



# Amateur Television Network & Mesh Video Arizona (ATN-AZ) & California (ATN-CA)

## Amateur Television Network

The Amateur Television Network (ATN) is a group of radio amateurs that promotes Amateur Radio audio/video operation on linked repeaters and on mesh networks. **Everyone is welcome.**

- You don't need an Amateur Radio license to watch us and send video to us on the Internet.
- **Watch us Wednesday & Sunday at 7pm AZ time and Tuesday at 7:30pm Pacific** Browse to [www.YouTube.com/amateurtelevisionnetwork](http://www.YouTube.com/amateurtelevisionnetwork) or search for [W7ATN-MESA LIVE](http://W7ATN-MESA LIVE). Alternately, browse to [BATC.TV](http://BATC.TV). Then under **Repeaters**, click on [W6ATN](http://W6ATN), [W7ATN](http://W7ATN), or [W7ATN-MESA](http://W7ATN-MESA). You can see us, hear us, send audio and video and send live Chat Messages. **In AZ, we are now transmitting on 421.25 MHz! Join in.**
- **Send us your live video on the Internet at [whereby.com/amateurtvnetwork](http://whereby.com/amateurtvnetwork)**
- Learn about ATV & Mesh Video - Contact Rod Fritz WB9KMO at [wb9kmo@gmail.com](mailto:wb9kmo@gmail.com)
- Become an ATN member – Go to [www.atn-tv.org](http://www.atn-tv.org) and click on Membership, or Contact Roland Hoffman at [kc6jpg@charter.net](mailto:kc6jpg@charter.net). **We would appreciate your support.**
- Browse to [TheNewATVQ.com](http://TheNewATVQ.com). It contains valuable links to the best ATV and Mesh Video information that the Internet has to offer. Check in periodically to watch the content grow.

We enjoy operating specialized communication modes like Fast-Scan TV (ATV), Mesh Networking (Mesh Video), Digital Television (DATV), High Altitude Balloons (HAB), First Person View (FPV), Remote Control (RC) and Slow-Scan TV (SSTV) for use in emergencies, public service, education and just having fun. Experience the exciting synergy, integrating ATV with Mesh Video.

ATN interconnects numerous Amateur Television (ATV) repeaters on-the-air and over the Internet in many states and even world-wide. All licensed Amateur Radio operators are authorized to transmit audio, video, pictures and data. **We hope you'll give it a try.**

## ATV & Mesh Nets – Video on Ham Radio (VOAR)

The ATN-AZ ATV Net is each **Wednesday and Sunday** night at 7pm Arizona time. Browse to [www.youtube.com/amateurtelevisionnetwork](http://www.youtube.com/amateurtelevisionnetwork) or search for [w7atn-mesa live](http://w7atn-mesa live).

The ATN-CA ATV Net is each **Tuesday** night at 7:30pm Pacific time. World-wide ATVers participate. Browse to [youtube.com](http://youtube.com). Search for [w6atn live](http://w6atn live). Watch us or better yet, check-in!

- ATN-AZ and ATN-CA ATV Repeater Inputs: 434 MHz AM/DVB-T, 2441.5 MHz FM
- ATN-AZ and ATN-CA ATV Repeater Outputs: 1253.25 & 5910 MHz (Phoenix/Orange Cnty), 1277.25 MHz (Tucson), 421.25 MHz & 1289.25 MHz (Mesa) and 3380 MHz (Ventura Cnty)
- ATN-AZ FM Repeater Outputs: 448.400 MHz, PL 100.0 (White Tank), 445.225 MHz, PL 103.5 (Mt Lemmon) & 447.175 MHz, PL 100.0/C4FM (Mesa), 1286.15, 223.82 & 146.43 MHz (CA)
- **Arizona Mesh Organization Net: Thurs. 7:00pm AZ, KB7KWK-L on EchoLink**
- Get more ATV and Mesh Networking info at [www.atn-tv.org](http://www.atn-tv.org), [www.arednmesh.org](http://www.arednmesh.org), [www.superstitionarc.org](http://www.superstitionarc.org), [www.ocmesh.org](http://www.ocmesh.org) and [www.TheNewATVQ.com](http://www.TheNewATVQ.com)

