

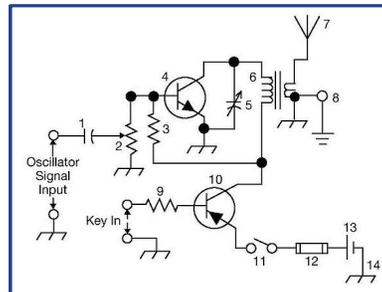
THE ARRL

TENTH EDITION

# GENERAL CLASS

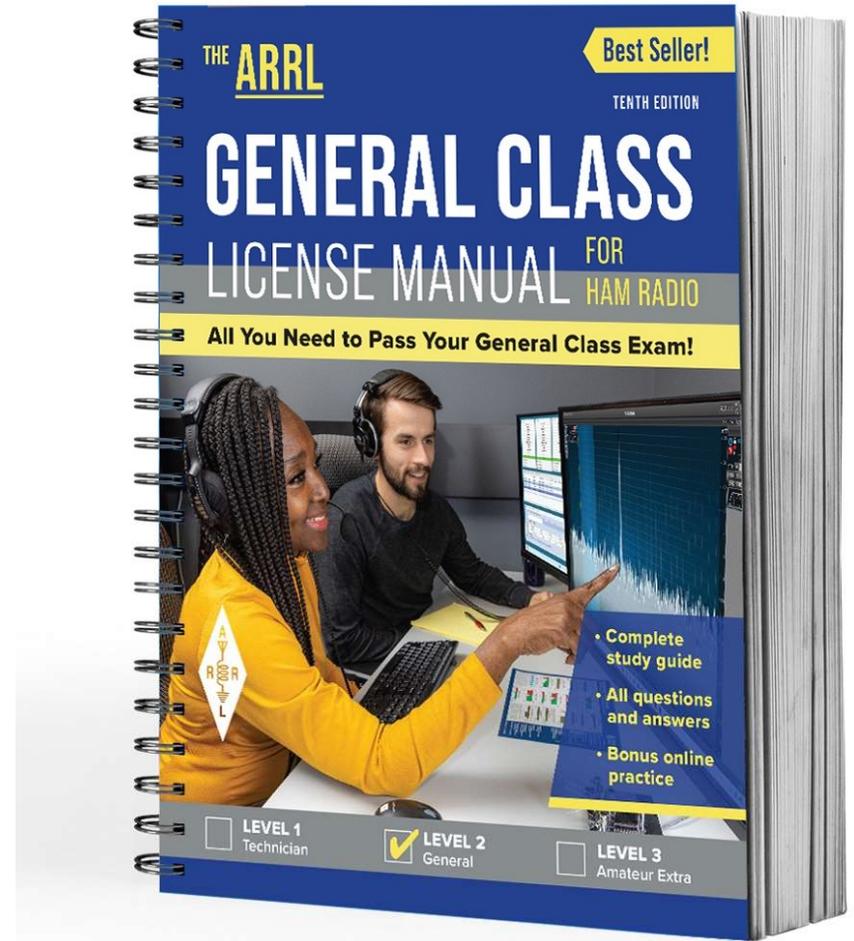
LICENSE COURSE FOR  
HAM RADIO

**All You Need to Pass Your General Class Exam!**



# Resource & Reference

[www.arrl.org/shop/Licensing-Education-and-Training](http://www.arrl.org/shop/Licensing-Education-and-Training)



# Chapter 1 Part 1 of 1

ARRL General Class  
Sections 1.1, 1.2, 1.3

Introduction

# Introductions

- Instructors
- Students
  - What is your name?
  - Tell us about yourself.
  - Why are you taking this course?
  - What do you know about ham radio?
  - What are your expectations for yourself & instructors?

# Instructors' Expectations

- Class will start and end on time
- Instructor will be prepared for each topic
- Students are expected to read assigned material before class and be ready to learn
- Ham radio is NOT a spectator sport
  - Active participation in class is vital to success in obtaining your General Class license

# Course Overview (book chapters)

1. Introduction
2. Procedures & Practices
3. Rules & Regulations
4. Components & Circuits
5. Radio Signals & Equipment
6. Digital Modes
7. Antennas
8. Propagation
9. Electrical & RF Safety
10. General Question Pool

# General Question Pool Subelements

#	Title	# Exam Questions
G1	Commission's Rules	5
G2	Operating Procedures	5
G3	Radio Wave Propagation	3
G4	Amateur Radio Practices	5
G5	Electrical Principles	3
G6	Circuit Components	2
G7	Practical Circuits	3
G8	Signals and Emissions	3
G9	Antennas and Feed Lines	4
G0	Electrical and RF Safety	2

# Let's Get Started!

- Our goal during this class is for each of you to achieve the General class Amateur Radio license!
- This license will authorize you to operate an Amateur Radio (ham radio) transmitter on frequencies well beyond that allowed with a technician class license

## Section 1.1

# The General Class License and Amateur Radio

- Reasons to upgrade
  - More frequencies (covered in Chapter 3)
  - More communications options (expanded HF)
  - New technical opportunities (studying and using effects of the ionosphere & solar conditions, for example)
  - More fun (DXing, contesting, e.g.)
  - You can be a Volunteer Examiner

