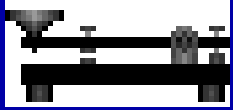




*QRP*





# Why QRP?

The Joys of  
*Low-Power Ham Radio*

**Colorado QRP Club**  
**[www.coloradoqrpclub.org](http://www.coloradoqrpclub.org)**

**QRP**

*Ver 110617*



# What is “QRP?”

A telegraphy Q-signal

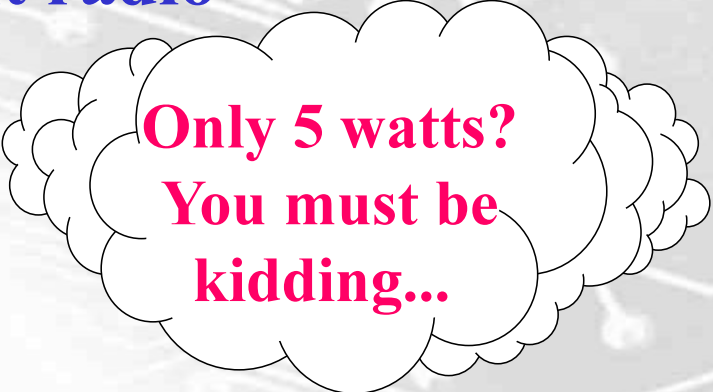
“QRP” = To lower your power

“QRP?” = Can you lower your power?

Five watts RF output power (or less!)

Use a “QRP” rig, or

Turn down your present radio



Only 5 watts?  
You must be  
kidding...

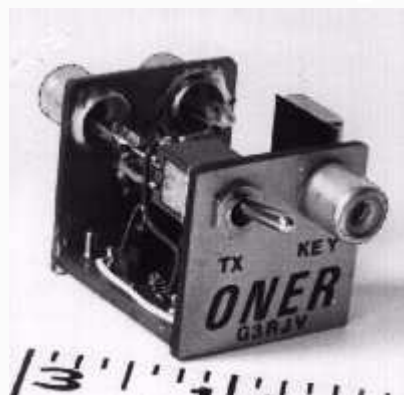
**QRP**



## Part 97, FCC Rules

“Run only the power necessary to maintain the desired communications.”

There is, of course, room for interpretation...



QRP

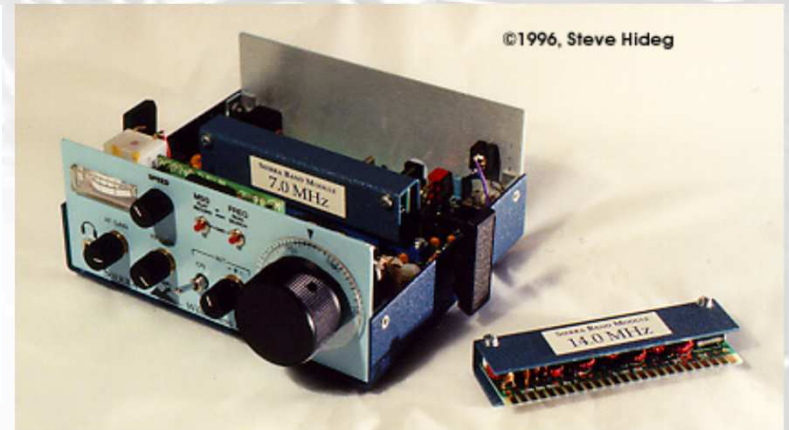
# Why QRP?

- Signal strength allows it
- Safer for you, your family, and the public
- Quality and simplicity of equipment
- Joys of homebrewing & kit-building
- Excellent way to improve skills
- Backpacking
- It's fun!



