in your living room or basement, and stare into your TV screen with your Atari ST or your Commodore Amiga, and just tuck away at your keyboard, hooked into your parents phone line with an 11 baud modem hanging off the side of your PC, plugged into Fido Net, and logging into the local BBS servers, playing on DOORS and MUDS and reading old 2600 magazine articles the SysOp sends you? That's the feeling I get every time I search for AX.25 TNCs. They're an alternative to the internet in a weird way. MUCH slower than a 56k modem, so don't get all excited over the alternative.

APRS

Okay, now this is where things get particularly OPERATOR! APRS or Automatic Packet Reporting System is a TACTICAL real time information exchange system, which was developed by a Navy Academy Engineer that wanted to share his glorious GPS reporting system with the world! Long story short, it's a mode where your position on a GPS is transmitted to other APRS ready radios, and everyone can keep an eye on each other's position in real time. Pretty damn cool right?

SSTV

Slow Scan Television! This is the common method of sending pictures of the happy merchant and dank Spurdo may-mays through the airwaves. It's also how we get those pictures of deep space from Ivan on the ISS!

This concludes the most commonly used digital radio modes. I expect you to be a good boy and study up on all the other operating modes that are out there. They all have different uses for different operating environments.

TERMINAL NODE CONTROLLERS: THE INTERNET OF HAM RADIO

Okay, so you're at the /k/ompond and you're picking up some strange sounds on you rig. Sounds like... Data... You have your laptop connected to the radio but it's not translating what's coming through the speaker. Strange... It sounds like the data is traveling too fast for the computer to pick up on. What device could these signal operators be using to communicate with?!! OH! I KNOW!!! TNC!

A TNC (Terminal Node Controller) is a hardware modem that interfaces with your radio and computer to decode large amounts of data and to help interface two computers from great distance. AX.25 is the typical operating mode, and requires a new bit of software called WinLink in order to work. It's mostly an email client, reminiscent of BBS and Telnet services of old. A lot can be done with a TNC. So it's really handy to have one in your shack.

<http://www.tnc-x.com/>

This is a nice cheap beginner's TNC that you can use to get your foot in the door for high speed radio data. And before I forget, this is the software you use to interface with it.

<http://www.winlink.org/>

CB RADIO: /b/ BEFORE THE INTERNET

So we've talked about VHF and UHF for the most part. Now we're going to go deeper into the radio world. So deep, we're going to grow feathered hair and watch "Smokey and the Bandit" reruns, while wearing bell bottoms and sitting in our avocado colored couch, in our house with wood paneling.

YEE-HA MOTHER FUCKER!!! I'M TAKING CITIZENS BAND!!!

No doubt about it, CB is a fucking TRAIN WRECK when it comes to using it for anything other than shit talking a bunch of truckers on the freeway. This is mainly because CB doesn't require a license to use, thus more retards are shouting at each other from hundreds if not thousands of miles away. But on some days, you can slide past the entire peanut gallery and have a meaningful conversation on your CB.

As a ham, I'm obligated to not ignore the 11 meter band and still acknowledge it as a part of the spectrum, which I do. Unfortunately, CB operators have a vernacular all their own. They all sound like southern hillbillies and name all their equipment after household items. Something we hams don't really do too often. We like to speak like normal human beings when we can, which is why I'm more mic shy on CB than I am on any of the ham bands.

But don't let that stop you from getting a CB radio yourself. It's good practice if you don't already have your ham license. Just don't bring any of the lingo you pick up from the retards on CB to the ham bands. Some of us would rather you say "amplifier" rather than "kicker" on the airwaves, keeps things simple and less dramatic.

Anyway, on to the meat of the matter!

A CB is most useful in your car than as a home base station, so when installing a CB (or any radio for that matter) into your car, be sure to ground it to either the engine block or the ground terminal on your car battery. That's the beauty of ham and CB radios. All it takes to run them in an emergency are any 12 volt, deep cycle, car batteries that you have available. A great way to keep them topped off is by keeping your car running and using it like a power generator. However, running your CB/ham radio in your car set to accessory mode will drain your car battery faster than you can say "Cheeki Breeki" depending on how much you transmit or use the squelch.

Now let's talk about what you can and can't do on a CB during peace time.