# Section 1.2

## How to Use the ARRL General Manual

- Chapters begin with brief review of Technician material for this topic
- Covers exam questions (and correct answer), along with examples
- Questions to be covered are listed at the beginning of the section
- ARRL General webpage:
  - [www.arrl.org/general-class-license-manual](http://www.arrl.org/general-class-license-manual)
  - Includes supplements and clarifications
- After completing a chapter/section, review the questions in the Question Pool
- Online practice exams at:
  - [www.arrl.org/examreview](http://www.arrl.org/examreview)

# Section 1.3

## The Upgrade Trail

- Primary topics of focus as a General
  - Operating effectively on HF
  - Digital modes such as FT8, PSK31, PACTOR, and VARA
  - Solar effects on HF propagation
  - Test instruments
  - Practical electronic circuits
  - Common antennas used on HF

# Section 1.3

## The Upgrade Trail (cont.)

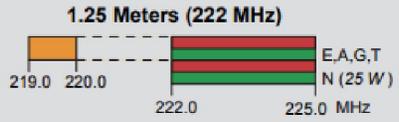
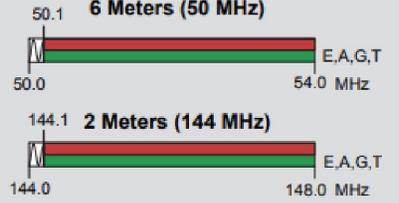
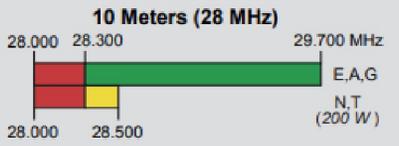
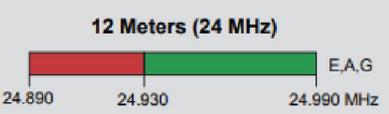
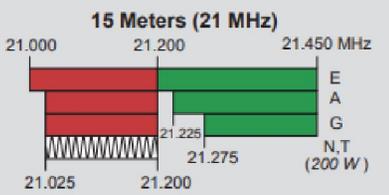
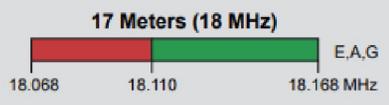
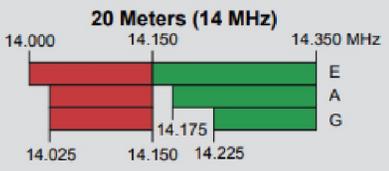
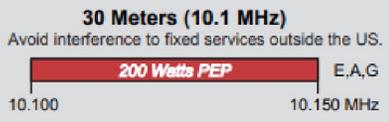
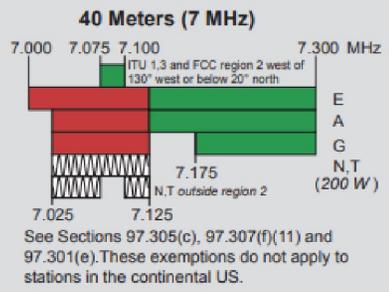
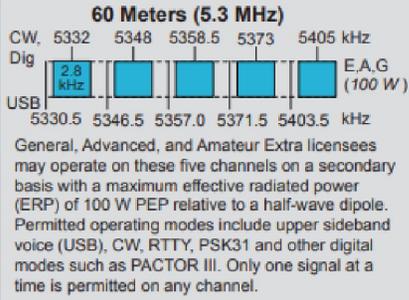
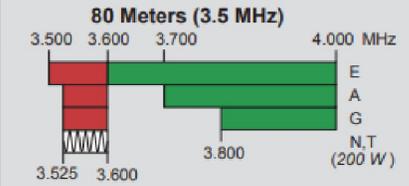
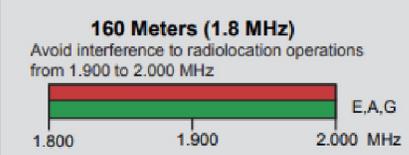
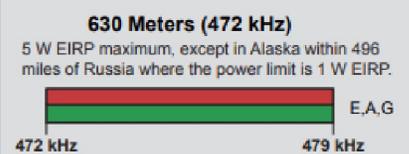
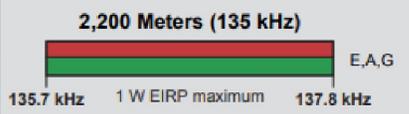
- Testing
  - When you pass the General exam, you will have the opportunity to take the Extra exam at the same time ... no additional fee
  - Find a test session
    - [www.arrl.org/exam](http://www.arrl.org/exam)
    - Online testing is available: [www.arrl.org/online-exam-session](http://www.arrl.org/online-exam-session)
  - Bring a copy of your license and two forms of ID to the test session (one must be a photo ID)
  - Once you pass, the VEC will submit your results to the FCC, and the FCC will update you in the database ... you'll be able to use your new General privileges immediately upon passing, even though the FCC database may not be updated ... just append **/AG** to your call sign ... KØILP/AG (for voice operation, say **KØILP SLASH AG**)
  - Test consists of 35 questions ... must answer 26 correctly