*Elecraft KX3 w/PX3*

*Wilderness Sierra*



**QRP**

# CW vs. SSB

## Typical bandwidth

CW = 100 Hz

SSB = 2000 Hz

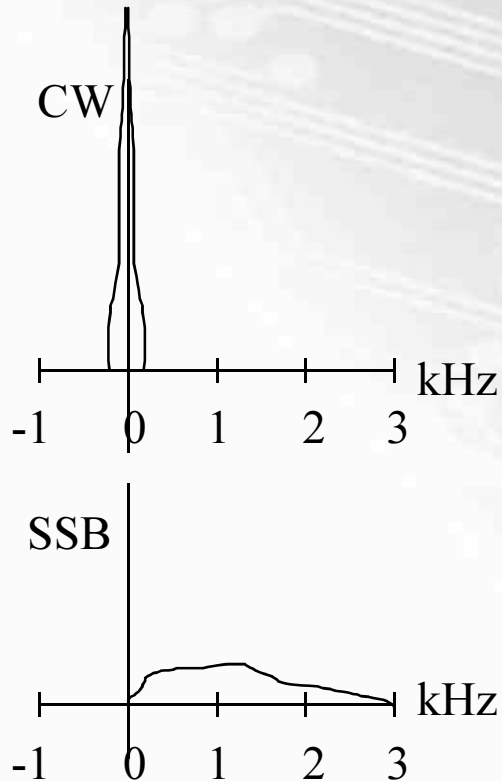
## Average power density

CW = 1 watt/Hz

SSB = 0.05 watts/Hz

## Which leads to...

Gain =  $10 * \log (1.00/0.05) = 13 \text{ db!}$



Output power = 100w

***5w CW is equivalent to 100w SSB!***



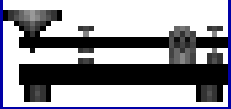
**QRP**



# What Does This Mean?

- Most (but not all) QRP QSOs are CW QSOs
- Thus, if you plan to try QRP...
  - Learn code, practice code, use code, dream code, etc.
- So who does QRP SSB/digital?
  - Lots of people
  - An even bigger challenge than CW QRP

**QRP**



# QRP “Optimization”

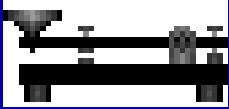
- 1) Size & weight increase with maximum output power
- 2) Minimize current draw
  - No lamps (except LEDs)
  - No digital display unless LCD
  - Maximize TX efficiency
- 3) Use few components & pack the board tightly
- 4) Use ICs if possible
- 5) Sensitive RX - If you can't hear 'em, you can't work 'em



*Oak Hills Research 100A*

**QRP**





# Size and Weight vs. Max. Power

Conventional 100w setup	Icom 735, etc.	12 lbs.
	Tuner	6 lbs.
	<u>Astron RS-20</u>	<u>25 lbs.</u>
	<b>TOTAL</b>	<b>43 lbs.</b>
	<b>TRANSPORT</b>	<b>Trunk of Car</b>
QRP setup	QRP rig	2 lbs.
	Tuner	2 lbs.
	<u>Power supply/battery</u>	<u>3 lbs.</u>
	<b>TOTAL</b>	<b>7 lbs.</b>
	<b>TRANSPORT</b>	<b>Small Briefcase</b>

**QRP**



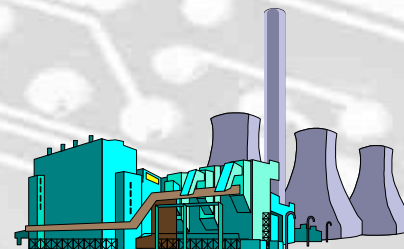
# Power Requirements for a Day

To run for 24 hours - 10% xmit, 90% receive:

Conventional, compact HF rig (IC-706, Yaesu FT-890)

Receive - 2 amps...Xmit - 4 to 20 amps (avg. 10 amps)

**TOTAL CONSUMPTION - 67.2 A-H (a car battery)**



QRP-optimized rig

Receive - 100 milliamps...Xmit - 500 milliamps

**TOTAL CONSUMPTION - 3.36 A-H (a 3-lb. gel cell)**

**QRP**



# Kitbuilding & Homebrewing

We are natural builders and experimenters

- \* Complete radios have been built from old TVs  
(Tubes are harder to kill than transistors)
- \* Thousands of schematics are available



*The Pixie Transceiver*

**QRP**

# Kits/Rigs

Kits are currently available

Single- and multi-band transceivers

Receivers, Transmitters, Accessories

Made for a wide range of abilities

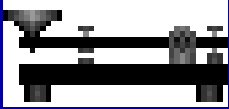
“Complete and fully documented”

“Bag-o-parts and a board”

“U-scrounge-em”



