Stanislaus Amateur Radio Association

Tech Training

December 8, 2018

*Today's Topics

- Stanislaus County Amateur Radio Clubs
- Other Local Amateur Radio Clubs
- VHF and UFH Repeater Usage, Etiquette & Tips - What You Need to Know
  - How a Repeater Works
  - Starting a QSO
  - Some Q-codes
  - Joining a QSO in Progress
  - *Roundtables and "Turning it Over"*
  - *ID's and Who's Who?*
  - *Demonstrations And Signal Reports*
  - *Language*
  - *Power*
  - Repeater /Frequency Web Sites
  - Examples of HT Frequency setup
  - Example of Band Plans
- The Radio Amateur's Code
- Miscellaneous Information

*Stanislaus County Amateur Radio Clubs

Stanislaus Amateur Radio Association (S.A.R.A.)

SARA is a volunteer club dedicated to furthering the advancements of Amateur Radio. Our purpose is the recognition and enhancement of the value of the Amateur Radio service to the public, particularly with respect to providing emergency communications. SARA is incorporated in the State of California incorporating in 1976.

SARA provides a public service to our communities by providing trained amateur radio operators for communications on several walk-a-thons, bicycle races and when needed, emergency communications in association with the Stanislaus Amateur Radio Emergency service. SARA is officially affiliated with the American Radio Relay League ARRL (*Amateur Radio Relay League*), Stanislaus County and the City of Modesto in California (U.S.A), ARES and the Northern Amateur Relay Council of California NARCC (*North American Repeater Coordinating Council*). SARA holds an FCC club station license, WD6EJF, which identifies the repeaters and digipeater. You need not be a licensed amateur to be a SARA club member.

Stanislaus Amateur Radio Association (S.A.R.A.)

For additional information contact SARA club president Jim (Wally) Walsh KK6CPN email: KK6CPN@yahoo.com

S.A.R.A. By-Laws

2018 Officers

President: Jim (Wally) Walsh KK6CPN
Vice President: Jim Ridenour W6IJR
Secretary: Robin Axton KG6ZYQ
Treasurer: Paul Owen W6UHF
Sergeant at Arms: Mark Price N6ARP
Board Member: Rick Lopez KF6TEZ
Board Member: Tom Brawley K6KQR
Board Member: Vicki Peitz KJ6RCV

* Stanislaus Amateur Radio Club (SARA) Nets

Traffic and Information Net
Monday through Friday starting at 7:00 AM on the S.A.R.A. 2 meter repeater 145.390 MHz (PL 136.5Hz) (Minus)
Traffic updates along with the weather conditions, Hosted most mornings by Mark WB6BJN.

S.A.R.A Weekly Net
Every first, second and fourth Tuesday at 7:30 PM on our club 2 meter repeater 145.390 MHz (PL 136.5Hz) (Minus).
Covers the latest information on club activities.

Stanislaus County ARES® Weekly Net
Every Wednesday at 7:30 PM on our club 2 meter repeater 145.390 MHz (PL 136.5Hz) (Minus).
Training and information for those interested in amateur radio emergency communications. The only requirements are being a licensed amateur radio operator and have an interest in emergency operations. Visitors to the net are always welcome to check in, after the membership roll-call.

* Stanislaus Amateur Radio Club (SARA) Nets

YL and XYL Weekly Net
Every Monday at 7:00 PM on our club 2 meter repeater 145.390 MHz (PL 136.5Hz) (Minus).
Ladies net only for sharing and friendship.

Space Net
Friday nights at 8:00 PM on our club 2 meter repeater 145.390 MHz (PL 136.5Hz) (minus).
Those interested in the very latest news and information related to air and space are invited to join us on SARA Space Net. This is an open net held on SARA's 145.390 repeater and can be reached throughout the Central Valley of California. Topics include the latest news in the world's manned and unmanned space programs, aeronautics, astronomy events and new discoveries. We also cover Amateur Astronomy, Model, Mid and High Powered Rocketry, as well as Amateur Radio activities related to space such as monitoring meteor activity, contacting the International Space Station, using Amateur Radio Satellites, EME (Moonbounce) and how to use Orbital Plotting software.

SARA Web Page = http://www.saraclub.net
ARES Web Page = http://stanares.org

* Turlock Amateur Radio Club (TARC) Nets

Morning Commuter Net/Beer and Pizza Net
6:30 AM Monday through Friday
147.03 Plus (100Hz)
or
444.7 Plus (94.8Hz)

Weekly 2 Meter Net
7:00 PM Tuesdays
147.03+ (100Hz)
or
444.7 Plus (94.8Hz)
Except the second Tuesday of the month

Merced County ARES Net
8:00 PM Mondays
147.03 Plus (100Hz) or 444.7 Plus (94.8Hz)

DMR Round Table Net
7:00 PM Mondays
444.7875 Plus CC1 – TarcTalk (310658), W6BXN Mt. Bullion
144.9375 Plus CC1 – TarcTalk (310658), W6BXN Mt. Bullion
440.1875 Plus CC1 – TarcTalk (310658), W6BXN Mt. OSO
444.3500 Plus CC2 – TarcTalk (310658), W6BXN City of Turlock
Linked to W6BXN DMR Repeaters

Other Local Radio Clubs

*Local Radio Clubs

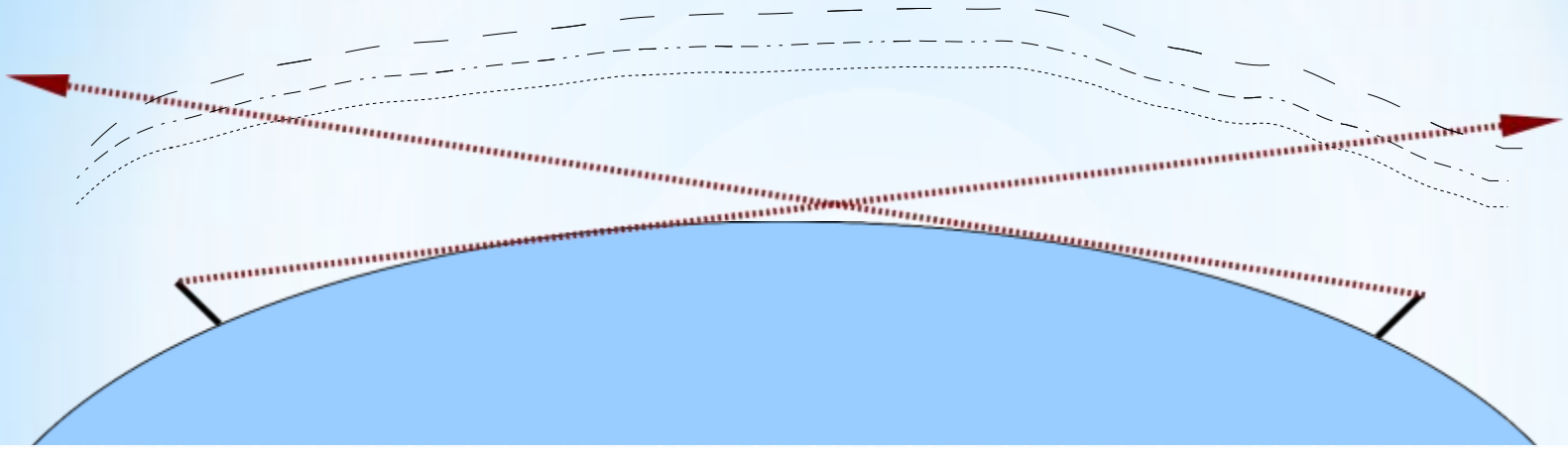
- Amateur Radio Relay League (ARRL) http://www.arrl.org/
- Modesto = http://www.saraclub.net/index.html
- Turlock = http://w6bxn.org/
- Manteca = http://k6man.org/
- Stockton = http://www.w6sf.org/
- Lodi = http://www.lodiarc.org/

