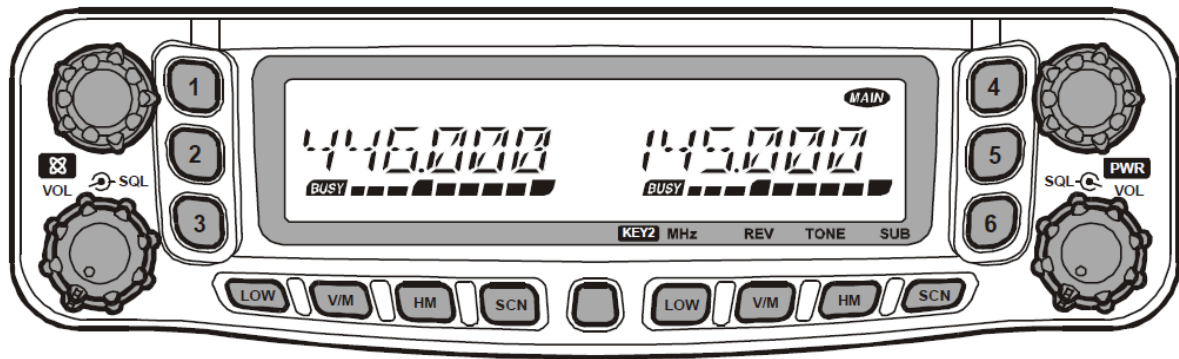


## S-meter reading FT-8900



|            |      |      |      |      |     |      |     |      |       |
|------------|------|------|------|------|-----|------|-----|------|-------|
| block      | 1    | 2    | 3    | 4    | 5   | 6    | 7   | 8    | 9     |
| dB $\mu$ V | -4   | -1   | +2   | +5   | +8  | +11  | +14 | +19  | +24   |
| dBm        | -111 | -108 | -105 | -102 | -99 | -96  | -93 | -88  | -83   |
| S          | S6   | S6.5 | S7   | S7.5 | 8   | S8.5 | S9  | S9+5 | S9+10 |

The details in this table find their origin in the documentation below and in the available documentation from Hampedia

### S-points and documented values for VHF/UHF and HF

From wiki (source is IARU):

| S-reading  | $V_{out}$ @50 $\Omega$ | $P_{out}$ @50 $\Omega$ | $\frac{V_{out}}{[1 \mu V]}$ @50 $\Omega$ |
|------------|------------------------|------------------------|------------------------------------------|
| S9 + 40 dB | -53 dBm                | 0.50 mV                | 54 dB $\mu$ V                            |
| S9 + 30 dB | -63 dBm                | 0.16 mV                | 44 dB $\mu$ V                            |
| S9 + 20 dB | -73 dBm                | 50 $\mu$ V             | 34 dB $\mu$ V                            |
| S9 + 10 dB | -83 dBm                | 16 $\mu$ V             | 24 dB $\mu$ V                            |
| S9         | -93 dBm                | 5.0 $\mu$ V            | 14 dB $\mu$ V                            |
| S8         | -99 dBm                | 2.5 $\mu$ V            | 8 dB $\mu$ V                             |
| S7         | -105 dBm               | 1.26 $\mu$ V           | 2 dB $\mu$ V                             |
| S6         | -111 dBm               | 630 nV                 | -4 dB $\mu$ V                            |
| S5         | -117 dBm               | 320 nV                 | -10 dB $\mu$ V                           |
| S4         | -123 dBm               | 160 nV                 | -16 dB $\mu$ V                           |
| S3         | -129 dBm               | 80 nV                  | -22 dB $\mu$ V                           |
| S2         | -135 dBm               | 40 nV                  | -28 dB $\mu$ V                           |
| S1         | -141 dBm               | 20 nV                  | -34 dB $\mu$ V                           |

