

General License Examination – Study Guide

General Class HF Frequency Privileges

10 meters	28000 – 29700 kHz (28300-29700 phone)
12 meters	24890 – 24990 kHz
15 meters	21025 – 21200 kHz and 21275 – 21450 kHz
17 meters	18068 – 18168 kHz
20 meters	14025 – 14150 kHz and 14225 – 14350 kHz (the last digits are 25-50, 25-50)
30 meters	10100 – 10150 kHz
40 meters	7025 – 7125 kHz and 7175 – 7300 kHz
80/75 meters	3525 – 3600 kHz and 3800 – 4000 kHz
160 meters	1800 – 2000 kHz

Maximum 1500 watts PEP, **Except** 200 watts PEP on 30 meters (10100 – 10150 kHz)

60 meter rules

5 authorized channels 2.8kHz wide with USB and 100 watts ERP maximum relative to a ½ wave dipole. No interference to adjacent services and records must be kept if gain antenna is used.

RTTY/data near center of CW allocation (170Hz shift for amateur RTTY)

20 meter RTTY	14.070 – 14.095 MHz	20 meter PSK31	14.070
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Maximum Symbol Rate for Packet, RTTY, or Data

Below 10 meters (28 MHz)	300 baud	
10 Meter band	1200 baud	
6 and 2 meters	19.6 kilobaud	Maximum 20kHz bandwidth
1.25 meters and 70 cm	56 kilobaud	

General privileges can be used immediately with General CSCE by adding “/AG” to callsign

Minimum Channel Separation

CW	150 – 500 Hz	RTTY	250 – 500 Hz
SSB	3 kHz		

International Telegraph Union (ITU) Regions

Region 1 – Europe and Africa
Region 2 – North and South America
Region 3 – Asia and Australia

Power Multipliers

One S-Unit = 6dB = 4 fold power change
3dB = 2 fold power change

Sideband Operation (upper freqs, upper SB)

Below 20 MHz use lower sideband (LSB)
Above 20 MHz use upper sideband (USB)

Propagation

D layer absorbs

E layer maximum single hop distance 1200 miles at an altitude of 100 km (62 miles)

F2 layer maximum single hop distance 2500 miles at an altitude of 200 km (124 miles)

A two tone linearity test uses two **non-harmonically related** audio tones

Wire Sizes

15 amp circuit requires 14 gauge wire and 15 amp breaker

20 amp circuit requires 12 gauge wire and 20 amp breaker

Peak Envelope Power

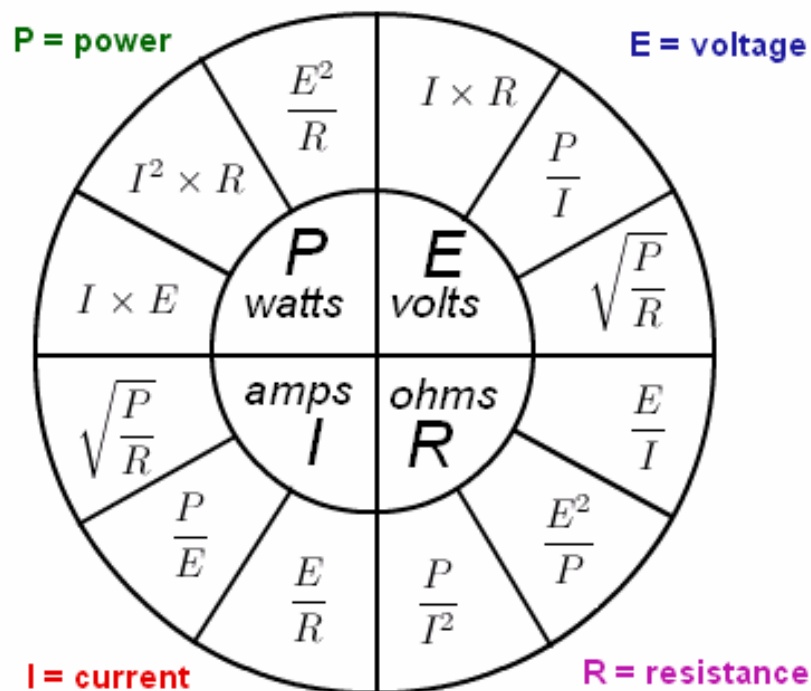
To calculate the Peak Envelope Power from the Peak Envelope Voltage, you need to calculate the RMS voltage. $RMS = 0.707 * Peak$

Peak Voltage is $\frac{1}{2}$ the Peak-to-Peak Voltage

$$PEP = (0.707PEV)^2/RL$$

Where: PEV = Peak Voltage
RL = Resistive Load

Ohm's Law and Power Formulas



Threshold Power for Station Evaluation

Station power analysis needed for all frequencies and power levels.

Use the RF Exposure Calculator at arrrl.org or equivalent

30 MHz (10 meters) – 300 MHz (1.25 meters) are highest exposure risk

50 MHz has the highest exposure risk overall (lowest permitted power).

1270 MHz is resonant frequency of eyes