**We look forward to seeing you on Amateur Radio!**



2020

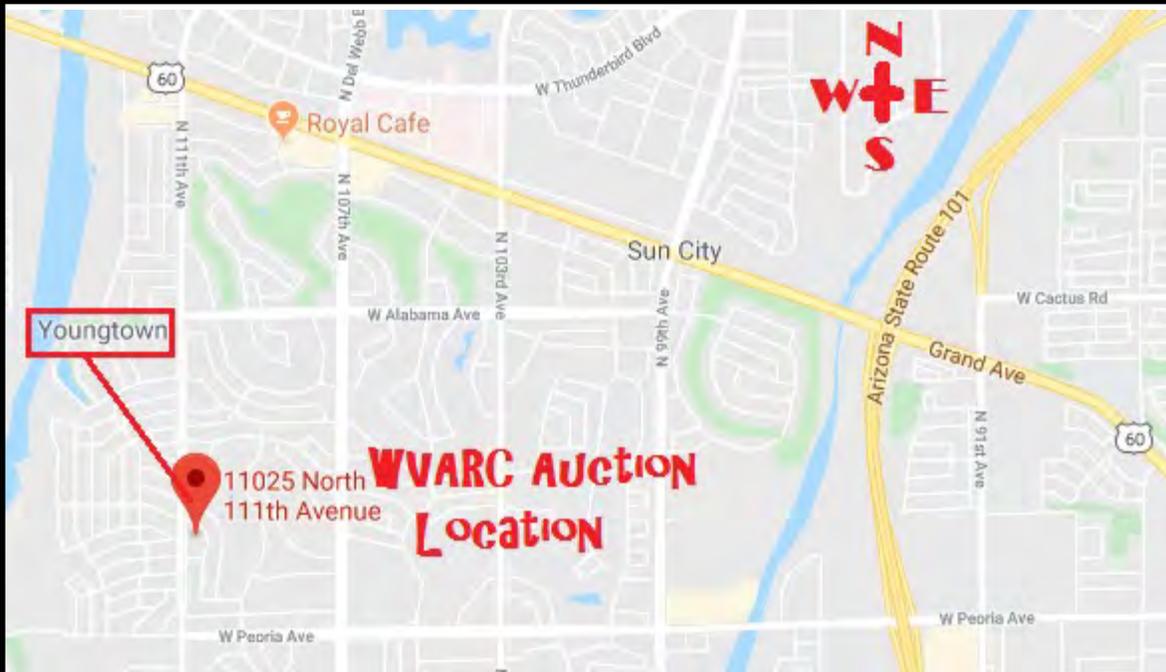
# Auction



**FEB**  
**3<sup>rd</sup>**



Doors open at 6 PM  
Fun Begins at 7 PM



**You  
Know  
You  
Need  
More  
Ham  
Gear!**

*Save  
The  
Date!*



If it's ham related, it's here!  
Every year West Valley ARC has a fast-paced auction of local ham gear. Bring your extra ham gear to our auction and receive 90% of the winning bid!

[suncitywvarc@gmail.com](mailto:suncitywvarc@gmail.com) for more info.

We reserve 10% of proceeds to fund club projects and activities.



Shepherd of the Desert Lutheran Church  
11025 N. 111<sup>th</sup> Avenue  
Sun City Arizona 85351  
Down the breezeway to Walton Hall

[www.westvalleyarc.com](http://www.westvalleyarc.com)



# ***2020 Southwestern Division Convention***

## ***Yuma Hamfest***

***Yuma, Arizona***

***Feb. 14 & 15, 2020***



Yuma County Fairgrounds  
2520 East 32<sup>nd</sup> Street, Yuma, Arizona

***[www.yumahamfest.org](http://www.yumahamfest.org)***

Check the Website for Additional Information

Gates Open for Camping  
Thursday, 2 pm

Vendor Setup  
Friday, 7 am - Noon

Event Hours  
Friday, Noon - 5 pm  
Saturday, 8 am - 5 pm

Hamfest Dinner &  
Grand Prize Drawing  
Saturday Night  
6:00 - 8:00 pm

**Vendors & Exhibitors**  
**Consignment Sales**  
**License Testing**  
**Hourly Door Prizes**  
**On-site RV Camping**  
**Hamfest Dinner**  
**ARRL Speakers**  
**Transmitter Hunt**  
**\$5.00 Admission**

