

## AMATEUR RADIO: BARC Baltimore Amateur Radio Club - FIRST STEP



This document will detail the beginning steps along with the time and cost to achieve a 2-way, 2-meter contact via a 2 M (2 Meter 146.67- MHz) repeater.

It's Easy – If I told you hard, you would not attempt. Learning is about desire first.

The Technician license is attainable. Some pass with 8 hrs. of learning or memorization.

Requires: Basic Math, metric system, STEM science.

### Time:

Dependent on each person's ability to learn.

8 hrs. to 50 hrs. depending on the student.

Age 18 and under the cost is \$50 USD Over the age of 18, the cost is \$100 USD

### Benefit:

*College Scholarships*

*Good understanding of VHF / UHF communication*

*SAFETY*

*Electronics basics*

*Troubleshooting*

*Working with your hands*

*Emergency communication*

*Program/code a radio w Chirp*

*Metric System*

*Career Skills, Networking*

*Atmosphere propagation*

*1% Have the skills: be part of a small group. Less than 1 million in the USA.*

**Detail:**

Before starting, find a local radio club. BARC Baltimore Amateur Radio Club is set up for new beginners.

**Obtain the Technician License:**

**\*FCC Start Registration\*** Note only if sure. The fee is \$35 and a period to process. Under 18\$ is reimbursed via ARRL. The license is 10 years.

(SAMPLE TEST AND TEST PREP FREE ONLINE ARRL)

*One should always refer to the ARRL site for the latest question pools*

Video how to: <https://youtu.be/ofg03VMKlvE?si=4QlPIZfuVIqyLOU8>

**EXAM:**

The Tech License is by Exam. Exams can be found free. The Exam site will inform how to proceed.

<https://www.arrl.org/find-an-amateur-radio-license-exam-session>

**Study Books:** ARRL 5<sup>th</sup> Edition. There are other study guides and all are intending to pass the exam.

-Check the local library and any radio club library. Lend a book.

**Courses:** ARC NEM Free Zoom Course, there are others free and paid.

**GOAL:** pass the exam at 73% or better.

*My study was 50 hours. 25 hours ARC NEM Course, 10 Hours reading, 10 hours Test samples to 95%. Rest hands-on with the radio. I wanted a deep learning experience.*

When the study is complete, Use the ARRL sample test to achieve 85% on each level.

Take the exam. Baltimore area, 95% pass the exam first time out.

**Chapters Summary:**

- 1- Welcome to Amateur Radio
- 2- Radio and Signals fundamentals
- 3- Electricity, Components, and Circuits
- 4- Propagation, Antennas, and Feedlines
- 5- Amateur Radio Equipment
- 6- Communicating With Other Hams
- 7- Licensing Regulations
- 8- Operating Regulations
- 9- Safety

1Sample Test

Technician Exam Review									
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Return to Main</div>									
Your score this round: 47 correct of 56 questions									
Chapter	Chapter Progress				Sub-element	Subelement Progress			
	Total Pool	Total Answered	Total Correct	Percent Correct		Total Pool	Total Answered	Total Correct	Percent Correct
2	25	25	21	84%	1	67	62	49	79%
3	91	91	85	93%	2	36	4	3	75%
4	66	66	61	92%	3	34	34	34	100%
5	56	56	47	84%	4	24	19	14	74%
6	68	0	0	0%	5	52	52	45	87%
7	30	30	27	90%	6	47	47	47	100%
8	32	32	22	69%	7	43	42	38	90%
9	43	43	37	86%	8	48	23	20	87%
					9	24	24	19	79%
					0	36	36	31	86%
<b>Total</b>	<b>411</b>	<b>343</b>	<b>300</b>	<b>87%</b>	<b>Total</b>	<b>411</b>	<b>343</b>	<b>300</b>	<b>87%</b>

**PASSED Now what?**

**Gear** – this is the minimum to have for our area to 12 miles from Towson MD.

An HT (hand Held radio dual band) 2 Meters and 70 cm - \$30 USD

**BARC can support HT:** Boafeng: UV5, 5R, GT. TYT: TH-UV88 (DEAL: Jumpstart Jan-Mar)

**TYT TH 9800 (Quad band mobile).** (BARC Elmers can add to the list of MFG)

Antenna system 48 inch – \$10 USD

A Nice antenna multi-purpose is a 2M, 5/8 wave Mag Mount antenna. Home, Apt, Condo, Remote, Auto. Used \$45 New \$80. My base antenna was \$105 GP-3 Comet Dual Band. 2M 70cm

Charger

Programming cable \$9 USD

Access to a computer to run CHIRP and MFG programs to code radio

BARC can help with programming of a radio, which beginners find challenging.