*VHF and UFH Repeater Usage

- Etiquette & Tips What You Need to Know

Basic Repeater Terminology

VHF/UHF is generally considered “line of sight” communications

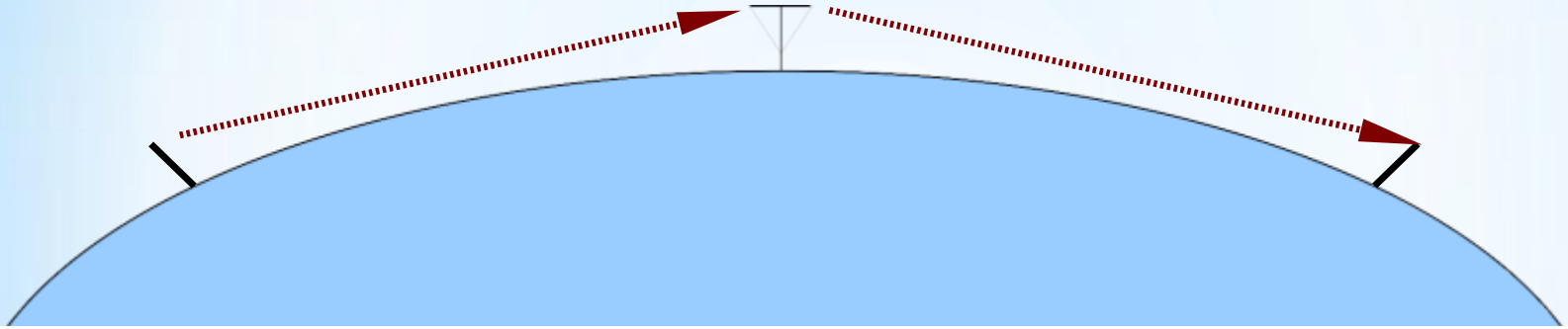


In areas with hills you can get:

5-6 miles from one hand-held to another
12-18 miles from one good roof-mounted antenna to another

On occasion, atmospheric conditions will allow VHF signals to bounce, but not often and not for very long

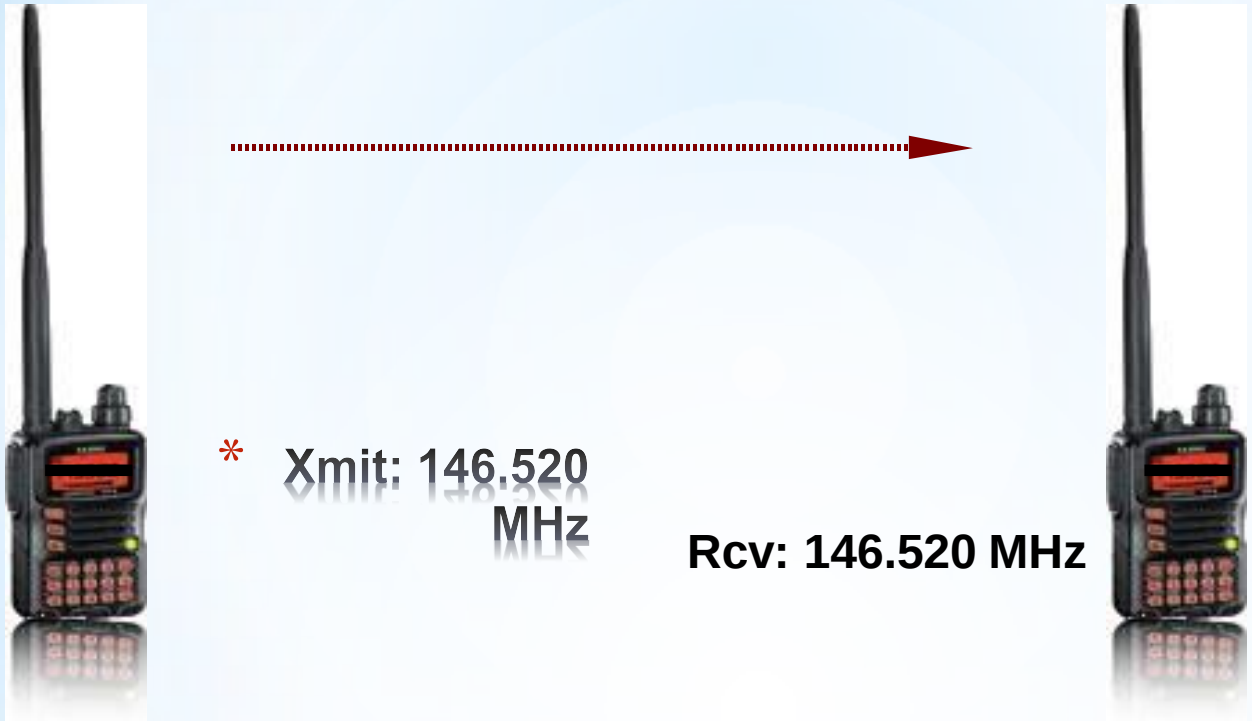
We use repeaters to get more range



The repeater REPEATS your signal so that it can go further

Plus, most repeaters have their antennas mounted up high so that they naturally cover more land

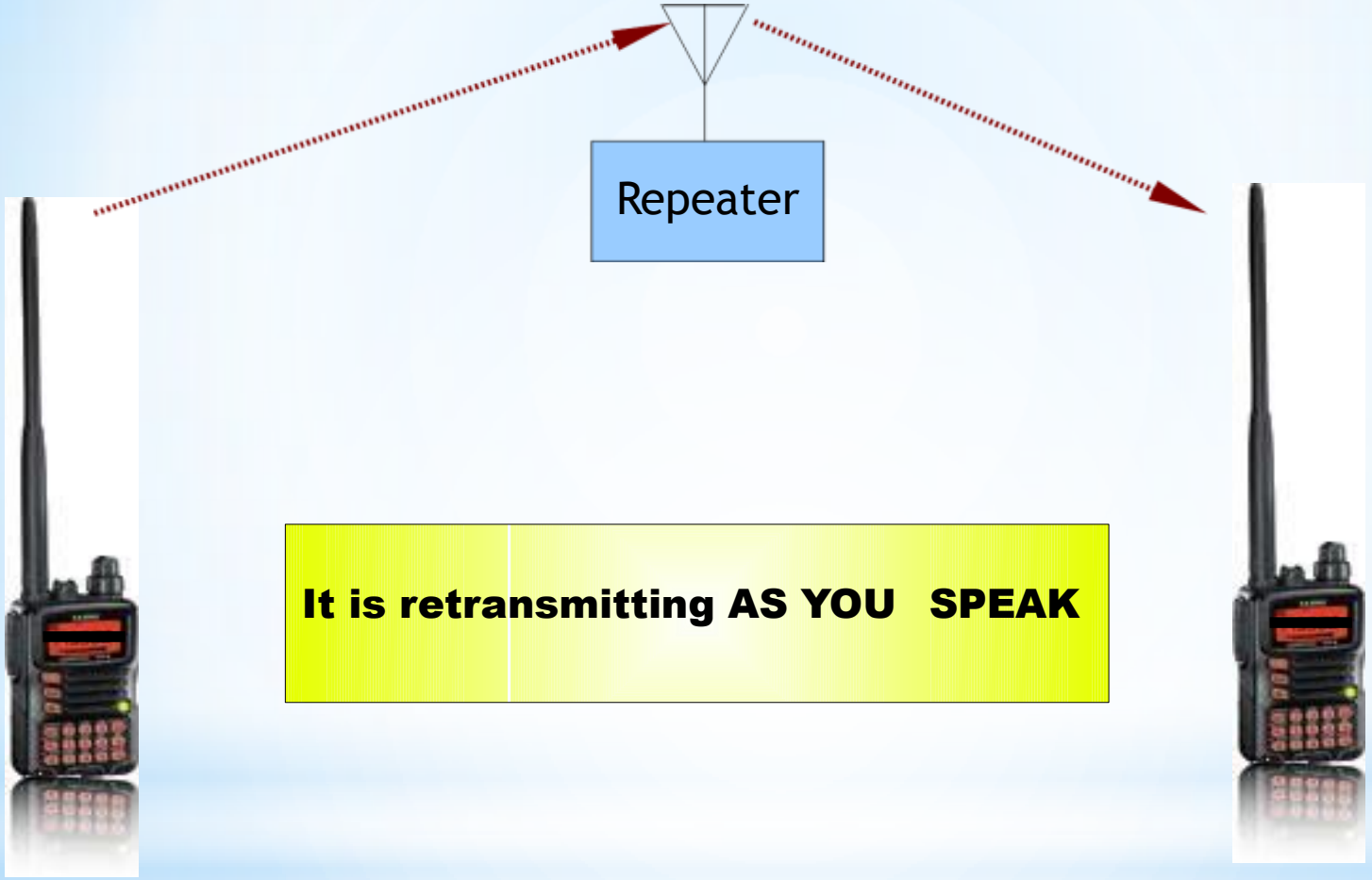
To understand repeater operations, let's start with basic simplex operation



