

Ham Radio SwapFest



Saturday, October 3rd
8:00 am -12:00 noon
Ponderosa Bible Church
(Parking Lot)
1800 N. Beeline Highway
Payson, AZ

Call-In Repeater 147.39 mHz 100 Hz TSQ L

<https://n7tar.org/>

SwapFest RAFFLE

(2) BF-F8HP Tri-Band HT's
(1) My-EMR1 (aka TH-UV88)
Other items still being added!



The Tonto Amateur Radio Association of Payson is organizing a SwapFest and invites everyone to come and participate as a seller or buyer.

The TARA SwapFest will be held Saturday, October 3rd at the **Ponderosa Bible Church** located at **1800 N. Beeline Highway**, Payson, AZ.

SwapFest will open at 08:00 and will run till 12 noon.

To cover expenses, we are charging \$5 per space for tailgaters. There is no entrance fee.

This is an event to buy, sell and swap amateur radio, GMRS radio, electronic and computer equipment. Hams and non-hams are all welcome.

In addition to the Swapfest, we will also be hosting a VE session (FCC License test) at 09:00 AM. There is a \$15 charge for the FCC test.

For more information: <https://n7tar.org/swapfest/>
Vendor Contact Email: n7tar.tara@gmail.com





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NOVEMBER 7, 2026**
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Joe Eisenberg, KONEB

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3D PRINTING FOR AMATEUR RADIO

Learn practical ways to use affordable
3D printing technology for:

- Portable operations
- Antenna projects
- Shack accessories
- Equipment repairs
- Custom station solutions
- And much more!

FEATURED VENDORS & EXHIBITORS



Plus dozen of commercial vendors, clubs, organizations,
and flea market sellers from throughout Arizona.

Giant Indoor Swap meet
Commercial Vendors
Amateur Radio
Equipment
Electronics & Technology
Exhibits
Presentations &
Demonstrations

VE Testing
CLUB Displays
GOTA Station
SuperNet Talk-In
Hourly Prize Drawings

GRAND PRIZE RAFFLE

NEED NOT BE PRESENT TO WIN!

1



**Icom
IC-7300MKII**

100W HF/50MHz
SDR Transceiver

2



**Yaesu
FTX-1 Field**

HF/50/144/430 MHz
Portable Transceiver

3



**Vero
VR-N7600**

50W 2m/70cm
Dual Band Mobile
Transceiver

4



**AnyTone
AT-D890UV**

Dual Band
Handheld Radio



GRAND PRIZE TICKETS

1

TICKET
\$4

5

TICKETS
\$20

10

TICKETS
\$30

20

TICKETS
\$50

Buy online now at www.superfest.info



Event details



RAFFLE TICKETS



Superfest tickets

—WWW.SUPERFEST.INFO—



Facebook



Instagram



Discord



SUPERFEST 2026 GRAND PRIZES

SATURDAY, NOVEMBER 7TH

Icom IC-7300MK2 100W HF/50MHz SDR Transceiver

1ST



Yaesu FTX-1 Field HF/50/144/430MHz All Mode Portable Field Transceiver

2ND



VERO VR-N7600 50W 2m/70cm Dual Band Mobile Transceiver

3RD



Anytone AT-D890UV Radio

4TH



Southern AZ Fall Hamfest

2026 **NOVEMBER 14**

PRESENTED BY ORO VALLEY AMATEUR RADIO CLUB

MARANA MIDDLE SCHOOL 11285 WEST GRIER RD MARANA AZ

GREAT DOOR PRIZES!

DRAWN THROUGHOUT THE EVENT

Over \$4,000.00 in Raffle Prizes!

NEED NOT BE PRESENT TO WIN

BUY TICKETS ON OVARC WEBSITE



LOTS OF SHADE!

FOOD TRUCK!

BREAKFAST AND LUNCH

COFFEE AND DONUTS!

INTERESTING SEMINARS!



**Amateur Radio
Council of Arizona**

ARRL BOOTH!

INDOOR VE SESSION!

EASY ACCESS FROM I-10

See tucsonhamradio.org/hamfest
for more information

SELLER GATE OPENS AT 5:00AM

GENERAL ADMISSION OPENS AT 7:00AM AND CLOSSES AT Noon

WALK-IN ADMISSION \$5.00

SELLER SPACE \$10.00 INCLUDES 1 SELLER ADMISSION

CHILDREN UNDER 12 FREE WITH PAID ADULT—STUDENTS FREE WITH AZ SCHOOL ID

REGISTER FOR VE SESSION AT LICENSING@TUCSONHAMRADIO.ORG BUT NOT REQUIRED

CAN I PLAY, TOO?