**Tailgating (Swap Meet)**  
**Full Seminar Schedule**  
**DXCC Card Checking**  
**\$22000+ in Grand Prizes**  
**Emergency Preparedness**  
**Admission Prizes**  
**Hospitality Area**  
**Near Space Balloon Launch**  
**Antenna Clinic & T-hunt**

Email Contact: ***[info@yumahamfest.org](mailto:info@yumahamfest.org)***

Saturday  
March 14, 2020  
7:30 AM – 12:00 PM



12983 W Grand Ave  
Surprise, Arizona  
85374

# ATN Surprise Hamfest

Talk-In on 448.400 MHz FM PL 100.0

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**Tailgaters, Vendors & Club Booths: \$10/Space – Opens at 6:30 AM**  
**General Admission: \$1/Person – Opens at 7:30 AM**

Early Arrival and Camping May Be Available  
Space and Booth Reservations: Bob Minnick W8ARZ [povertyflataz@yahoo.com](mailto:povertyflataz@yahoo.com)

**Snacks and Beverages Will Be Available for Purchase**  
**Kindly Offer Equipment Donations for Our ATN Swap Table**

No Firearms, Alcohol or Drugs are Permitted  
Excellent Weather is Expected but Not Promised  
Be Prepared in Case the Weather Becomes less than Ideal

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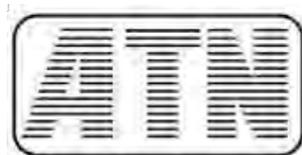
**Visit our Amateur Television Network Website: [www.atn-tv.org](http://www.atn-tv.org)**  
Ask Us About the Exciting Things the Amateur Television Network is Doing

**Visit our [www.meetup.com](http://www.meetup.com) Video on Amateur Radio Meetup Group**  
Meet us at Denny's in Tempe on the **THIRD SUNDAY** of each month at 6:00 PM

**Join Our Nets Sunday and Wednesday nights at 7:00 PM on 448.400 MHz FM PL 100.0**

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**Questions: Rod Fritz WB9KMO [wb9kmo@gmail.com](mailto:wb9kmo@gmail.com)**



**Amateur Television  
Network**

*On the Air to Everywhere*

Watch us on [www.youtube.com](http://www.youtube.com) - Search for **W6ATN Live**

# SCOTTSDALE SPRINGFEST

SPONSORED BY  
THE SCOTTSDALE AMATEUR RADIO CLUB

## Saturday March 21, 2020

### We have our old location back!



- Open to Vendors at 6am
- Open to the Public at 7am
- Vendors \$20.00/2 parking spaces
- General Admission \$5.00/person
- Raffle Prizes and hourly drawings
- Refreshments and snacks available
- ARRL & ARCA Sanctioned Event
- 1<sup>ST</sup> Prize – Yaesu FTM-400XD
- 2<sup>nd</sup> Prize FT3D - 3<sup>rd</sup> Prize FT70D



Location:	17705 North Pacesetter Way, Scottsdale, Az
Vendors:	17700 North Perimeter Drive
For more information:	<a href="http://www.scottsdalearc.org">www.scottsdalearc.org</a> Facebook: Scottsdale Amateur Radio Club <a href="https://www.facebook.com/ScottsdaleARC/">https://www.facebook.com/ScottsdaleARC/</a>
Talk-in	147.180+ MHZ / 440.000+ MHZ
Questions:	Bill Kouchis - <a href="mailto:N9EIV@arrl.net">N9EIV@arrl.net</a> Ray Vasquez <a href="mailto:K4RMV@arrl.net">K4RMV@arrl.net</a>

Springfest here





# RST

Radio  
Society of Tucson

## TUCSON SPRING HAMFEST

Saturday March 28th

7AM - 11 AM

FREE ADMISSION & PARKING

FREE Testing by The Laurel VEC 9 to 11 AM



Talk -in Repeater  
Frequency:  
**145.250- MHz,**  
**Tone**  
**156.7 Hz**



**TARGET**  
9615 E. Old Spanish  
Trail



Tucson, AZ  
\*\*\*NORTH PARKING LOT\*\*\*

Free VE Onsite  
Testing

Morning Meal  
Hot Breakfast  
And Morning  
Snacks.