Simplex – both radios are transmitting and receiving on the same frequency.

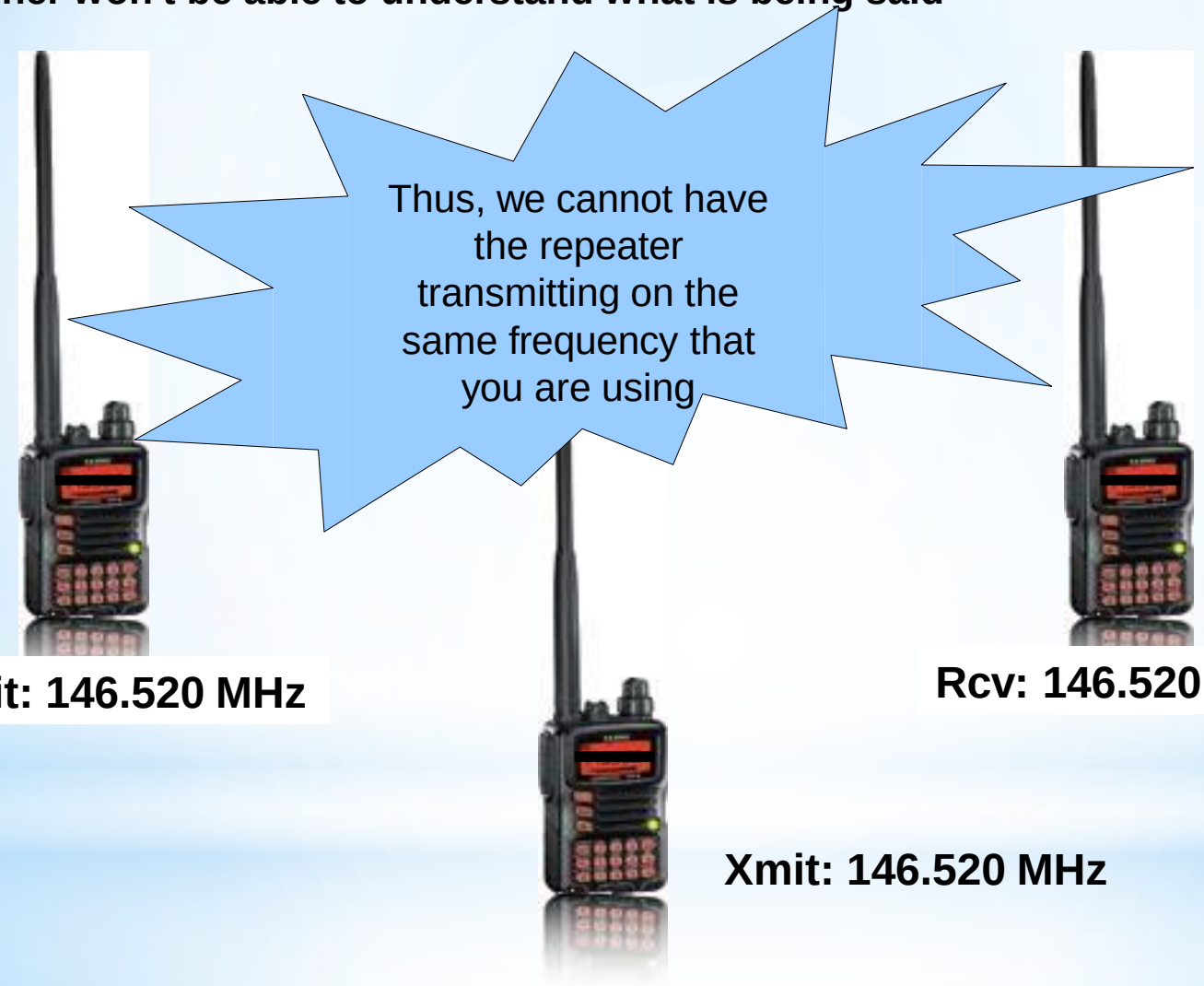
When you are transmitting, the other radio is listening.
When the other radio is transmitting, you are listening.

The repeater is going to listen to your signal and retransmit it

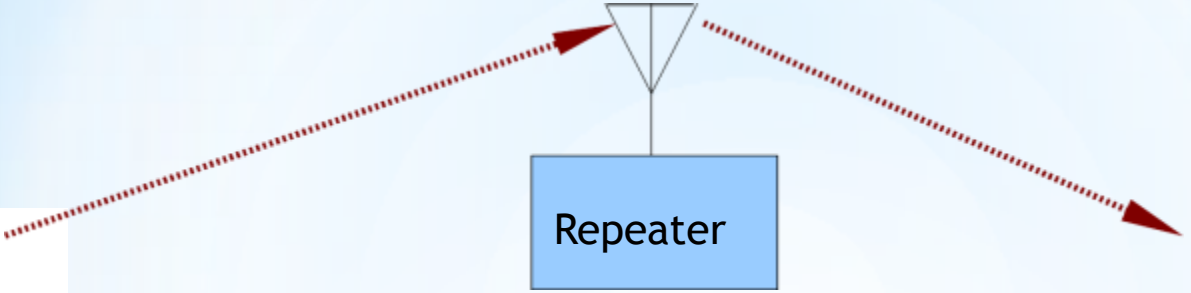


It is retransmitting AS YOU SPEAK

But there is a problem – if two radios are transmitting on the same frequency at the same time they will interfere with each other and the listener won't be able to understand what is being said



The sender (you) and the repeater each have to transmit on a different frequency



Xmit: 146.655 MHz
Rcv: 146.055 MHz

You are going to receive on the repeater's transmit frequency (in this case 146.655MHz), and you are going to transmit on the repeater's receive frequency (in this case 146.055MHz)