Yes, and we really like when you do!

We get LOTS of extra points when non-hams sit down, learn how it's done, and make contacts on the air. We call it "Get On The Air (GOTA)".

Hams talking to one another is fine. But filling our community's communications gap can mean connecting community members with someone *they* need to talk to. We call it "third-party" messages. So putting a third-party person like you on the air simulates us bridging that gap, and that's a banner day for us!

COULD I BE A HAM?

Sure, if you want. You can pass the multiple-choice test and earn a license from the federal government. Children, teenagers, and other non-technical people pass the test all the time after some focused study.

Morse code is no longer required, so you don't have that hurdle.

Books, classes, and online sample tests are available to help you. Google™ to find them.

If you need help, contact me.

WHAT DOES "HAM" MEAN?

"Hams" are not named for the tasty meat.



Instead, it was an insult that Radio Amateurs embraced as a nickname.

The term most likely came from the early commercial radio operators who prided themselves on their precise, quick Morse code. They looked down their noses at the awkward, *ham*-fisted amateurs who made lots of mistakes.

But the amateurs learned radio craft through trial and error, and became more proficient and innovative than the commercial pros. Perfection ridicules mistakes; excellence leverages them to do better than perfect.

Field Day lets us learn and excel.

"HAM" RADIO FIELD DAY

Thank you for visiting us today. One of our goals is to satisfy curious people like you.

You saw licensed Amateur Radio Operators ("hams") contacting one another by radio in an event called "Field Day". Ham radio is a community that enjoys applying science, technology, engineering, and math in practical ways on 2-way radio.

Field Day prepares us to respond when normal communications fail. One of our government-mandated jobs is to fill that communications gap for our communities when trouble strikes.

If you have follow-up questions, contact me.

Name: _____

Callsign: _____

Phone or e-mail: _____

IMPORTANT MESSAGES

World War II Coast Watchers scanned the skies and seas for enemy movements and radioed their reports from hidden, portable locations. Then they packed up and scrambled to avoid capture. They got the important messages through.

When disasters strike, such as the Great Alaska earthquake in March 1964, the first casualty is the telephone system. That earthquake collapsed structures across south-central Alaska, triggered massive tsunamis, and killed 139 people. No help was coming until some hams pieced together makeshift stations and got the news to hams outside the area, who then alerted officials.

Often, large outdoor events like marathons and bicycle races count on ham radio crews to track the participants, make sure the aid stations are well-staffed and -supplied, and coordinate help when someone gets lost or hurt. The racers feel safer because they know the hams can get help when needed.

All those scenarios rely on radios and operators – often outdoors in the field – getting the critical messages through.

FIELD DAY

One way to encourage radio hobbyist to stay ready to fill in when all else fails is to hold fun contests. Folks will do anything if it's fun, meaningful, and earns them some points. Field Day is an *activity*, not a contest, though, because there are no winners or losers. Communication requires people to cooperate, not compete. Points earned just make it more fun and easier to measure our progress year by year.

So in June and January, we hold a Field Day to tote our gear into the field, set it up, and contact as many other stations as we can. Summer heat and winter cold pose different obstacles, so hams challenge ourselves under both conditions.

Field Day runs 24 hours on a weekend. That forces us to master more than just radio stuff. An overnight exercise teaches us leadership and organizational skills; planning; scheduling round-the-clock coverage; logistics like food, shelter, fans in the heat and heaters in the cold; and field sanitation.

Field Day teaches us to be a sturdy communications unit, not one that wilts within a few hours.

ON THE AIR

We didn't send critical messages today, but we earned some points and got dopamine hits by proving that we could, if needed.

We exchanged our radio call signs, the types of operations we were running, and gave our locations. Routine stuff, but placeholders for important messages.

A Field Day station can be one person running a low-power radio off a small battery. Or it can be a handful or dozens of hams using generators or batteries with multiple, powerful transmitters.

It can even be someone operating from home, or a group activating their city, county, or state Emergency Operations Center (EOC) ham station. In disasters, field stations need help that a "base" station can provide. So we exercise both roles.

