

Getting Your Ham Radio License for Mesh Networking

You do not need a ham radio license to use Meshtastic or MeshCore - both operate on the FCC Part 15 ISM band, which is license-free. However, getting your Technician license opens up significant advantages for mesh network operators.

Why a License Helps (But Isn't Required)

- **Higher power:** 902-928 MHz is also the amateur 33 cm band, so licensed operators may run LoRa mesh under Part 97 at higher power than Part 15 ISM allows - but only with encryption disabled and full callsign identification (this is Meshtastic's "licensed ham mode"). Most mesh users stay on Part 15 instead so they can keep encryption, in which case a license does not raise your allowed power.
- **Community credibility:** Many emergency management agencies, ARES, and CERT programs prefer working with licensed operators
- **Broader skill set:** The license exam covers RF propagation, antenna theory, and electrical safety - directly applicable to mesh network work
- **Club liability insurance:** ARRL-affiliated radio clubs can purchase liability insurance (commonly around \$1M per occurrence) through the ARRL-sponsored club insurance program - useful for club-run community network infrastructure installations. Individual ARRL membership does NOT by itself include liability coverage; the coverage is a policy that affiliated clubs buy.
- **Community:** Ham radio clubs are natural partners for mesh network expansion; a license makes you a full member of that community

The Technician License

The entry-level FCC amateur radio license requires passing a 35-question written exam. No Morse code is required (the code requirement was eliminated in 2007). The exam covers:

- Basic radio regulations (FCC Part 97)

- Basic electronics and RF theory
- Antenna fundamentals
- Operating practices and safety

Study time to pass: 10-20 hours for most people with basic electronics background. Mesh network operators often find they already know much of the RF theory content from their practical experience.

Study Resources

- **HamStudy.org** - Free to use on the web, with adaptive learning that tracks what you've gotten wrong and focuses practice there. The companion iOS/Android mobile app is a small paid purchase. Highly recommended.
- **The ARRL Ham Radio License Manual** - The official Technician study guide; roughly \$25-33 in print (check arrl.org for current pricing). Very thorough.
- **KB6NU's "No-Nonsense" Technician Study Guide** - Free PDF download; 50 pages, focused and practical.
- **HamWhisperer YouTube channel** - Video explanations of exam questions.

Finding an Exam Session

Technician exams are administered by Volunteer Examiner (VE) teams. Find a session:

- **arrl.org/find-an-amateur-radio-license-exam-session** - ARRL exam session database by zip code
- **hamstudy.org/sessions** - Searchable list of upcoming in-person and online exam sessions
- **Local amateur radio clubs** - Most clubs hold regular exam sessions, often free or low-cost

Exam session fees are set by the coordinating VEC (Volunteer Examiner Coordinator), not by each VE team - typically \$0-15 (the ARRL VEC charges \$15; some coordinators such as GLAARG charge little or nothing). The FCC charges an additional \$35 for processing your license application (as of 2022).

After You Pass

Your license will be issued within 1-10 days of passing. Your callsign will be assigned automatically. Use your callsign:

- As your Meshtastic node long name (e.g., "KG7XYZ-Mobile")
 - For identification when operating on ham bands
 - For joining ARES or other emergency communications programs (ARES participation requires an amateur license but not ARRL membership) and, if you wish, ARRL membership
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