TECH TEST CHEAT SHEET

by Dan Romanchik, KB6NU

One of the problems with the Technician Class amateur radio license exam is that so many questions can be answered correctly only by memorizing the answers. If any of these questions came up in real life, one would consult a book for the correct equation or information.

That being the case, I'm offering this "cheat sheet" that someone could use while taking practice tests to answer these questions. Just don't get too dependent on this cheat sheet, as you won't be able to use while taking the real test, at least not yet anyway.

Ohm's Law

 $E = I \ge R$

I = E/R

R = E/I

where E is the voltage across a circuit, I is the current flowing through the circuit, and R is the resistance of the circuit.

DC power equations

 $P = E \ge I$

E = P/I

I = P/E

where P is the power being generated or consumed by a circuit or system, E is the voltage across the circuit or system, and I is the current flowing through the circuit or system.

Scientific notation prefixes and numeric equivalents

Prefix	Abbreviation	Numerical	Exponential
giga-	G	1,000,000,000	10 ⁹
mega-	М	1,000,000	10 ⁶
kilo-	k	1,000	10 ³
		1	10 ⁰
milli-	m	0.001	10-3
micro-	µ ,u	0.000001	10-6
nano-	n	0.00000001	10 ⁻⁹
pico-	Р	0.00000000001	10 ⁻¹²

Decibels and the equivalent linear ratios

For the Tech test, you don't need to know how to calculate the power ratio in dB. All you need to know are these three values: 3 dB, 6 dB, and 10 dB.

Value in dB	Power Ratio	Value in dB	Power Ratio
3 db	2:1	-3 dB	0.5: 1
6 dB	4:1	-6 dB	0.25:1
10 dB	10:1	-10 dB	0.1:1

Frequency to wavelength and wavelength to frequency equations

wavelength (m) = 300,000,000 / frequency (Hz) = 300 / frequency (MHz)

frequency (Hz) = 300,000,000 / wavelength (m)

frequency (MHz) = 300 / wavelength (m)

Equations for calculating half-wave and quarter-wave antenna lengths

For a half-wave dipole antenna, length (ft.) = 468 / frequency (MHz)

For a quarter wave vertical, length (ft.) = 234 / frequency (MHz)

2-meter and 70-cm band repeater offsets

2-meter band: ± 600 kHz

70-cm band: ± 5 MHz

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.



The national association for

29.700 MHz

E,A,G

N.T (200 W)

E.A.G.T

E,A,G,T

E.A.G.T

N (25 W)

E,A,G,T

E,A,G,T

E,A,G,T

N(5W)

450.0 MHz

928.0 MHz

1300 MHz

1295

134-141 GHz

241-250 GHz

All above 275 GHz

54.0 MHz

148.0 MHz

225.0 MHz



N = Novice

See ARRLWeb at 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

Publication Orders: www.arrl.org/shop Toll-Free 1-888-277-5289 (860-594-0355) email: orders@arrl.org

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

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

Exams: 860-594-0300 email: vec@arrl.org