We earn one point for each station we talk to by voice. Since Morse code (also called "CW") requires more skill and experience, those earn two points. Besides, a CW operator with headphones can rack up points late at night without disturbing sleepers nearby. Bonus!

WHAT DOES “HAM” MEAN?

“Ham” doesn’t stand for anything like “NASA” does. Nor does it have anything to do with the tasty meat.



It was an insult that Radio Amateurs embraced as a nickname.

The history is fuzzy, but it probably came from the early commercial radio operators who prided themselves on their precise, quick Morse code. They looked down their noses at the awkward amateurs whom they accused of sluggish, *ham*-fisted Morse code.

But the amateurs learned radio craft through trial and error, and became more proficient and innovative than the commercial pros. Perfection ridicules mistakes; excellence leverages them to do better than perfect.

POTA lets us learn and excel.

COULD I BE A HAM?

Of course, if you want to. Anyone can receive radio signals. But you must pass a multiple-choice test and earn a license from the federal government to transmit.

The entry-level “Technician” test covers...

- basic radio procedures,
- basic electrical and electronics principles,
- radio regulations, and
- radio wave behavior.

Morse code is no longer required.

Books, classes, and online sample tests are available to help you. Google™ to find them.

The entry-level test doesn’t require you to be a radio engineer. It just ensures that you know enough not to get into trouble on the air. Children, teenagers, and other non-engineers pass the test all the time after some focused study.

If you need help, contact me.

Thank you for stopping by today!

“HAM” RADIO in the PARK

Thank you for your curiosity and questions today. It’s unusual to see a shortwave radio station in the park. What you saw today was a licensed Amateur Radio Operator participating in an activity we call “Parks on the Air® (POTA)”.

Amateur (also called “ham”) Radio is a community of people who enjoy applying science, technology, engineering, math, and even art in practical ways on 2-way radio.

And one function of ham radio is to fill the communications gap for our community when trouble strikes.

If you have more questions, I’ll be happy to help.

Name: _____

Callsign: _____

Phone or e-mail: _____

PORTABLE RADIO OPS

World War II Coast Watchers scanned the skies and seas for enemy movements and radioed their reports from hidden, portable locations. Then they packed up and scrambled to avoid capture. They got the important messages through.

When disasters strike, such as the Great Alaska earthquake in March 1964, the first casualty is the telephone system. That earthquake collapsed structures across south-central Alaska, triggered massive tsunamis, and killed 139 people. No help was coming until some hams pieced together makeshift stations and got the news to hams outside the area, who then alerted officials.

Often, large outdoor events like marathons and bicycle races count on ham radio crews to track the participants, make sure the aid stations are well-staffed and -supplied, and coordinate help when someone gets lost or hurt. The racers feel safer because they know the hams can get help when needed.

All those scenarios rely on field radio operators getting critical messages through. POTA helps keep those skills alive. Besides, it's fun!

PARKS ON THE AIR®

I didn't send critical messages today, but I earned a few bragging-rights points and got a dopamine hit by proving that I could, if needed.

We sent each other our radio call signs, reported how well we heard each other, and gave our locations.

Routine stuff, but placeholders for important messages.

Normally, the calling hams are at home. But sometimes, a station at another park will call, and we'll accomplish a "park-to-park" (P2P) contact for extra points and even more dopamine.

The website parksontheair.com identifies who is currently operating from each activated park.

Those who enjoy POTA operations learn to recognize one another after months or years talking together. So, we often call each other by name during the exchange, too.

It's more fun to work with friends, right?



THE RADIO STATION

You saw a shortwave station today. We use frequencies grouped into distinct "bands" named for their radio wavelengths measured in meters.

The "20 meter" (20m) band (14.00 – 14.35 MHz), for instance, is normally good for daytime contacts around the country and beyond. The antenna can be about 33 feet of wire strung out horizontally, or half that length tall if mounted vertically.

The 40m band (7.0 – 7.3 MHz) can be reasonably good during daytime, reaching a few hundred miles away. But it's best at night when our signals go thousands of miles. The antenna is twice as long as for 20m, so a 40m station is a little more awkward to erect.

The choice of band depends largely on the reflective quality of the upper atmosphere, the "ionosphere". It charges up in the sun and discharges at night. Understanding that is part of the science of ham radio.