# 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.

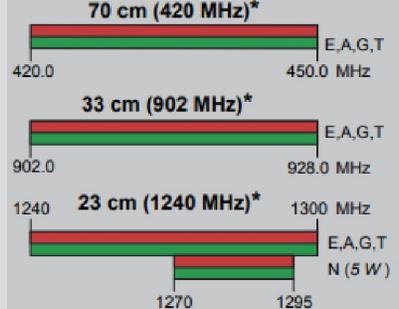


Amateurs wishing to operate on either 2,200 or 630 meters must first register with the Utilities Technology Council online at <https://utc.org/plc-database-amateur-notification-process/>. You need only register once for each band.



**1.25 Meters (222 MHz)**

219.0 220.0 222.0 225.0 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](http://www.arrl.org) at [www.arrl.org](http://www.arrl.org) for detailed band plans.

**ARRL**  
**We're At Your Service**

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

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Toll-Free 1-888-277-5289 (860-594-0355)  
email: [orders@arrl.org](mailto:orders@arrl.org)

Membership/Circulation Desk:  
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Toll-Free 1-888-277-5289 (860-594-0338)  
email: [membership@arrl.org](mailto:membership@arrl.org)

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

Exams: 860-594-0300 email: [vec@arrl.org](mailto:vec@arrl.org)

<http://www.arrl.org/graphical-frequency-allocations>

# General Privileges

BAND	FREQUENCIES	MODES	POWER
2200 m	135.7-137.8 kHz	CW, Phone, Image, RTTY/Data	1 W EIRP maximum
630 m	472-479 kHz	CW, Phone, Image, RTTY/Data	5 W EIRP max (see AK exception)
160 m	1.800-2.000 MHz	CW, Phone, Image, RTTY/Data	1500 watts PEP max
80 m	3.525-3.600 MHz	CW, RTTY/Data	1500 watts PEP max
80 m	3.800-4.000 MHz	CW, Phone, Image	1500 watts PEP max
60 m	5330.5 kHz	CW, Phone, RTTY/Data	100 W PEP max
60 m	5346.5 kHz	CW, Phone, RTTY/Data	100 W PEP max
60 m	5357.5 kHz	CW, Phone, RTTY/Data	100 W PEP max
60 m	5371.5 kHz	CW, Phone, RTTY/Data	100 W PEP max
60 m	5403.5 kHz	CW, Phone, RTTY/Data	100 W PEP max
40 m	7.025-7.125 MHz	CW, RTTY/Data	1500 watts PEP max
40 m	7.175-7.300 MHz	CW, Phone, Image	1500 watts PEP max
30 m	10.100-10.150 MHz	CW, RTTY/Data	200 watts PEP max

## General Privileges (cont.)

BAND	FREQUENCIES	MODES	POWER
20 m	14.025 -14.150 MHz	CW, RTTY/Data	1500 watts PEP max
20 m	14.225 -14.350 MHz	CW, Phone, Image	1500 watts PEP max
17 m	18.068-18.110 MHz	CW, RTTY/Data	1500 watts PEP max
17 m	18.110-18.168 MHz	CW, Phone, Image	1500 watts PEP max
15 m	21.025-21.200 MHz	CW, RTTY/Data	1500 watts PEP max
15 m	21.275-21.450 MHz	CW, Phone, Image	1500 watts PEP max
12 m	24.890-24.930 MHz	CW, RTTY/Data	1500 watts PEP max
12 m	24.930-24.990 MHz	CW, Phone, Image	1500 watts PEP max
10 m	28.000-28.300 MHz	CW, RTTY/Data	1500 watts PEP max
10 m	28.300-29.700 MHz	CW, Phone, Image	1500 watts PEP max
6 m	50.0-50.1 MHz	CW Only	1500 watts PEP max
6 m	50.1-54.0 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max

# General Privileges (cont.)

BAND	FREQUENCIES	MODES	POWER
2 m	144.0-144.1 MHz	CW Only	1500 watts PEP max
2 m	144.1-148.0 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max
1.25 m	222.00-225.00 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max
1.25 m	219-220 MHz	Fixed digital message forwarding systems	50 watts PEP max
70 cm	420.0-450.0 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max
33 cm	902.0-928.0 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max
23 cm	1240-1300 MHz	CW, Phone, Image, MCW, RTTY/Data	1500 watts PEP max

All modes, 1500 watts PEP max: 2300-2310 MHz, 2390-2450 MHz, 3300-3450 MHz, 5650-5925 MHz, 10.0-10.5 GHz, 24.0-24.25 GHz, 47.0-47.2 GHz, 76.0-81.0 GHz\*, 122.25 -123.00 GHz, 134-141 GHz, 241-250 GHz, All above 300 GHz (\* Amateur operation at 76-77 GHz has been suspended till the FCC can determine that interference will not be caused to vehicle radar systems)

END OF CHAPTER 1 PART 1 OF 1

Slides created by ...

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Feel free to contact me if you find errors or have suggestions for improvement.