ARRL Awards  
Checking

**Seller setup starts at 6:00 AM.**

**All Vendor/Seller Spaces \$10/space.**

### RAFFLE!

**Tickets: \$2 each, 3 for \$5, 7 for \$10**  
**Need not be present to win!**

### Prizes:

Transceiver Equipment is TBD.

Multiple **TARGET** gift certificates, ARRL Gift Certificates.

Map and information: <http://www.k7rst.org>



The Arizona Amateur Radio Club and  
The Arizona Red Cross Communications Club  
present the



# April Hamfest at DeVry Tentative April 11, 2020

DeVry University - South Parking Lot  
2149 W Dunlap Ave.  
Phoenix, AZ

Hours: 7:00 AM to 11:00 AM  
Admission Donation—\$2.00  
Tailgate Spaces—\$10.00 each  
Commercial Vendors—Tailgaters

VE Testing - 9:00 AM in Building  
DX QSL Card Checking - 9 to 10 AM  
Prizes - Coffee - Doughnuts - Sodas

Prizes to be determined



SELL - TRADE  
BROWSE - BUY

SPEND THE DAY WITH FRIENDS



Light Rail Station nearby at  
19th Ave & Dunlap

Google Earth View

Talk-In on 147.060 (+) PL 162.2 Hz

For more information or to Reserve a Space -  
Contact Gary Hamman at [\\_k7gh@arrl.net](mailto:_k7gh@arrl.net) or 602.996.8148

# 2020 Prescott Hamfest and ARRL 2020 Arizona State Convention

## ***NEW VENUE***

### **Arizona Downs**

10501 E. State Route 89A, Prescott Valley, AZ

**Two Day Hamfest - May 8<sup>th</sup> & 9<sup>th</sup>, 2020**

Hosted by: **Yavapai Amateur Radio Club**



**Friday – 7 AM to 2 PM - Tailgate Flea Market**  
**8 AM to 4 PM - Indoor Vendors**  
**10 AM to 2 PM – Free VHF/UHF XCVR Frequency Programming**  
**10 AM to 4 PM – Seminars - [www.prescotthamfest.com](http://www.prescotthamfest.com)**

**Saturday - 7 AM to 2 PM - Tailgate Flea Market**  
**8 AM to 3PM - Indoor Vendors**  
**9 AM - VE License Exams (\$15)**  
**10 AM to 2 PM – Free VHF/UHF XCVR Frequency Programming**  
**10 AM to 3 PM – Seminars**  
**3:30 PM – Grand Prize Raffle Drawings (do not need to be present)**

**Order Grand Prize Raffle tickets online by going to [hamfest.w7yrc.org/prizes/](http://hamfest.w7yrc.org/prizes/)**

### **Featuring**

- ✓ Tail Gate Flea Market
- ✓ Consignment Sales
- ✓ ARRL Booth
- ✓ Hourly Prize Drawings
- ✓ DXCC Card Checking
- ✓ Indoor Social Area
- ✓ General Interest
- ✓ Seminars for non-hams
- ✓ Seminars for Beginners, Intermediate, & Advanced
- ✓ Indoor Commercial Vendors
- ✓ Free VHF/UHF XCVR Frequency Programming
- ✓ Grand Prize Raffle Drawings – 3:30 PM Saturday
- ✓ Food and Refreshments Available For Purchase
- ✓ Limited RV Dry Camping Thursday & Friday nights Only - PRE-REGISTRATION IS REQUIRED