Xmit 146.055MHz
Rcv 146.655Mhz

Xmit 146.055MHz
Rcv 146.655Mhz

The difference in frequency between the sender and the repeater is called the SHIFT (or offset)

Repeater

Xmit: 146.655 MHz
Rcv: 146.055 MHz

In this case, the amount of shift is 0.6MHz (600KHz)

Xmit 146.055MHz
Rcv 146.655Mhz

Xmit 146.055MHz
Rcv 146.655Mhz

The DIRECTION of the shift tells you if you are transmitting at a lower frequency than you receive (-) or higher frequency than you receive (+)

Xmit 146.055MHz
Rcv 146.655Mhz

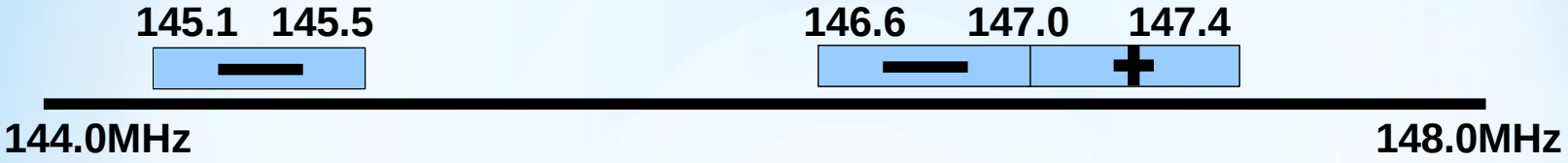
In this case, you are transmitting at a lower frequency than you receive, so it is (-) shift

Xmit 147.455MHz
Rcv 146.475Mhz

In this case, you are transmitting at a higher frequency than you receive, so it is (+) shift

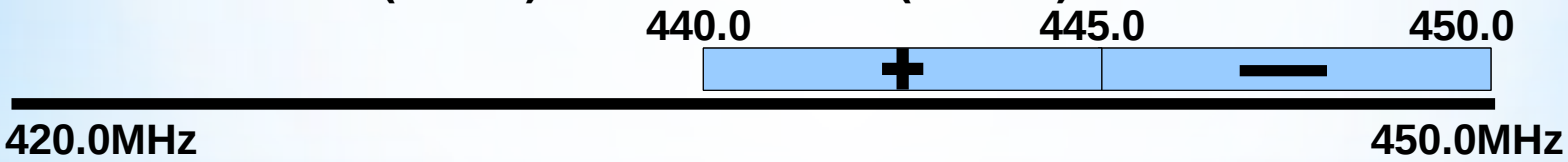
The amount of repeater shift and direction of repeater shift is a voluntary standard in the United States

2 Meter Band: 0.6MHz Shift (Offset)



1.25 Meter Band: 1.6MHz Shift (Offset)

0.70 Meter Band (70cm): 5.0MHz Shift (Offset)



In the U.S., these standards are voluntary. Most repeaters follow these standards. Most VHF/UHF radios sold in the U.S. automatically apply these offsets (Automatic Repeater Shift or ARS).

PL© tones are sub-audible tones used to prevent the repeater from responding to signals that are not meant to be repeated (e.g., static and interference)

Xmit: 146.655 MHz
Rcv: 146.055 MHz
PL: 100

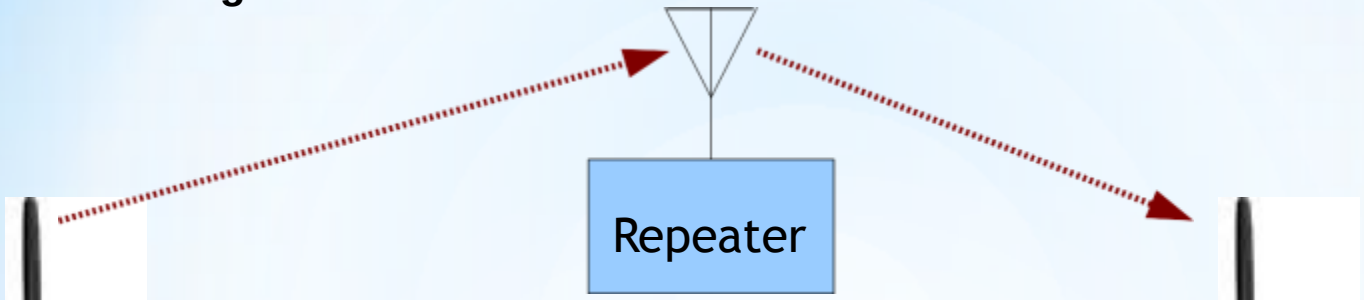
PL stands for Private Line and is a copyright of Motorola. More correctly, it is called CTCSS (Continuous Tone-Coded Squelch System)

Xmit: 146.055 MHz
Rcv: 146.655MHz
PL: Not 100

Xmit: 146.055 MHz
Rcv: 146.655MHz

Since the transmitting station is NOT sending the correct PL code, the repeater does not repeat the signal

When the transmitting station sends the correct PL code, the repeater repeats the signal



Xmit: 146.655 MHz
Rcv: 146.055 MHz
PL: 100

Rcv: 146.655MHz
Xmit: 146.055 MHz
PL: 100

This is called “TONE” CTCSS

It only determines whether or not the repeater will repeat the signal. It has no impact on the receiver's ability to receive a signal

Rcv: 146.655MHz
Xmit: 146.055 MHz
PL: 100

There are different types of PL

- **TONE mode (sometimes referred to as CODE or just CTCSS) is the most common. Remember, it is an inbound tone *to the repeater***
  - **There are 50 commonly used frequencies:**

CTCSS Tone Frequencies (Hz)

67.0	69.3	71.9	74.4	77.0	79.7	82.5
85.4	88.5	91.5	94.8	97.4	100.0	103.5
107.2	110.9	114.8	118.8	123.0	127.3	131.8
136.5	141.3	146.2	151.4	156.7	159.8	162.2
165.5	167.9	171.3	173.8	177.3	179.9	186.2
183.5	189.9	192.8	196.6	199.5	203.5	206.5
210.7	218.1	225.7	229.1	233.6	241.8	250.3
254.1						

- **TONE SQUELCH mode (usually called TSQL) adds a PL tone outbound *from the repeater*. You can set your radio so that the radio does not break squelch until it hears that outbound tone**
  - **Note that the repeater still needs the inbound tone before it will retransmit your signal**
  - **The inbound and outbound tones may be different**

*QUESTIONS ?

*Starting a QSO

- Direct Call – N6XYZ from K6ABC
  - K6ABC is only looking to talk to N6XYZ
  - Not an invitation to answer K6ABC
  - If no reply K6ABC will “clear and be listening”
- K6ABC “listening and/or monitoring”
  - K6ABC is available to QSO (talk) with another Ham
- Calling CQ on a Repeater is not a common practice
  - “K6ABC listening” is more common and if someone wants to talk they will respond with their call sign.
- Avoid calls like “is anybody out there” and “is there anybody around on frequency”

*Some Q-Codes

Q-Codes

QTH -What is your location? Or my location is
QRM - I am experiencing interference
QRZ - Who is calling me?
QSX – Will you Listen on …. KHz
QSL - I understand or can you acknowledge receipt?
QSY - I'm changing frequency to, or can you change frequency to?
QRT - I am finished transmitting or please stop transmitting.
QSO - Can you communicate? Or I can communicate.
QRN - I am experiencing static.

