

PRACTICAL

Section 14 – Answers

1. What does SWR stand for?

Standing Wave Ratio.

2. Sometimes SWR is referred to as VSWR, what does this mean?

Voltage Standing Wave Ratio

3. What power level should you use to test the SWR of an antenna?

Lowest level possible. Reason is that the antenna may be damaged or disconnected completely and a high power high SWR may damage the transmitter.

4. What power level is a Foundation operation restricted too?

10 watts PEP

5. What is PEP mean?

Peak Envelope Power Read more [HERE](#)

6. What is a dummy load and why is it used?

A dummy load is a device connected to the transmitter in place of an antenna and has a load impedance of 50 ohms. This allows transmitter testing without transmitting signals.

7. What modes should the power measurements be made?

FM and SSB

8. What is the relationship between frequency and antenna length?

The relationship is wavelength. The longer the antenna the lower the frequency. Short antennas identify high frequencies.

9. What are the steps to make an SWR measurement?

- Calibrate the SWR meter.
- Measure Forward power.
- Measure the Reverse power.
- Calculate the Standing Wave Ratio (SWR)

10. Why should SWR measurements be made regularly on all antennas?

Sometimes the antenna may get damaged, so regular testing is advised to prevent any damage to the transmitter.

11. What is an ATU?

Antenna Tuning Unit. Also goes by the name of antenna matching unit, impedance matching unit, matchbox, matching network, transmatch, antenna match, antenna tuning unit (ATU), antenna coupler, feedline coupler.

12. What does an ATU do?

An antenna tuner is a passive electronic device inserted into the feedline between a radio transmitter and its antenna. Its purpose is to optimize power transfer by matching the impedance of the radio to the signal impedance at the end of the feedline connecting the antenna to the transmitter.

13. You just built a new 10 metre dipole antenna. (10 metre frequency range is 28 MHz to 29.7 MHz) Now you test the SWR at 28.1 MHz and the result is 1:1.29.

Now you test the SWR at 29.5 MHz and the result is 1: 5.

Is the antenna too long or too short and what action should you take?

As the antenna SWR is closer to ideal at the lower frequency, the antenna is too long. Trim a little of each end of the dipole and retest. (Lower frequency Long antenna)

14. You just built another new 10 metre dipole antenna.

Now you test the SWR at 28.1 MHz and the result is 1:5.

Now you test the SWR at 29.5 MHz and the result is 1: 2.

Is the antenna too long or too short and what action should you take?

As the antenna SWR is closer to ideal at the higher frequency, the antenna is too short. Connect additional wire to each side of the dipole and retest.

15. What are the SWR limits?

SWR 1.0-1.5 Ideal.

SWR 1.5 - 1.9 There's room for improvement. •

SWR 2.0 - 2.4 Should not damage your radio with casual use. •

SWR 2.5 - 2.9 Performance decreased. •

SWR 3.0+ Could cause damage with degraded performance.