1. No digital modes. (CB only)
2. No broadcasting music (this goes for CB and ham).
3. No encryption (this goes for CB and ham).
4. No high power linear amplifiers of any kind. (CB only)
5. You can use any alias of your choosing. (CB only)
6. The highest point of your home antenna must not be more than 20 feet. (CB only)
7. But for some fucking reason, there is no limit as to how high the antenna on your car or hand held CB can be.
8. You must always give emergency transmissions priority (this goes for CB and ham).

Okay, now that that's covered. Ignore each and every one of those rules minus the last one, because that's what everyone else does. Truth be told, the FCC stopped giving a shit after 1975, and CB has become the containment band for all the "radio enthusiasts" that failed their Technician's test and have nothing better to do other than bitch and moan about it on their own little slice of the band (Australians especially). They like to say us hams are goody two-shoe, faggy, want to be engineers, who suck the FCC's fat cock.

To that I say... it's true, but at least I can use a 1.5 Kw linear amp without getting V& faggot! Get good scrub!!!

That isn't to say that CB is useless. CB operates on the 11 meter band, which qualifies for HF propagation.

HIGH FREQUENCY PROPAGATION: YOUR GOLDEN TICKET AROUND THE WORLD

HF or High Frequency is your go to method for “Around the World” communication. Remember way back when I was talking about the IONOSPHERE and how VHF/UHF can cut right through that shit? Well now we’re going full ionosphere! Don’t worry, I’ll start out simple and work my way to more complicated matters later. First let’s just establish the HF range.

HF is any frequency from 1.8 – 30.0 Megahertz.

Just because you have a Technician’s license, doesn’t mean that you’re just limited to the 2 meter and 70 centimeter bands (VHF/UHF). As a tech you’re allowed to operate CW on almost all the HF bands, but **ONLY CW**. No voice or sideband, until you get your General License. In this part, I’m going to go through all the HF bands and tell you their pros and cons for certain operations. Some bands are more useful for certain things than others.

10 METERS: CB WITHOUT THE RETARDS

28.0 - 29.7 MHz

This band is right next to the CB band, but it’s reserved for hams only. Strelaks with Technicians licenses will like this band, because it’s the only HF band we’re allowed to use voice on until we get our General License. Like CB, it’s a fairly short range propagation method (ground wave), but don’t be surprised if you pick up people from 1,000 miles away from you. 10 Meters is reliant on sunspots for long distance communications. So times during the day of high sunspot activity, such as early sunrise, or just before sunset, are the best times to use the 10 meter band for long range activity. As a Technician, you are allowed to operate on only **28 -28.5 MHz**

28.0 – 28.3 is reserved for digital modes, while 28.3 – 28.5 is reserved for USB voice. Remember that so as not to crowd the band.

12 METERS: 10 METERS WITHOUT THE PEOPLE

24.89 – 24.99 MHz

Technicians aren’t allowed on this band, but this is a SHTF guide, so fuck that noise.

12 meters is right underneath the CB band, so as you can expect, there’s no real solid difference between 12, 11, and 10 meters. Remember, that these bands operate best during sunspot activity so expect ground wave distance during the rest of the day. At most, 40 or so mile ranges depending on power during the day.

15 METERS: 12 METER’S GIMP SLAVE

21.0 – 21.45 MHz

Technicians can use CW on this band from 21.0 – 21.2 MHz

In general, this is a daytime band, that works really well with Sporadic E (remember that kinky bitch?) during the day.

17 METERS: ALWAYS TRYING TO GET 20 METERS TO NOTICE HER

18.068–18.168 MHz

Technicians aren't allowed to touch her, but it's not because she doesn't like you or anything...

17 meters is extremely sensitive to solar activity (both high and low), so keep an eye on her to see if she's really warming up to you or not. B... Baka!!!

20 METERS: 17 METER'S SEMPAI AND STAR TRACK RUNNER

14.0–14.35 MHz

Technicians are too casual to be around him though. He likes to hang with the cool kids (Generals and Extras).

20 meters is like the popular kid, when it comes to long range communications. He's right there, ready, willing, and able to deliver your message around the world, both day and night. PSK31 is his specialty at 14.071MHz, right there next to SSTV around 14.230MHz. He truly is the flagship that carries all to the Promised Land. No wonder 17 meters loves him so much.

30 METERS: THE SJW BAND WITH DADDY ISSUES

10.1–10.15 MHz

Technicians aren't her thing. She prefers her own cluster fuck of a clique.