Most POTA stations transmit only a handful of watts. Low power radios equal less weight and smaller size, so more portable. Our job is to make the most of our quiet signals.

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>

MCC Electronics

High Tech. Hands On.



Want to *really* learn RF ? Become an Amateur Extra ?

MCC Can help! We are proud to announce that the lab course in Analog RF Communications, **ELE261 – Communication Systems** now focuses on the amateur radio community. The class is taught by amateur extra Mike Childers K7URK, so you know it will be fun and “hands on” — not like the old boring lecture-only college courses you may remember.



We will have access to MCC’s new Ham Shack for use during the course. And feel free to take advantage of this station outside of class with our club. Serious DX-ing awaits!

This lab class includes lecture instruction and hands-on lab bench experiments. During the semester, you will build a working AM/FM radio and use our lab instrumentation and test equipment to troubleshoot and align each stage during construction. We will cover the theory of operation of each stage as we proceed with construction. You’ll need a basic knowledge of:

- ✓ Common components, including op-amps & bipolar transistors
- ✓ Basic familiarity with digital multi-meters and oscilloscopes
- ✓ Ability to read/draw basic schematic diagrams & block diagrams
- ✓ Basic thru-hole PC Board soldering skills
- ✓ Basic math skills in high-school level algebra



If you haven’t had any coursework in the above topics, you can still take the class with equivalent skills and experience. Here’s the general class outline (coverage can vary based on the needs of the group):

I. Introductory Topics

- A. Noise
- B. Noise measurement
- C. Information & BW

II. AM-Transmission

- A. Amplitude modulation
- B. AM analysis
- C. AM generation circuits
- D. AM transmitter systems

III. AM-Reception

- A. Receiver characteristics

B. AM detection

- C. Superhet receivers
- D. Automatic gain control
- E. AM receiver systems

IV. FM-Transmission

- A. Angle modulation
- B. FM Analysis
- C. Noise suppression
- D. Direct and indirect FM
- E. PLL FM transmitter
- F. Stereo FM

G. FM transmissions

V. FM-Reception

- A. Block diagram
- B. RF amplifiers
- C. Limiters
- D. Discriminators
- E. PLL receivers
- F. Stereo demodulation
- G. FM receivers

VI. Digital Comm.

- A. Coding

B. Pulse modulation

- C. Pulse-code modulation
- D. Radio telemetry

VII. Transmission Lines

- A. Types
- B. Propagation down a line
- C. Non-resonant / resonant
- D. Standing wave ratio
- E. Applications

The course meets two nights each week, Mondays and Wednesdays, at 6:30 pm on the MCC campus. Sign up here:

<https://www.mesacc.edu/enroll>



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A MARICOPA COMMUNITY COLLEGE

age, or national origin. A lack of English language skills will not be a barrier to admission and participation in the career and technical education programs of the District. MCCCCD does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs or activities. For Title IX/504 concerns, call the following number to reach the appointed coordinator: (480) 731-8499. For additional information, as well as a listing of all coordinators within the Maricopa College system, visit <http://www.maricopa.edu/non-discrimination>.

The Maricopa County Community College District (MCCCCD) is an EEO/AA institution and an equal opportunity employer of protected veterans and individuals with disabilities. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity,



**MARICOPA
COMMUNITY COLLEGES**

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.

EXPLORER POST 599

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

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

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Ham Radio

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

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A Special Language:

Q-Signals

Phonetics

Signal Reports

The Morse Code

What is Explorer Post 599?



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

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

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

Ham Radio - RST Signal Reports			
R-R-T Characteristics	Readability R	Strength S	Tone T (aw)
1	Unreadable	Faint signals, barely perceptible	Strong code and tone, very rough and broad
2	Barely readable, occasional words distinguishable	Very weak signals	Very rough and broad
3	Readable with considerable difficulty	Weak signals	Rough signals, neither too fast nor too slow
4	Readable with practically no difficulty	Fair signals	Rough copy, some loss of timing
5	Perfectly readable	Fairly good signals	Filtered readings and strongly regulated
6	N/A	Good signals	Filtered tone, definite trace of ripple modulation
7	N/A	Moderately strong signals	Clear pure tone, trace of ripple modulation
8	N/A	Strong signals	Clear perfect tone, slight trace of modulation
9	N/A	Extremely strong signals	Perfect tone, no trace of ripple or modulation of any kind