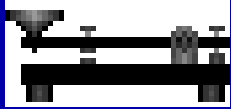
**QRP**



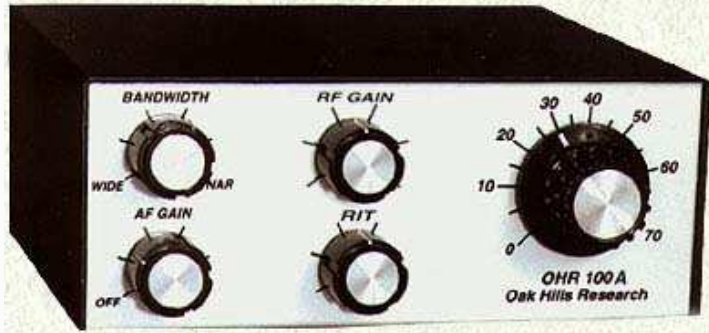
# Kits/Rigs



QRP



# Kits/Rigs



QRP



# Kits/Rigs



**QRP**



# Kits/Rigs



**QRP**



# Kits/Rigs



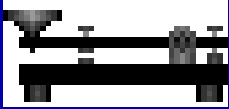
QRP



# Kits/Rigs



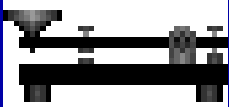
QRP



# Kits/Rigs



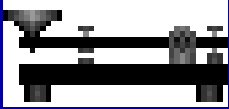
QRP



# Kits/Rigs



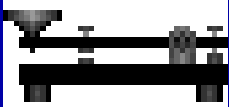
**QRP**



# Kits/Rigs



QRP



# Kits/Rigs



**QRP**



# Antennas!!!

The most important part of ANY station

A radio hooked to a dummy load will hear nothing

Good coax

Good antenna tuner (with non-resonant antennas)

Well-built antennas

Beams work wonders, as do full-size loops

Dipoles and verticals work OK, too

*A poor antenna system hurts your  
receiver AND transmitter*



**QRP**



# Taking to the Field

**Mountaintop operation adds to a radio's performance!**

**Complete station:**

**single-band rig**

**dipole cut to proper length, with coax & rope**

**straight key or iambic paddles w/electronic keyer**

**gel cell battery**

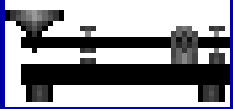
**pen & paper for logging**

**nice campsite with tall trees**



**QRP**



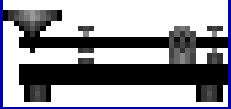


# Taking to the Field

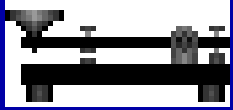


**QRP**

Can you spot the ham in this picture?



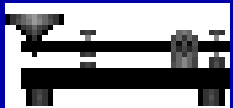
*QRP*



# NØLX working the world from 13,800 ft. in Colorado



**QRP**



# Bicycle Mobile



NØLX using his  
FT-817



**QRP**



# QRP DXing

**There are two rules for QRP DXing:**

- 1) Listen, listen, listen**
- 2) When in doubt, see rule #1**

**Put your signal where and when the others ain't**

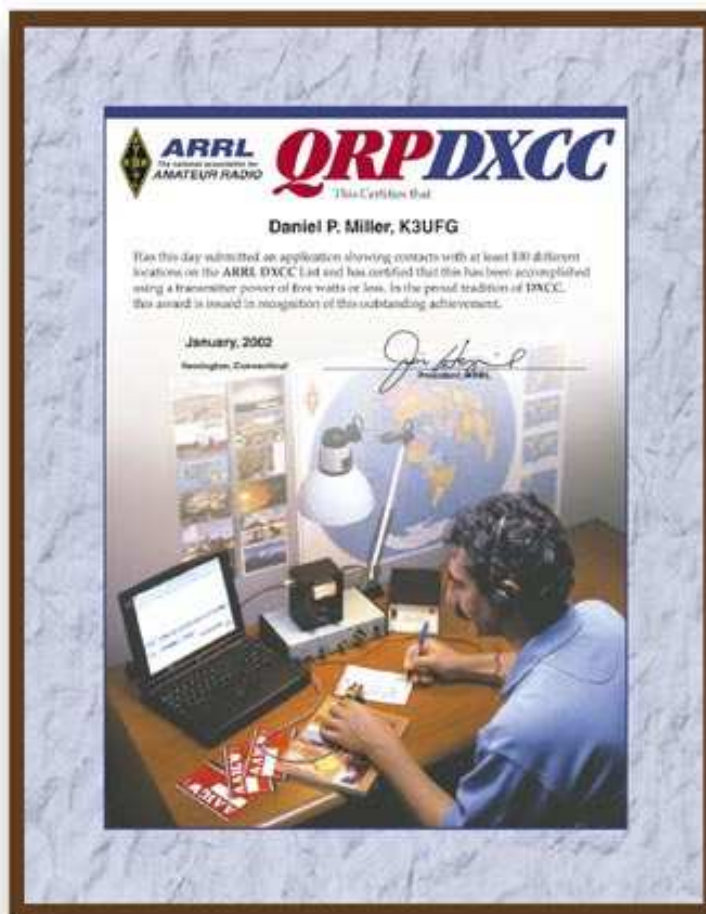
**Let others QRM each other, and pick your spot**

**Try to get in BEFORE the pileup starts! (see rule #1, above)**

**QRP**



# QRP DXing



QRP



# QRP Contesting

Great way to pick up QSOs, countries, states, continents

Good operators with good ears

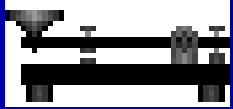
Equipment & antennas are optimized

Lots of QRP-only club-sponsored contests

Many QRP categories in larger contests

**You DO have a chance!**

**QRP**

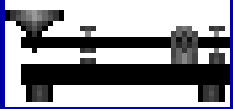


# QRP Contesting



**QRP**

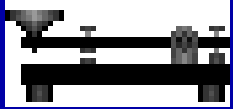




# QRP Contesting



**QRP**



# QRP Contesting



**QRP**



# A Favorite Thing to Hear...

“HOW much power are you running? A watt? Really? No way.”