30 meters is like that fat feminist in college that never talked to anybody but her gender studies professor. Voice modes are strictly forbidden and you're only supposed to use CW and data modes with 200 watts peak power only. She's still good for long distance communications, but just be mindful of all the baggage that comes with her. (she also likes to sleep with non-hams... Just saying...)

40 METERS: YOUR BEST FRIEND THAT BUYS YOU LUNCH EVERY FRIDAY

7.0–7.3 MHz

Unlike 12, 17, 20, and 30 meters; 40 meters will let Technicians drive his car for a beer run, and not complain about the vomit smell you left on the seats.

Techs can operate CW on 7.025 – 7.125MHz. 40 meters was a shortwave broadcasting band until a bunch of stations decided to shut down and the FCC decided to throw the band to the hams (lucky us, we always get the scraps). Anyway, during the day this band shines as a medium range (900 Mile) band, but at night expect greater performance. He's just a cool and dependable guy you can operate with all year round, but be careful though... There are broadcasters that still use some of the frequencies, so be careful not to crowd them.

60 METERS: THAT NEW AUTISTIC KID YOU SEE PICKING HIS NOSE ON THE PLAYGROUND

5.33 – 5.403 MHz

Okay, so this band is a little different. It just became available to hams not too long ago, and people are still trying to figure out its qualities. Don't touch him though, you have to be General or higher to do that.

If you live in Alaska, that's where the emergency frequency for the Alaskan troopers is. Which is 5.1675MHz. You're not allowed to exceed 100 watts of power, and you're only supposed to use USB, Data, and CW. But in an emergency, you do whatever it takes to get a signal out.

80 METERS: THE EDGY WEIRDO THAT LIKES TO ONLY COME OUT AT NIGHT

3.5-4 MHz

Techs can use CW on 3.525 – 3.6 MHz

80 meters works best at night and even better at night in the winter. That's what's weird about the band, it hates sunlight in general, so he just sits in his room and cuts himself and posts pictures of it on Tumblr. CRAAAWWWWLLING
IIIIIIINNNN MY SKIIIIINNNN!!!!

160 METERS: THAT OLD FART THAT WON'T SHUT THE FUCK UP

1.8-2 MHz

Technicians aren't allowed to touch him because he might whack you on the head and call you a hooligan.

160 meters is what's known as the "Gentleman's Band". Because if you've been doing your homework, you'll know that the lower the frequency, the larger the antenna. Can you imagine a 160 meter long antenna in your yard? No? Good! Make a $\frac{1}{4}$ wave like everyone else does. Anyway, this band has no real special quality that I know of. It's mostly used by hams that want a real challenge for building the right kind of antenna for the band. Thus, rarely anybody goes on it and is reserved for those who can support such a mighty antenna, so you're more likely to run into a kind and knowledgeable gentleman on the band.

BONUS: NVIS ANTENNA

Remember when I told you I would talk about the NVIS antenna when we got to HF? Well here we are!!!

NVIS or Near Vertical Incidence Sky-wave is a method of propagation that was discovered by soldiers in WWII. What would happen is, a soldier would bend the long whip antenna of their jeeps to keep it from being exposed, and once that was done, they would find that transmitting with the antenna bent, would improve their radio signal in mountainous areas. How this works, is that with the antenna bent, it's blasting RF energy into space and the ionosphere would pull it back down and over an obstacle and scatter the signal over your intended receiver. Kind of like how a mortar works, the higher you aim the tube the higher the arch of the shell, thus the shorter the distance the shell will

travel. This has been found to work great with 60, 40, and 30 meters. So if you're in the mountains, and you need to get a signal over a mountain, NVIS ALL THE WAY BABY!!!

This concludes the absolute **BASIC NESESTIES** on ham radio. The rest of the guide will now focus on some things worth memorizing and applying to the hobby in general. Remember, this guide is not only for aspiring hobbyists but is also geared towards SHTF (Shit Hit the Fan) situations as well. If it's a matter of life and death, ham radio can be your savior in your time of need. The more people know about this method of communication the better. Ham radio is slowly becoming one of those forgotten hobbies that many associate with old men in their late 60's. This simply isn't so. Ham radio is open to all people of all ages. If you're old enough to speak, you're old enough to get a license. Ours is a hobby of communication and international good will. We strive to learn all we can about how the electromagnetic spectrum can benefit us in times of need or peace. It's a hobby that sparks interest in electronics and encourages you to build your own radios, as well as modify already existing ones.