**Get on The Air (GOTA)**

LOS Line of Sight. About 4 to 5 miles. Radio to radio is LOS + % or less.

A repeater is what is used for longer distances. HT has to be programmed for the repeater.

Once a radio is coded, test for connection and a response from the repeater.

Vid KC3YFZ – TYT/Baofeng Repeater test [https://youtu.be/mswXsSplI\\_q?si=LTfV55hyTbhUbA1V](https://youtu.be/mswXsSplI_q?si=LTfV55hyTbhUbA1V)

**Can you Hear Others?** Hearing is easy, but transmitting and contact/conversation are hard.

Vid KC3YFZ – Test Contact <https://youtu.be/YpJUBEIULLU?si=VhWGNCEINjD7anJr>

BARC Repeater is used every evening at 06:30 PM EST for the Baltimore Traffic Network.

<https://www.baltimoretraffic.net/>

Perfect time to test and introduce yourself.

**CONGRATULATIONS !!!!!**

Ask the Elmers about BARC’s Services: Loaner programs, test gear, contesting, and mentoring.



## Terms, Vocabulary:

<https://www.arrl.org/ham-radio-glossary>

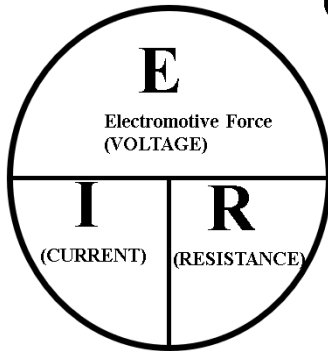
<https://www.larig.org/glossary-of-amateur-radio-terms/>

This Document Appendix

Acronym	Term	Page	Cross-Reference Count	Cross-Reference Pages
ARRL	The National Association for Amateur Radio® (ARRL.ORG)			
GOTA	Get on The Air	3		

MY Prep Sheet for Technician

OHMS LAW Direct Current (DC)

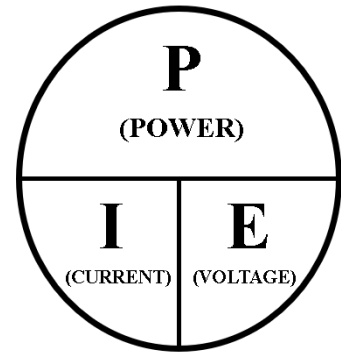


**I (current) Measured in A (amps) ammeter**

**P (power) measured in W (watts)**

- HF 3 to 30 MHz
- VHF 30 to 300 MHz
- UHF 300 MHz to 3 GHz

$$Wavelength(M) = \frac{300}{f \text{ in MHz}}$$



E	=	I	x	R
I	=	E	/	R
R	=	E	/	I

Length of 1/2 wavelength antenna:

$$Length \text{ (in feet)} = \frac{468}{Frequency \text{ (in MHz)}}$$

Length of 1/4 wavelength antenna:

$$Length \text{ (in feet)} = \frac{234}{Frequency \text{ (in MHz)}}$$

P	=	I	x	E
I	=	P	/	E
E	=	P	/	I

International System of Units (SI)

Prefix name	Prefix symbol	Value		
giga-	G	10 <sup>9</sup>	1,000,000,000	one billion
mega-	M	10 <sup>6</sup>	1,000,000	one million
kilo-	k	10 <sup>3</sup>	1,000	one thousand
(none)	(none)	10 <sup>0</sup>	1	one
centi-	c	10 <sup>-2</sup>	.01	one one-hundredth
milli-	m	10 <sup>-3</sup>	.001	one one-thousandth
micro-	μ	10 <sup>-6</sup>	.000001	one one-millionth
nano-	n	10 <sup>-9</sup>	.000000001	one one-billionth
pico-	p	10 <sup>-12</sup>	.000000000001	one one-trillionth

Thanks:

National Electronics Museum -NEM/ARCNEM for the Free video training and a Station for learning HF.

My BARC Elmers and Editors.