A complete set of Q-signals can be found at:

http://www.arrl.org/files/file/Get%20on%20the%20Air/Comm%20w%20Other%20Hams-Q%20Signals.pdf

* Joining a QSO in progress.

- Simply state your call sign during “hang time” at end of current transmission.
- Wait until current QSO recognizes your call sign
- Do not interrupt a QSO unless it is an emergency
- Common terms to interrupt a QSO “K6ABC comment” “K6ABC contact”
- “K6ABC Break” indicates an emergency

* Roundtables and "Turning it Over"

- More than two amateurs in QSO is often referred to as a “roundtable”
- The QSO usually goes in order from amateur A to amateur B to amateur C back to Amateur A.
- When any one amateur is done making a transmission, they "turn it over" to the next station in sequence (or out of sequence, if so desired).
- Without turning it over to a particular station when there are multiple stations in the QSO, nobody knows who is supposed to go next.
- This can create confusion and several stations talking at once.
- At the end of a transmission, turn it over to the next station by naming them or giving their call sign.
- If it's been close to 10 minutes, it's a good time to identify at the same time as well.

* ID's and Who's Who?

- FCC regulations, you must always identify at 10 minute intervals and at the end of a transmission.
- If you are making a test transmission or calling another party, you should identify each time you make a call or a test transmission.
- When identifying yourself and another party (or parties), or when making a directed call, your callsign goes LAST. "N6XYZ, K6ABC" means that K6ABC is calling N6XYZ, or think of it as "Hey you (K6ABC), it's me (N6XYZ)!",
- You do not need to identify the station with whom you are speaking, only your own call sign
- Use phonetics when the other station misunderstanding your callsign.

* Demonstrations And Signal Reports

- **Demonstrations** - An amateur may want to demonstrate the capabilities of amateur radio to another non-amateur.
- The typical way to do this is to ask for a "demo" such as "N3XYZ for a demonstration."
- Anyone who is listening to the repeater can answer them back.
- Usually telling the calling party your name, callsign, and location.

- **Signal Reports** - If you are unsure how well you are making it into the repeater.
- DO NOT just key the microphone or "kerchunk" the repeater.
- Anytime you key up the repeater, you should identify, even if you are just testing to see if you are making the machine. "N6XYZ test" is sufficient.
- If you need someone to verify that you are making the repeater OK, ask for a signal report such as "N6XYZ, can someone give me a signal report?"
- "Radio check" is a term most often used on CB, and a "signal report" is what most amateurs ask for.

* Language

- Aside from some of the techno-syncracies inherent in amateur vernacular, use plain conversational English.
- The kind of English that would be suitable for prime-time television.
- If a topic of conversation starts to draw strong debate, change the subject.
- Avoid "radio-ese" lingo whenever possible. CB has its own language style and so does amateur radio, but the two are not the same.
- Amateurs have "names", not "personals".
- Let us keep CB lingo off the amateur bands.
- When visiting a new repeater, take some time to monitor before jumping in to get a feel for the type of traffic and operating mannerisms of that particular system.
- Listen before you talk is the "golden rule" of good operators everywhere.

* Power

- Use the minimum power necessary to complete a QSO.
- However, the minimum power necessary doesn't just mean you are barely tickling the repeater receiver squelch.
- If someone says that you are noisy, increase power or relocate to improve your signal.
- Continuing to make transmissions after being told your signal is noisy is inconsiderate to those listening.
- Many new amateurs start out with a handheld radio as their "first rig". Some aren't the most effective radios in terms of performance.
- Consider a good external antenna, operating a handheld radio indoors or inside a car is going to result in a lot of bad signal reports.

* Repeater /Frequency Web Sites

http://www.winsystem.org/

http://www.condor-connection.org/

http://www.carlaradio.net/

http://www.nationalradiodata.com/scanner-frequencies-home.jsp

http://www.radioreference.com/

Radio Channels - Kenwood TH-F6 (example of repeater offsets)

	Receive Frequency	Transmit Frequency	Offset Frequency	Offset Direction	Offset Reverse	Operating Mode	Name	Tone Mode	CTCSS
0									
1	51.80000	51.30000	500 kHz	Minus		FM	SARA 6m	Tone	136.5 Hz
2	51.82000	51.32000	500 kHz	Minus		FM	MtDiablo	Tone	123.0 Hz
3	51.90000	51.40000	500 kHz	Minus		FM	Murphy's	Tone	141.3 Hz
4	51.94000	50.94000	1.00 MHz	Minus		FM	K6GTO	Tone	114.8 Hz
5	52.52500	52.52500		Simplex		FM	Calling	None	88.5 Hz
6	52.54000	52.54000		Simplex		FM	Lcl splx	None	100.0 Hz
7	52.98000	52.98000		Simplex		FM		Tone	100.0 Hz
8	147.52000	147.52000		Simplex		FM		Tone	94.8 Hz
9	147.62000	147.02000	600 kHz	Minus		FM		Tone	94.8 Hz
10	145.39000	144.79000	600 kHz	Minus		FM	SARA VHF	Tone	136.5 Hz
11	147.03000	147.63000	600 kHz	Plus		FM	TARC VHF	Tone	100.0 Hz
12	145.11000	144.51000	600 kHz	Minus		FM	Dbl Tree	Tone	136.5 Hz
13	147.03000	147.63000	600 kHz	Plus		FM	TARCILO	Tone	103.5 Hz
14	224.14000	222.54000	1.60 MHz	Minus		FM	SARA220	Tone	136.5 Hz
15	224.96000	223.36000	1.60 MHz	Minus		FM	TARC220	Tone	156.7 Hz
16	440.22500	445.22500	5.00 MHz	Plus		FM	SARA 440	Tone	136.5 Hz
17	444.70000	449.70000	5.00 MHz	Plus		FM	TARC 440	Tone	107.2 Hz
18	147.00000	147.60000	600 kHz	Plus		FM	Yosemite	Tone	107.2 Hz
19	440.30000	445.30000	5.00 MHz	Plus		FM	BuckRK	Tone	94.8 Hz
20	443.52500	448.52500	5.00 MHz	Plus		FM	W1NOSO	Tone	107.2 Hz
21	145.13000	144.53000	600 kHz	Minus		FM	Fresno	None	88.5 Hz
22	147.18000	147.18000		Simplex		FM	Oakhurst	None	88.5 Hz
23	146.74500	146.14500	600 kHz	Minus		FM	Mariposa	Tone	146.2 Hz
24	147.22500	147.82500	600 kHz	Plus		FM	Maaro	Tone	146.2 Hz
25	145.17000	144.57000	600 kHz	Minus		FM	Calveras	Tone	100.0 Hz
26	145.21000	144.61000	600 kHz	Minus		FM	MtDelux	Tone	100.0 Hz
27	145.31000	144.71000	600 kHz	Minus		FM	AnglCamp	None	88.5 Hz
28	145.35000	144.75000	600 kHz	Minus		FM	MDARC1	Tone	100.0 Hz
29	144.39000	144.39000		Simplex		FM	APRS	None	88.5 Hz
30	144.45000	144.45000		Simplex		FM	KD5STN-L	None	88.5 Hz
31	144.91000	144.91000		Simplex		FM	SARA Pac	None	88.5 Hz
32	144.97000	144.97000		Simplex		FM	KD6JZZ-2	None	88.5 Hz