One more thing: Don't let some hipster douche-bag tell you that it's an outdated medium that's useless.

"Herp-a-Durr, why would you need a radio to talk to people when we have cellphones?"

Tell that faggot that his iPad uses the 5cm band for streaming his ukulele lessons and his iPhone uses the 15cm band for sending pictures of his food to Instagram. GOOD LUCK CONNECTING TO A CELLTOWER IN AN EMERGENCY, FAGGOT!!! AT LEAST I CAN TALK TO OTHERS IN SIMPLEX*!!!

Anyway, thanks for reading my guide. If you're interested in getting a license of your own, here are a few guides that I used to study for my license.

<http://www.kb6nu.com/study-guides/>

These are the guides I used to get my Technician's License and above. They're super easy to understand and the writer does a good job of cutting out most of the fluff that is associated with electronics. I got my license on the first try, so if my autistic ass can do it, so can you.

<http://www.arrl.org/>

The ARRL is the American Radio Relay League. Think of them as the elders of the ham gods. They're the ones who do most of the talking with the FCC, so once you get your license it's a good idea to make an account with them. Explore the website and use the resources they give you. They also offer insurance for your equipment. If you don't live in America; every country that allows ham radio use has an equivalent Radio League, so look around the web.

<http://www.qrz.com/index.html>

QRZ is the white pages of ham radio operators. Just enter a call sign in the search and see who you're talking to. You don't need a license to sign up for them, and they provide a neat forum for asking questions and giving answers.

<http://www.repeaterbook.com/>

Use Repeater book to look for repeaters in your area.

*Talking to other radios without the use of a repeater.

Okay, now onto the reference sheets!!!

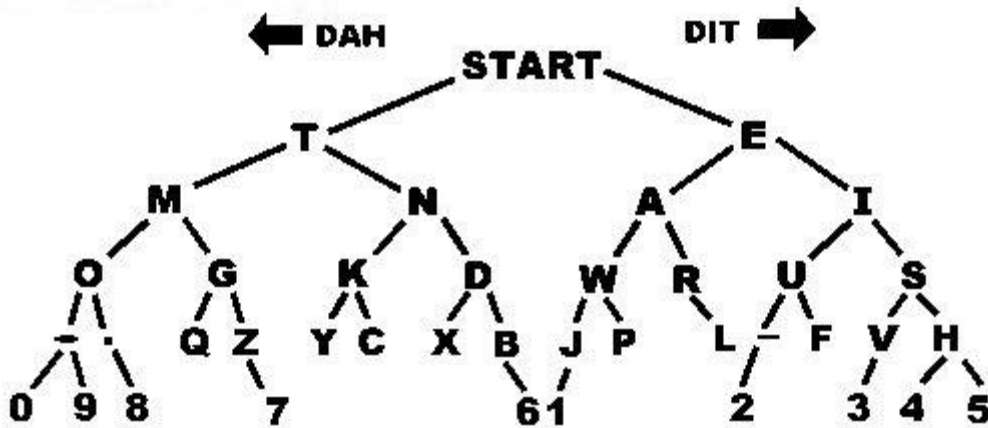
THE PHONETIC ALPHABET

The phonetic alphabet has a purpose and a good one at that. The reason we use phonetics in radio is because when you run into interference, it's much easier to hear a multi syllable word than a single one through static. So memorize the table below and use it every time you need to spell something out over the radio (e.g. your call sign)