“Way.”

*Heath HW-8*



**QRP**

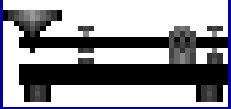


# VHF/UHF QRP? Yes!



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

**QRP**



# VHF/UHF QRP? Yes!

5 watts into a 20-element Yagi can do VERY well

Much 1296, 2304, 3456, and higher frequency gear is homebrewed, and is already QRP

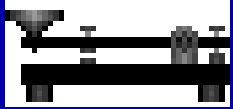
On 6 meters, 5w and a dipole is more than adequate

Sporadic-E

Lots of people DO have beams

Use THEIR antennas to your advantage

**QRP**



# Why QRP?

Because it's fun!

Because it's a challenge!

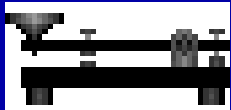
Because it's what 'ham radio' is all about!

## Join the fun today!

Contact the Colorado QRP Club to learn more.

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

**QRP**



## Club Membership

- High Power Fun @ Low Power Costs
- Club Meetings and Presentations
- Chat N Chews
- Contests / Events
- Field Day
- Elmering
- \$5 for life!



**QRP**



## Did we mention **FIELD DAY**???



**QRP**

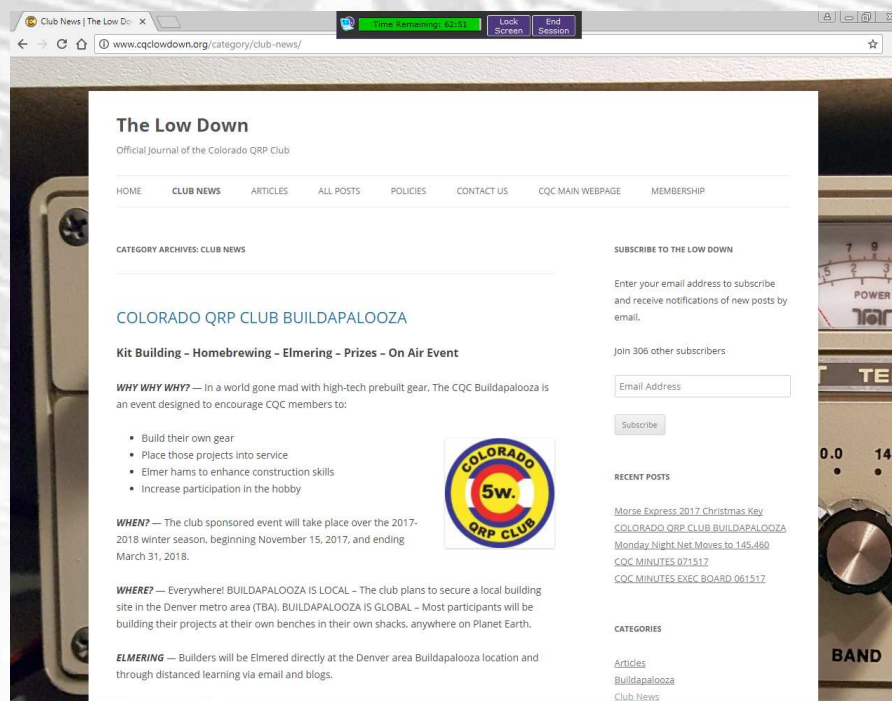




# CQC Low Down

Official Journal of the Colorado QRP Club

- [www.cqclowdown.org](http://www.cqclowdown.org)
- Photos / Soapbox
- Announcements
- Club News
- Articles / Ideas
- Email Delivery
- Always Online



QRP



# Buildapalooza!

- Club Members Build Kits
- Homebrew Projects AOK
- Nov. 15, 2017 – Mar. 31, 2018
- On Air Event Spring 2018
- Denver Area Build Location
- Global Event
- Elmering
- PRIZES!



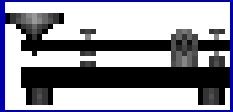
**QRP**

# Colorado QRP Club

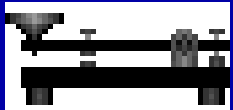
Uhhh... Dit

Uhhh... Dah

Uhh.....



QRP



Questions?



Remember...  
Life's too short  
for \$800 finals!

Dit Dit!

**QRP**