

Converting Metric Units, A Ham Radio Exam Study Page

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Several of the exam questions involve converting metric units from one form to another. By memorizing what a few unit prefixes mean, these questions become easy. Look at the table below:

Prefix	Size	Multiply/Divide by
pico	one millionth of a millionth	.000000000001 or 1E-12
micro	one millionth	.000001
milli	one thousandth	.001
kilo	one thousand	1000
mega	one million	1,000,000
giga	one billion	1,000,000,000

- a kilohertz is one thousand hertz
- a megahertz is one million hertz
- a milliamperere is one one thousandth of an ampere
- a microvolt is one one millionth of a volt

From	To	Multiply/Divide By
Mega	Kilo	x1000
Kilo	Mega	/1000
One	milli	x1000
milli	One	/1000
milli	micro	x1000
One	micro	/1,000,000
pico	micro	/1,000,000
mega	One	x1,000,000

The prefix in front of a unit just tells you how many of those units your talking about. A few examples:

To convert between prefixes, there are two steps you can follow. First, convert the original unit to single units, (megahertz to hertz for example), then convert the single units to the second prefix, (hertz to kilohertz for example). To convert from a bigger unit, (megahertz for example), to a smaller unit, (hertz), multiply the number of the bigger units by the number in the right hand column above for the prefix, so 3.525 megahertz, (MHz), is $3.525 \times 1,000,000 = 3,525,000$ Hertz, (Hz). To convert from a smaller unit to a larger unit, divide by the number in the right hand column, so $3,525,000 \text{ hertz} / 1000 = 3525$ kilohertz.

Rules of Thumb

Sometimes it's simpler to remember a few rules of thumb in the next table. These will become more familiar to you the more you use them for actual radio operations.

Exam Questions:

186 | T | 5 | B | 01 | C | How many milliamperes is 1.5 amperes?

- A. 15 milliamperes
- B. 150 milliamperes
- C. 1,500 milliamperes
- D. 15,000 milliamperes

187 | T | 5 | B | 02 | A | What is another way to specify a radio signal frequency of 1,500,000 hertz?

- A. 1500 kHz
- B. 1500 MHz
- C. 15 GHz
- D. 150 kHz

188 | T | 5 | B | 03 | C | How many volts are equal to one kilovolt?

- A. One one-thousandth of a volt
- B. One hundred volts
- C. One thousand volts
- D. One million volts

189 | T | 5 | B | 04 | A | How many volts are equal to one microvolt?

- A. One one-millionth of a volt
- B. One million volts
- C. One thousand kilovolts
- D. One one-thousandth of a volt

190 | T | 5 | B | 05 | B | Which of the following is equivalent to 500 milliwatts?

- A. 0.02 watts
- B. 0.5 watts
- C. 5 watts
- D. 50 watts

191 | T | 5 | B | 06 | C | If an ammeter calibrated in amperes is used to measure a 3000-milliamperere current, what reading would it show?

- A. 0.003 amperes
- B. 0.3 amperes
- C. 3 amperes
- D. 3,000,000 amperes

192|T|5|B|07|C| If a frequency readout calibrated in megahertz shows a reading of 3.525 MHz, what would it show if it were calibrated in kilohertz?

- A. 0.003525 kHz
- B. 35.25 kHz
- C. 3525 kHz
- D. 3,525,000 kHz

193|T|5|B|08|B| How many microfarads are 1,000,000 picofarads?

- A. 0.001 microfarads
- B. 1 microfarad
- C. 1000 microfarads
- D. 1,000,000,000 microfarads

T5C14 (D) What is the proper abbreviation for megahertz?

- A. mHz
- B. mhZ
- C. Mhz
- D. MHz

T5B12 (A) Which of the following frequencies is equal to 28,400 kHz?

- A. 28.400 MHz
- B. 2.800 MHz
- C. 284.00 MHz
- D. 28.400 kHz

T5B13 (C)

If a frequency display shows a reading of 2425 MHz, what frequency is that in GHz?

- A. 0.002425 GHz
- B. 24.25 GHz
- C. 2.425 GHz
- D. 2425 GHz