<i>CHARACTER</i>	<i>MORSE CODE</i>	<i>TELEPHONY</i>	<i>PHONIC (PRONUNCIATION)</i>
A	• —	Alfa	(AL-FAH)
B	— •••	Bravo	(BRAH-VOH)
C	— • — •	Charlie	(CHAR-LEE) or (SHAR-LEE)
D	— ••	Delta	(DELL-TAH)
E	•	Echo	(ECK-OH)
F	•• — •	Foxtrot	(FOKS-TROT)
G	— — •	Golf	(GOLF)
H	••••	Hotel	(HOH-TEL)
I	••	India	(IN-DEE-AH)
J	• — — —	Juliett	(JEW-LEE-ETT)
K	— • —	Kilo	(KEY-LOH)
L	• — ••	Lima	(LEE-MAH)
M	— —	Mike	(MIKE)
N	— •	November	(NO-VEM-BER)
O	— — —	Oscar	(OSS-CAH)
P	• — — •	Papa	(PAH-PAH)
Q	— — • —	Quebec	(KEH-BECK)
R	• — •	Romeo	(ROW-ME-OH)
S	•••	Sierra	(SEE-AIR-RAH)
T	—	Tango	(TANG-GO)
U	•• —	Uniform	(YOU-NEE-FORM) or (OO-NEE-FORM)
V	••• —	Victor	(VIK-TAH)
W	• — —	Whiskey	(WISS-KEY)
X	— •• —	Xray	(ECKS-RAY)
Y	— • — —	Yankee	(YANG-KEY)
Z	— — ••	Zulu	(ZOO-LOO)
1	• — — — —	One	(WUN)
2	•• — — —	Two	(TOO)
3	••• — —	Three	(TREE)
4	•••• —	Four	(FOW-ER)
5	•••••	Five	(FIFE)
6	— ••••	Six	(SIX)
7	— — •••	Seven	(SEV-EN)
8	— — — ••	Eight	(AIT)
9	— — — — •	Nine	(NIN-ER)
0	— — — — —	Zero	(ZEE-RO)

MORSE CODE

This is optional as Morse code has been pulled out of the testing requirements in order to bring more people into the ham radio hobby so be thankful you don't have to pass a test on this shit. However, it's still a lifesaver to know. Morse code is useful for not just radio, but anything that can be used to create sound to communicate. Think about it; you're in the battle field and you get stabbed in the throat. After shooting that asshole that did that to you, you need to send a message to get help. EUREKA!!! YOU STUDIED MORSE CODE!!! Get to tappin nigga! Here's a simple guide to help you get started in listening. I won't lie, Morse code is tedious to learn, but it pays off in the end.



I also recommend a smart phone app to help you learn to key Morse, called "Morse CT". **You don't want to become dependent on the graph above or else you'll plateau at around 10 words per minute.**

Download a trainer app of some sort and practice listening and tapping. Practice makes perfect!

Also, if you're on a computer there is an online trainer you can use that has a leader board so you can compete for speed.

The link is: <http://www.lcwo.net/>

FCC BAND PLANS

When you get your license, you're going to be all excited to switch on your radio, tune to the most populated frequency, and start spewing your knowledge all over the place! At least that's what happened with me. But don't get too carried away, because you'll want to exercise courtesy over the air

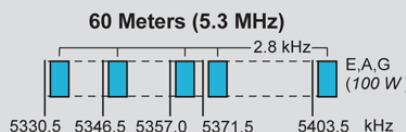
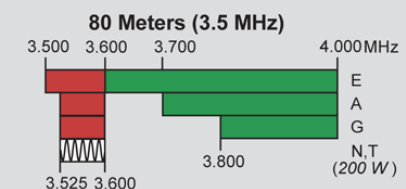
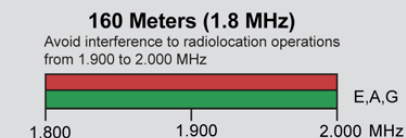
US Amateur Radio Bands

US AMATEUR POWER LIMITS

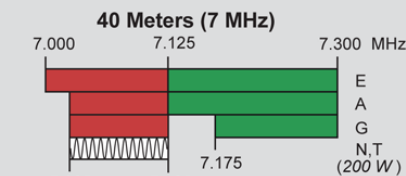
FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