Examples of Band Plans

Stanislaus County ARES Band Plan

Description	Frequency	Name	Plus or Minus	PL	STEP	OFFSET
Primary Repeater Frequency	145.390	SARA2M	Minus	136.5	5	0.60
Back-up Repeater Frequency	145.110	DBLTRE	Minus	136.5	5	0.60
220 Repeater	224.140	SARA220	Minus	136.5	5	1.6
440 Repeater	440.225	SARA440	Plus	136.5	25	5.00
Memorial Hospital Repeater	146.355	MEMRPTR	Plus	156.7	5	0.60
Simplex Link	442.525	K6LPG	Plus	107.2	25	5.00

SIMPLEX FREQUENCIES

Description	Frequency	Name	Plus or Minus	PL	STEP	OFFSET
Primary Simplex Frequency	147.540	SIMP2M	SIMP		5	0.60
440 Simplex	446.000	SIMP440	SIMP		25	5.00
Crossband	446.015	XBAND	SIMP	136.5	25	5.00
Echolink	147.540	KI6KQQ	SIMP			

NETWORK SYSTEMS

Description	Frequency	Name	Plus or Minus	PL	STEP	OFFSET
Win System	443.525	WIN-OSO	Plus	107.2	25	5.00
Condor Connection	224.900	Goat Mnt	Minus	156.7	5	1.6

PACKET FREQUENCIES

Description	Frequency	Name	Plus or Minus	PL	STEP	OFFSET
Primary Packet	144.910	PACKET91	SIMP		5	0.60
Back Up Packet	145.050	PACKET05	SIMP		5	0.60
Back Up Packet	145.630	PACKET63	SIMP		5	0.60

POSITION REPORTING (APRS)

Description	Frequency	Name	Plus or Minus	PL	STEP	OFFSET
Primary APRS Frequency	144.390	APRS	SIMP		5	0.60
Packet Freq, Used for APRS	144.910	APRS	SIMP		5	0.60

HIGH FREQUENCY (HF)

Description	Frequency	Name	Plus or Minus	PL	STEP	OFFSET
Primary 75 Meter Frequency	3.995	HF Freq	SSB			
Primary 40 Meter Frequency	7.295	HF Freq	SSB			
Primary 10 Meter Frequency	28.495	HF Freq	SSB			

D-STAR FREQUENCIES

Description	Frequency	Name	Plus or Minus	PL	STEP	OFFSET
Primary 2m D-Star	145.130	C Node	Minus			0.60
440 D-Star	444.800	B Node	Plus			5.00

Stanislaus County ARES Band Plan - Continued

AREA FREQUENCIES CROSS REFERENCE						
Description	**Frequency**	**Name**	**Plus or Minus**	**PL**	**STEP**	**OFFSET**
APRS Frequency	144.390	APRS	SIMP		5	0.60
Tracy Am.Radio Club	146.655	CORHOL	Minus	100.0	5	0.60
SARA Club Repeater Doubletree Htl	145.110	DBLTRE	Minus	136.5	5	0.60
Emcommwest Talk In/ Reno	147.150	EMCOM -A	Plus	123.0	5	0.60
Emcommwest Talk In/ Reno	147.210	EMCOM-B	Plus	100.0	5	0.60
220 Repeater	224.900	Goat Mnt	Minus	156.7	5	1.6
Area 440 Repeater	443.075	K6IXA	Plus	107.2	25	5.00
Link to Simplex	442.525	K6LPG	Plus	107.2	25	5.00
Area 440 Repeater	441.275	K6RDJ	Plus	77.0	25	5.00
Area 2m Repeater	145.120	K6RDJ-2M	Plus	77.0	5	0.60
Area 440 Repeater	441.350	K6SIX	Plus	107.2	25	5.00
Area 440 Repeater	440.600	LICK	Plus	107.2	25	5.00
MDARC 2m Repeater (Bay Area)	147.060	MDARC	Plus	100.0	5	0.60
MDARC 220 Repeater (Bay Area)	224.780	MDARC220	Minus	77.0	5	1.6
Memorial Hospital Repeater	146.355	MEMRPTR	Plus	156.7	5	0.60
Livermore 2m Repeater	145.350	MINES RD	Minus	100.0	5	0.60
Packet	145.050	PACKET05	SIMP		5	0.60
Packet	145.630	PACKET63	SIMP		5	0.60
Primary Packet Frequency	144.910	PACKET91	SIMP		5	0.60
SaraClub 220 Repeater	224.140	SARA220	Minus	136.5	5	1.6
SaraClub 2 Meter Repeater	145.390	SARA2M	Minus	136.5	5	0.60
SaraClub 440 Repeater	440.225	SARA440	Plus	136.5	25	5.00
2 Meter Simplex Frequency	147.540	SIMP2M	SIMP		5	0.60
440 Simplex Frequency	446.000	SIMP440	SIMP		25	5.00
TARC 220 Repeater	224.960	TARC220	Minus	156.7	5	1.6
TARC Main Repeater Frequency	147.030	TARC2M	Plus	100.0	5	0.60
TARC 440 Repeater	444.700	TARC440	Plus	94.8	25	5.00
TARC Low Level	147.030	TARC-LOW	Plus	103.5	5	0.60
Western Inter-tie System (MT OSO)	443.525	WIN-OSO	Plus	107.2	25	5.00
Cross Band Repeater	446.015	XBAND	SIMP	136.5	25	5.00
Tied to Turlock Repeater	147.000	YOSEMITE	Plus	100.0	5	0.60

*Other Band Plans

- **California Emergency Volunteers**
  http://cevol.org/frequency/plan_files/2017%20CEV%20PLAN%2011.pdf

- Mountain Amateur Radio Club – Oakhurst
  http://w6bw.org/Local%20Repeaters.htm

*QUESTIONS ?

The Radio Amateur's Code

The Radio Amateur is
CONSIDERATE...He/[She] never knowingly operates in such a way as to lessen the pleasure of others.

LOYAL...He/[She] offers loyalty, encouragement and support to other amateurs, local clubs, the IARU Radio Society in his/[her] country, through which Amateur Radio in his/[her] country is represented nationally and internationally.

PROGRESSIVE...He/[She] keeps his/[her] station up to date. It is well-built and efficient. His/[Her] operating practice is above reproach.

FRIENDLY...He/[She] operates slowly and patiently when requested; offers friendly advice and counsel to beginners; kind assistance, cooperation and consideration for the interests of others. These are the marks of the amateur spirit.

BALANCED...Radio is a hobby, never interfering with duties owed to family, job, school or community.

PATRIOTIC...His/[Her] station and skills are always ready for service to country and community.
- adapted from the original Amateur's Code, written by Paul M. Segal, W9EEA, in 1928

Miscellaneous Information

* Other Information of Interest

- Choosing Your First Hand-Held Radio
  http://beniciaarc.com/wp/?page_id=100
- eHam
  http://www.eham.net/
- Radio Frequency Data Base
  http://www.radioreference.com/
- Your First Ham Station
  http://www.hamuniverse.com/setuphamstation.html
- Ham Swap Meets
  http://www.w6thw.com/ham_swap_meets.html
- Repeater Lookup Site
  https://www.repeaterbook.com/
- QRZ HAM Call sign lookup and other Info.
  https://www.qrz.com/

* Helpful Ham related items

Signstek Professional UV Dual Band Standing-Wave Meter Power Meter SWR Meter for Testing SWR Power
by Signstek