**General Admission \$5.00 (all fees good for both days)**

**Friday & Saturday Tailgate - Parking lot space \$10.00, each additional space \$5**

**Friday & Saturday - Commercial Vendors Indoor Table \$25.00, each additional table \$10**

**Full-Time Students FREE with Student ID/ 12 Years and Younger FREE**



***An ARRL Sanctioned and ARCA Co-sponsored Event***

***Hamfest Chair Person: Don Braun KB6BOB ([kb6bob@cox.net](mailto:kb6bob@cox.net))***

**Talk-In Frequency: K7MRG 147.000 MHz (-) PL 162.2 Hz**

**NO GUNS, DRUGS, ALCOHOL, SMOKING, or VAPING**

**LEASHED ANIMALS ARE PERMITTED ONLY IN OUTSIDE AREAS**



**Check for updates and additional details: [www.prescotthamfest.com](http://www.prescotthamfest.com)**

THE MARICOPA AMATEUR RADIO ASSOCIATION

# COPAFEST 2020



OCTOBER 24, 2020  
THE ULTRASTAR AT AK-CHIN CIRCLE  
16000 N MARICOPA ROAD, MARICOPA, AZ 85139

[WWW.COPAFEST.ORG](http://WWW.COPAFEST.ORG) FOR INFORMATION



# ORO VALLEY ARC



# HAMFEST

**Great Fun!**

**Great Raffle Prizes!**

**Indoor VE Session!**

Pre-registration for VE testing preferred  
but not required.

Email [licensing@tucsonhamradio.org](mailto:licensing@tucsonhamradio.org)

**Interesting Seminars!**

See website for Seminar Schedule

**ARRL Booth with Award Card  
Checking and Logbook of the  
World assistance!**

**Food Truck for Breakfast and  
Lunch**

*An ARRL Sanctioned Event*

*Presented by the*

*Oro Valley Amateur Radio Club*

**November 14, 2020**

**Marana Middle School  
11285 West Grier Road  
Marana Arizona 85653**

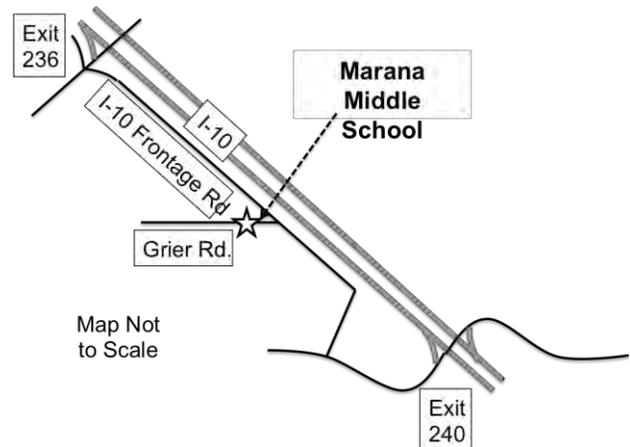
Gates open at 7:00 AM (5:00am for  
sellers) and close at 1:00 PM

Admission: \$5.00 includes a bottle of water  
(Children under 12 free with a paid adult)

Students free with any Arizona school ID

Sellers: \$10 per space (includes the seller)

Contact [hamfest@tucsonhamradio.org](mailto:hamfest@tucsonhamradio.org) for  
more information



[www.tucsonhamradio.org](http://www.tucsonhamradio.org)

Pick "Our Hamfest" from Menu

# Amateur Radio Promote & Support



Examples



**Promote** the Amateur Radio hobby. Show YOUR amateur radio callsign on your Arizona Vehicle License Plate.

**Support** the Amateur Radio hobby. \$17 of the additional annual yearly \$25 cost for an Arizona Amateur Radio Vehicle License Plate goes to fund the following Arizona Amateur Radio activities:

College Scholarships, Youth Programs & Emergency Communications

For more Information go to: <http://www.az-arrrl.org/web/AzPlate.htm>

## The Morse Code Characters

(● means a short beep, & — is a longer beep)

A: ●—	S: ●●●
B: —●●●	T: —
C: —●—●	U: ●●—
D: —●●	V: ●●●—
E: ●	W: ●— —
F: ●●—●	X: —●●—
G: — —●	Y: —● — —
H: ●●●●	Z: — —●●
I: ●●	1: ● — — — —
J: ● — — —	2: ●● — — —
K: —● —	3: ●●● — —
L: ●—●●	4: ●●●● —
M: — —	5: ●●●●●
N: —●	6: —●●●●
O: — — —	7: — —●●●
P: ● — —●	8: — — —●●
Q: — —● —	9: — — — —●
R: ● —●	0: — — — — —

## Punctuation and Procedural Signs

/ (slash): —●●—●
, (comma): — —●● — —
. (period): ● —● —● —
? (question mark): ●● — —●●
BT (pause): —●●● —
AR (end of message): ● —● —●●
SK (end of contact): ●●● —● —

## Do I Need To Know Morse Code?

You do not need to know Morse Code for any ham license. The three classes of licenses are Technician, General, & Extra. You must pass a multiple choice exam in order to gain your license. The higher the class of license, the more operating privileges you gain. Many people stop at the first license, and that's okay, too. People of all ages have passed the test, from 8 years old on up.