Effective Date
March 5, 2012

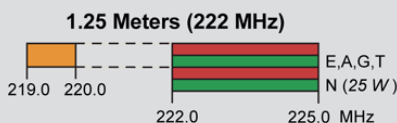
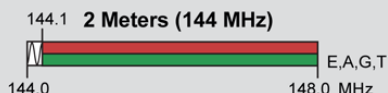
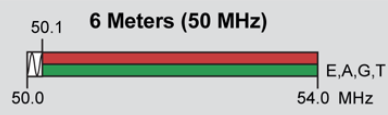
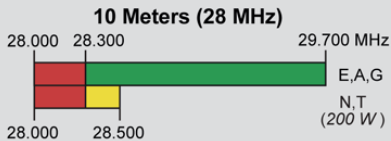
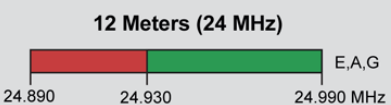
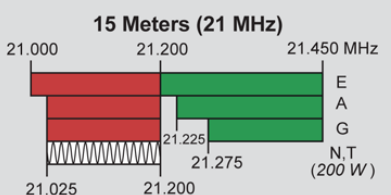
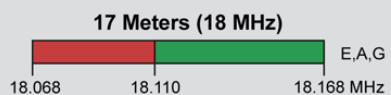
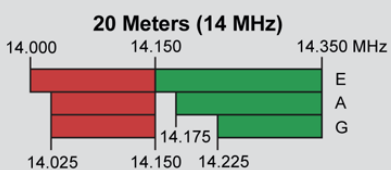
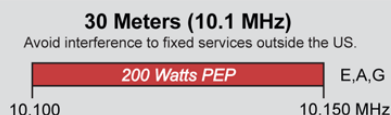
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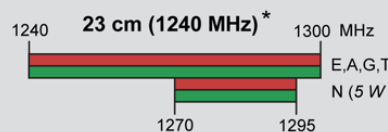
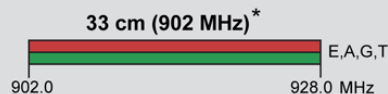
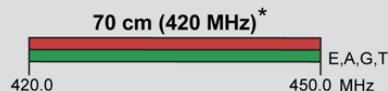
General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated output of 100 W PEP. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III as defined by the FCC Report and Order of November 18, 2011. USB is limited to 2.8 kHz centered on 5332, 5348, 5358.5, 5373 and 5405 kHz. CW and digital emissions must be centered 1.5 kHz above the channel frequencies indicated above. Only one signal at a time is permitted on any channel.



Phone and Image modes are permitted between 7.075 and 7.100 MHz for FCC licensed stations in ITU Regions 1 and 3 and by FCC licensed stations in ITU Region 2 West of 130 degrees West longitude or South of 20 degrees North latitude. See Sections 97.305(c) and 97.307(f)(11). Novice and Technician licensees outside ITU Region 2 may use CW only between 7.025 and 7.075 MHz and between 7.100 and 7.125 MHz. 7.200 to 7.300 MHz is not available outside ITU Region 2. See Section 97.301(e). These exemptions do not apply to stations in the continental US.



*Geographical and power restrictions may apply to all bands above 420 MHz. See *The ARRL Operating Manual* for information about your area.



All licensees except Novices are authorized all modes on the following frequencies:

2300-2310 MHz	10.0-10.5 GHz *	122.25-123.0 GHz
2390-2450 MHz	24.0-24.25 GHz	134-141 GHz
3300-3500 MHz	47.0-47.2 GHz	241-250 GHz
5650-5925 MHz	76.0-81.0 GHz	All above 275 GHz

* No pulse emissions

KEY

Note:
CW operation is permitted throughout all amateur bands.

MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz. Test transmissions are authorized above 51 MHz, except for 219-220 MHz

- = RTTY and data
- = phone and image
- = CW only
- = SSB phone
- = USB phone, CW, RTTY, and data
- = Fixed digital message forwarding systems only

- E = Amateur Extra
- A = Advanced
- G = General
- T = Technician
- N = Novice

See ARRLWeb at www.arrl.org for detailed band plans.

ARRL We're At Your Service

ARRL Headquarters:
860-594-0200 (Fax 860-594-0259)
email: hq@arrl.org

Publication Orders:
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email: membership@arrl.org

Getting Started in Amateur Radio:
Toll-Free 1-800-326-3942 (860-594-0355)
email: newham@arrl.org

Exams: 860-594-0300 email: vec@arrl.org

waves, or else you could be labeled a bad operator and nobody will want to talk with you.

So stick with the BAND PLAN STUPID!!! This chart shows what's typically reserved for operating on certain bands. You'll want to follow it as best you can.

ENDING NOTICE:

This guide was created with the intent to spark interest into the ham radio hobby and to help others to understand basic radio theory for a

SHTF situation. If anyone should be in a bad situation that would require getting your voice out on the radio, I hope that this guide will help you and offer various options to being heard on the spectrum. A

lot of what is said in this guide is cut short, so I place the burden of studying up to the reader. Communication is a valuable tool to have in either a disaster or a battlefield. So with that, I would like to say thank you for reading my guide and thank you to all the /k/ommandos that supported me in the making of this guide.

This guide is to be distributed freely and copies are encouraged.

Spread the knowledge!