$44.99 prime
Get it by Tomorrow, Feb 20

★★★★☆ 138

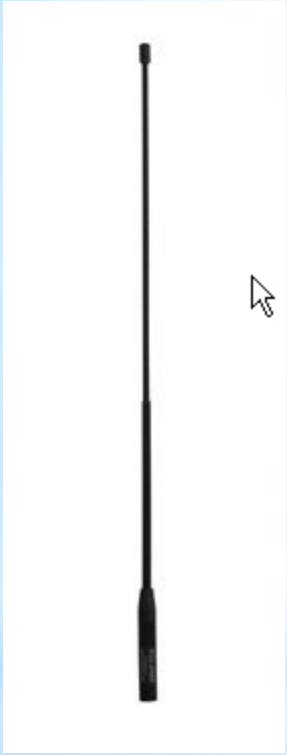
Handheld Antenna Cable SMA male to UHF SO-239 Female Connectors 6''

And

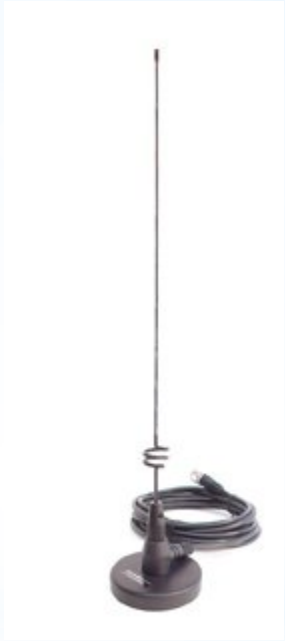
Adapter for UHF Base and Mobile Antennas - SMA Female to UHF SO-239 Female Connectors 6"

DBJ-1 Dual Band VHF UHF base antenna
E-Bay $36.00

*2mm / 7cm Antenna's



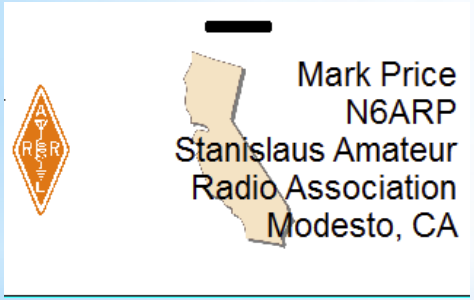
Diamond (Original) SRH77CA or SRHJ77CA 144/440 MHz. Dual-Band High Gain Handheld Antenna Rx: 120~900 MHz. (Gain: 440 Mhz. 2.15 dBi, Max Power: 10 Watts, Length: 15") SMA



DIAMOND 146/446 MHz Mini Dual-Band Mobile Antenna w/ Mini Magnet Mount & Cable RG-58/U Length Approx. 13ft , Black, Gain: 2.15 / 3.4 dBi, Connector: PL-259, Antenna Length: 20", Max Watts: 70, Magnet Diameter 2.6" UHF Connector

*Miscellaneous Stuff

https://astridsembroidery.com/custom_embroidered_call_sign_hats.htm



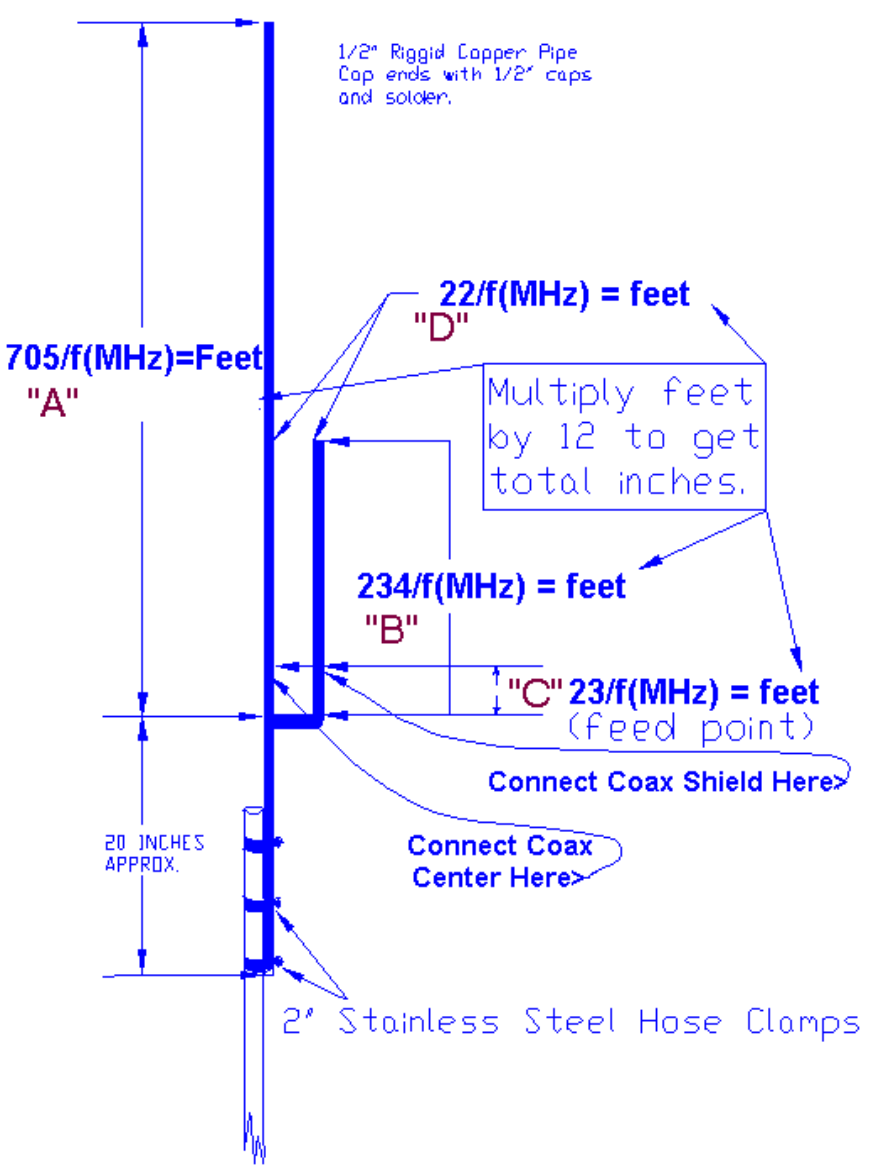
https://hamcall.net/badges

Power Supplies

Desktop 30A Switching Power Supply, Reliable power with minimum weight and size, Circuit innovations minimize output voltage ripple and RFI $129.00

Desktop 30A Switching Power Supply, Advanced switch-mode technology, Reliable power with minimum weight and size, Circuit innovations minimize output voltage ripple and RFI $20.95

Simple Antenna



DESIGN YOUR OWN J POLE FOR ANY BAND!

(Try it with aluminum too!)

Design your J Pole for hf, 2 meters, 220, 440 and up!