## What Is Explorer Post 599?

Exploring is a division of the Boy Scouts of America serving teen boys and girls between the ages of 14 and 21 years old. Each Explorer Post centers its activities around a specialty, usually a career oriented program.

Explorer Post 599 is the Phoenix-area's Ham Radio specialty post. All of our activities center around Ham Radio or high technology education. We meet weekly in a workshop-type meeting, working on projects or learning about an aspect of radio communications. We hold monthly business meetings with a program of interest to the members.

Post 599 has a dedicated group of adults who serve as mentors to the youth members. The adults really enjoy working with the youth, and believe that young people really need Ham Radio. The adults include radio engineers, computer engineers, technicians, and non-technical people, all licensed Ham operators.

Although Exploring is for 14 to 20-year-olds, youth younger than 14 years old are welcomed as associate members and can participate in all activities.

In addition to the weekly meetings, the Post holds at least monthly regular activities, including camping, tours, special training classes, demonstrations of Ham Radio, and providing communications for public service events. All youth and adult members are encouraged to participate in all events.

Explorer Post 599 will form subgroups in various areas of the Phoenix metro area if interest is present. We'll do what it takes to bring Ham Radio to Arizona's youth.

## For More Information

Contact American Radio Relay League  
The National Organization of Amateur Radio  
[www.arrl.org](http://www.arrl.org)

## Contact Explorer Post 599

Advisor: Tom Sharp WA9OXY (602) 569-6512  
Assoc. Advisor: Scott Cowling WA2DFI (480) 929-9529  
Committee Chair: Steve Kafka WB7QGJ (480) 895-6201

## Look for us:

On-the-air on these Phoenix Repeaters: Just Call "W7BSA"  
147.02+(162.2) 146.66-(162.2) 448.80-(100)

[www.post599.org](http://www.post599.org)

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# Ham Radio

*A hobby for everyone*  
*A hobby for life*  
*A hobby that serves*

## Contents:

*What Is Amateur Radio?*  
*Amateur Radio Privileges*  
*A Special Language:*  
*Q-Signals*  
*Phonetics*  
*Signal Reports*  
*The Morse Code*  
*What is Explorer Post 599?*



**EXPLORER POST 599**

**AMATEUR RADIO CLUB**

The Ham Radio Club For Teens

## What Is Amateur Radio?

Amateur Radio is a radio service authorized by the US Federal Communications Commission (FCC) and other similar agencies in other countries. Amateur Radio is also known as Ham Radio.

To operate a Ham Radio, you have to be licensed by the FCC. To get your first license, you must pass a 35 question test (getting 26 right). This test has multiple choice answers and all allowable questions are published so you can study them. There are excellent study books available that teach you every thing you need to know, plus internet-based practice tests to build your proficiency. Many Ham Radio clubs have classes or study groups to help you pass.

Ham Radio is used to talk with other Hams across the nation and around the world. But it is so much more than just talking. Here are just a few of the many aspects of Ham Radio:

- Experimentation with electronics
- Connect computer together with radio
- Talk to astronauts in the Space Station
- Send and Receive Television Video and Pictures
- Track each other using GPS Receivers
- Communicate using morse code
- Make local telephone calls using radio
- Provide disaster communications
- Send weather balloons into the upper atmosphere
- Use ham radio satellites
- Use mobile, hand-held, and base station radios
- Talk with your friends who are hams
- Keep track of your ham family members
- Meet new friends on-the-air
- Field day operations
- Plenty of contests
- Call for help almost anywhere
- Build radios, antennas, and accessories
- See how many different people you can talk to

Ham Radio is more than a telephone, a CB, or FRS radio. It is fun, getting involved in any aspect that interests you. You can use Ham Radio anywhere, while traveling, camping, driving around town, anytime, any place. Ham Radio builds skills, not only in electronics, but also talking with others, helping others, learning geography, science, math, or whatever direction you take it in. For many, becoming Hams at a young age influenced them to become engineers and scientists.

## Amateur Radio Privileges

When you pass your Ham Radio test and receive your license, the FCC gives you the authority to operate radios in certain frequency bands. Shortwave bands allow you to talk around the world. VHF/UHF bands allow line of sight range, which is extended to statewide/region-wide/worldwide through repeaters linked together by radio and the Internet. Hams are experimenting with Microwave bands, seeing how these new frequencies act, how far can contacts be made, and what types of uses can be made of them, such as computer linking, spread-spectrum, and satellite communications.

## The Ham Radio Frequencies

### Shortwave Bands

160 Meters	1.8-2.0 MHz
80 Meters	3.5-4.0 MHz
40 Meters	7.0-7.3 MHz
30 Meters	10.1-10.15 MHz
20 Meters	14.0-14.35 MHz
17 Meters	18.068-18.168 MHz
15 Meters	21.0-21.45 MHz
12 Meters	24.89-24.99 MHz
10 Meters	28-29.7 MHz

### VHF Bands

6 Meters	50-54 MHz
2 Meters	144-148 MHz
1.25 Meters	222-225 MHz

### UHF Bands

70 Centimeters	420-450 MHz
33 Centimeters	902-928 MHz

### Microwave Bands

23 Centimeters	1240-1300 MHz
	2300-2310 MHz
	2390-2450 MHz
	3300-3500 MHz
	5650-5925 MHz
	10.00-10.50 GHz
	24.0-24.25 GHz
	47.0-47.2 GHz
	75.5-81.0 GHz
	119.98-120.02 GHz
	142.0-149.0 GHz
	241.0-250.0 GHz
	All above 300 GHz

Look at all those frequencies! Compare it with the 40 channels at 27-MHz in Citizens Band (CB), or the 14 channels in the 460-MHz Family Radio Service (FRS) band

## A Special Language

As in any specialty, Hams have their own special lingo. These abbreviations are especially useful in Morse Code to reduce the number of letters that need to be sent.

### Q-Signals

<b>QRM</b>	Man made interference
<b>QRN</b>	Natural interference (Static)
<b>QRP</b>	Low power
<b>QRZ</b>	Who is calling me?
<b>QSB</b>	Your signals are fading.
<b>QSL</b>	Acknowledge receipt, "Okay", or a contact card
<b>QTH</b>	Location
<b>73</b>	Best wishes
<b>88</b>	Hugs and kisses (just for fun)
<b>YL</b>	Young Lady (any female operator)
<b>OM</b>	Old Man (any male operator)

## Amateur Radio Phonetics

Phonetics allow spelling a word or a callsign with words starting in the letter. It prevents confusion when letters sound similar, like "F," "S," and "X." For example: "My name is Bill, spelled **Bravo India Lima Lima**"

<b>A</b> LPHA	<b>J</b> ULIETT	<b>S</b> IERRA
<b>B</b> RAVO	<b>K</b> ILO	<b>T</b> ANGO
<b>C</b> HARLIE	<b>L</b> IMA	<b>U</b> NIFORM
<b>D</b> ELTA	<b>M</b> IKE	<b>V</b> ICTOR
<b>E</b> CHO	<b>N</b> OVEMBER	<b>W</b> HISKEY
<b>F</b> OXTROT	<b>O</b> SCAR	<b>X</b> -RAY
<b>G</b> OLF	<b>P</b> APA	<b>Y</b> ANKEE
<b>H</b> OTEL	<b>Q</b> UEBEC	<b>Z</b> ULU
<b>I</b> NDLA	<b>R</b> OMEO	

R-R-T Characteristics	Readability R	Strength S	Tone T (Hz)
1	Unreadable	Faint signals, barely perceptible	Distorted or irregular, very rough and broad
2	Barely readable, occasional words distinguishable	Very weak signals	Very rough and irregular
3	Readable with considerable difficulty	Weak signals	Rough or irregular, filtered out
4	Readable with difficulty	Fair signals	Rough or irregular, some trace of filtering
5	Partly readable	Fairly good signals	Filtered or irregular, but not distorted
6	R/A	Good signals	Filtered tone, definite trace of ripple modulation
7	R/A	Moderately strong signals	Mostly pure tone, trace of ripple modulation
8	R/A	Strong signals	Near perfect tone, slight trace of modulation
9	R/A	Extremely strong signals	Perfect tone, no trace of ripple or modulation of any kind