http://www.hamuniverse.com/jpole.html

Coax dB Loss per 100 Feet using common coax types

Green shade 50 - 52 ohm cable

dB Loss / 100 feet Frequency Mhz Cable Type	1.0	10	50	100	200	400	900	1000	3000	5000
6A, 212	.26	.83	1.9	2.7	4.1	5.9	6.5	9.8	23.0	32.0
8 MINI, 8X		1.1	2.5	3.8	5.4	7.9	8.8	13.0	26.0	
LMR -240	.24	.76	1.7	2.4	3.4	4.9	7.5	7.9	14.2	18.7
8, 8A, 10A, 213 (RG8/8A hard to find)	.15	.55	1.3	1.9	2.7	4.1	7.5	8.0	16.0	27.0
9913, 9086, 9096			0.9	1.4	1.8	2.6	4.2	4.5		13.0
4XL8IIA, FLEXI 4XL			0.9	1.4	1.8	2.6	4.2	4.5		13.0
LMR-400			.9	1.2		2.5	4.1	4.3		
LMR-500			.7	1.0		2.0	3.2	3.4		
LMR-600			.6	.8		1.4	2.5	2.7		
8214		.60	1.2	1.7	2.7	4.2		7.8	14.2	22.0
9095			1.0	1.8	2.6	3.8	6.0	7.5		
9, 9A, 9B, 214	.21	.66	1.5	2.3	3.3	5.0	7.8	8.8	18.0	27.0
11,11A,12,12A,13,13A, 216	.19	.66	1.6	2.3	3.3	4.8		7.8	16.5	26.5
14, 14A, 217	.12	.41	1.0	1.4	2.0	3.1		5.5	12.4	19.0
17,17A,18,18A, 218, 219	.06	.24	.62	.95	1.5	2.4		4.4	9.5	15.3
55B, 223	.30	1.2	3.2	4.8	7.0	10.0	14.3	16.5	30.5	46.0
58	.33	1.2	3.1	4.6	6.9	10.5	14.5	17.5	37.5	60.0
58A, 58C	.44	1.4	3.3	4.9	7.4	12.0	20.0	24.0	54.0	83.0
59, 59B	.33	1.1	2.4	3.4	4.9	7.0	11.0	12.0	26.5	42.0
62, 62A, 71A, 71B	.25	.85	1.9	2.7	3.8	5.3	8.3	8.7	18.5	30.0
62B	.31	.90	2.0	2.9	4.2	6.2		11.0	24.0	38.0
141,141A, 400, 142, 142A	.30	.90	2.1	3.3	4.7	6.9		13.0	26.0	40.0
174	2.3	3.9	6.6	8.9	12.0	17.5	28.2	30.0	64.0	99.0
178B,196A	2.6	5.6	10.5	14.0	19.0	28.0		46.0	85.0	100
188A, 316	3.1	6.0	9.6	11.4	14.2	16.7		31.0	60.0	82.0
179B	3.0	5.3	8.5	10.0	12.5	16.0		24.0	44.0	64.0
393, 235		.6	1.4	2.1	3.1	4.5		7.5	14.0	21.0
402		1.2	2.7	3.9	5.5	8.0		13.0	26.0	26.0
405								22.0		
LDF4-50A	.06	.21	.47	.68	.98	1.4	2.2	2.3	4.3	5.9
LDF5-50A	.03	.11	.25	.36	.53	.78	1.2	1.4	2.5	3.5

Source of chart http://www.hamuniverse.com/coaxdata.html

Phonetic Alphabet

Letter	Word	Pronunciation
A	Alfa	**AL** FAH
B	Bravo	**BRAH** VOH
C	Charlie	**CHAR** LEE
D	Delta	**DELL** TAH
E	Echo	**ECK** OH
F	Foxtrot	**FOKS** TROT
G	Golf	GOLF
H	Hotel	HOH **TELL**
I	India	**IN** DEE AH
J	Juliet	**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
V	Victor	**VIK** TAH
W	Whiskey	**WISS** KEY
X	X-Ray	**ECKS** RAY
Y	Yankee	**YANG** KEY
Z	Zulu	**ZOO** LOO

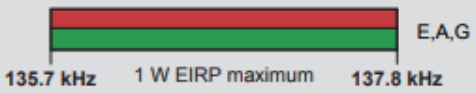
US Amateur Radio Bands

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.

ARRL The national association for AMATEUR RADIO®

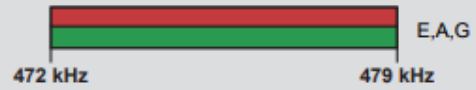
Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at **https://utc.org/plc-database-amateur-notification-process/.** You need only register once for each band.

2,200 Meters (135 kHz)



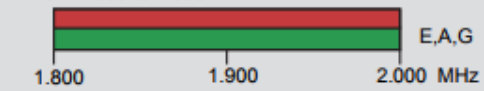
630 Meters (472 kHz)

5 W EIRP maximum, except in Alaska within 496 miles of Russia where the power limit is 1 W EIRP.

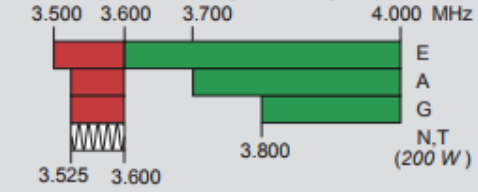


160 Meters (1.8 MHz)

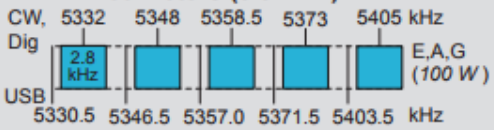
Avoid interference to radiolocation operations from 1.900 to 2.000 MHz



80 Meters (3.5 MHz)

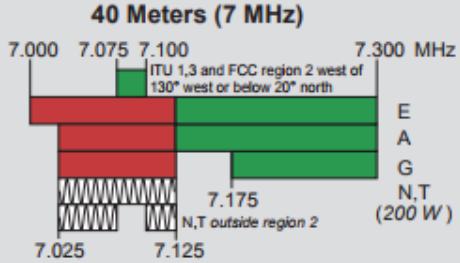


60 Meters (5.3 MHz)



General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half-wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on any channel.

40 Meters (7 MHz)

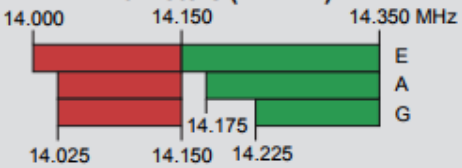


See Sections 97.305(c), 97.307(f)(11) and 97.301(e).These exemptions do not apply to stations in the continental US.

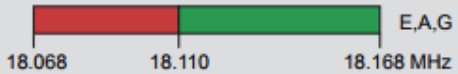
30 Meters (10.1 MHz)

Avoid interference to fixed services outside the US.

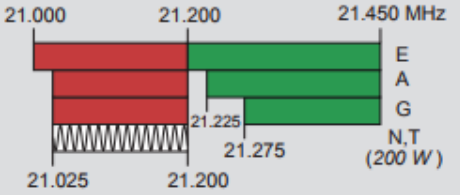
20 Meters (14 MHz)



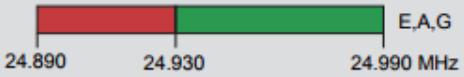
17 Meters (18 MHz)



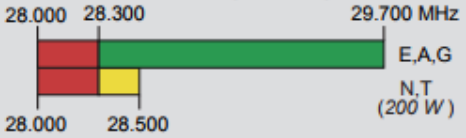
15 Meters (21 MHz)



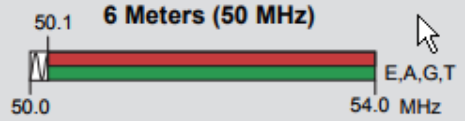
12 Meters (24 MHz)



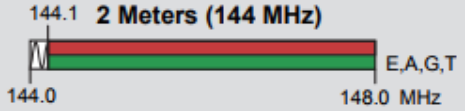
10 Meters (28 MHz)



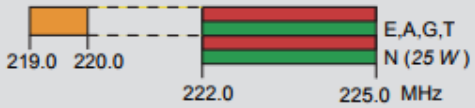
6 Meters (50 MHz)



2 Meters (144 MHz)

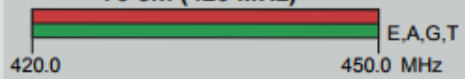


1.25 Meters (222 MHz)



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

70 cm (420 MHz)*



33 cm (902 MHz)*

23 cm (1240 MHz)*

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.

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email: newham@arrl.org

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

 rev. 9/22/2017

*QUESTIONS ?


Thank
You