| S-reading  | $P_{out}$ @50 $\Omega$ | $V_{out}$ @50 $\Omega$ | $\frac{V_{out}}{[1 \mu V]}$ @50 $\Omega$ |
|------------|------------------------|------------------------|------------------------------------------|
| S9 + 40 dB | -33 dBm                | 5.0 mV                 | 74 dB $\mu$ V                            |
| S9 + 30 dB | -43 dBm                | 1.6 mV                 | 64 dB $\mu$ V                            |
| S9 + 20 dB | -53 dBm                | 0.50 mV                | 54 dB $\mu$ V                            |
| S9 + 10 dB | -63 dBm                | 0.16 mV                | 44 dB $\mu$ V                            |
| S9         | -73 dBm                | 50 $\mu$ V             | 34 dB $\mu$ V                            |
| S8         | -79 dBm                | 25 $\mu$ V             | 28 dB $\mu$ V                            |
| S7         | -85 dBm                | 12.6 $\mu$ V           | 22 dB $\mu$ V                            |
| S6         | -91 dBm                | 6.3 $\mu$ V            | 16 dB $\mu$ V                            |
| S5         | -97 dBm                | 3.2 $\mu$ V            | 10 dB $\mu$ V                            |
| S4         | -103 dBm               | 1.6 $\mu$ V            | 4 dB $\mu$ V                             |
| S3         | -109 dBm               | 800 nV                 | -2 dB $\mu$ V                            |
| S2         | -115 dBm               | 400 nV                 | -8 dB $\mu$ V                            |
| S1         | -121 dBm               | 200 nV                 | -14 dB $\mu$ V                           |

# S-meter reading FT-8900

According <http://www.hampedia.net/yaesu/ft-8900r-s-meter-adjustment.php> :

## Yaesu FT-8900R (FT 8900 R FT8900R) S-Meter adjustment

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I purposely did not mention the details of "S-Meter alignment", since this is a little complicated. It has to be performed on each band individually and you need a signal generator to do it properly.

1. Enter alignment mode as described in my previous article and switch to A-7 SM L/V

### For 70cm S-Meter adjustment:

2. Tune the "right" band frequency to 440.050 MHz
3. Inject an RF-signal of -5 db-microvolt into antenna input, freq. 440.050 MHz.
4. Press the "left" band [LOW] key, then adjust the "left" dial knob so that the S-meter deflects 1 dot.
5. Increase the RF generator output level to +23 db-microvolt.
6. Press the "left" band [V/M] key, then adjust the "left" DIAL knob for full scale S-meter deflection.

### For 2m. S-Meter adjustment:

2. Tune the "right" band frequency to 146.050 MHz
3. Inject a 146.050 MHz signal at a level of -5 db-microvolt from the RF signal generator.
4. Press the "left" band [LOW] key, then adjust the "left" DIAL knob for 1-dot S-meter deflection.
5. Increase the RF-generator output level to +23 db-microvolt.
6. Press the "left" band [V/M] key, then adjust the "left" DIAL knob for full-scale S-meter deflection.

### IMPORTANT:

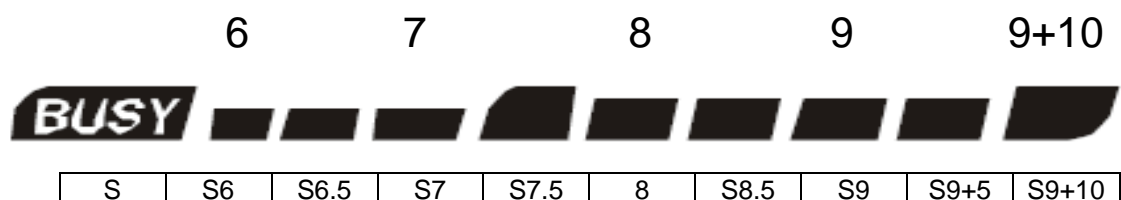
Repeat this procedure by tuning the "left" band frequency to 440.050 MHz and 146.050 MHz, but this time use "right" DIAL knob for S-meter deflection adjustment. Do the same adjustments as described, changing RF-generator output from -5 db-microvolt to +23 db-microvolt (S1 or S9+).

The same procedure applies for 28 MHz & 50 MHz, but for "left" band frequency only. (28 & 50 MHz cannot be used in sub-band) Remember: you NEED a calibrated RF-generator for proper adjustment.!

Meaning: a signal of 5 dB  $\mu$ V = 1 dot, and represents S6 and +23 dB  $\mu$ V = full scale and represents S9+10 dB

With the values from the (wiki IARU) tables, and some interpellation above S9, I established the picture on page 1

Looking ONLY to the S-points:



And this picture hangs in the shack right above the FT-8900

Hans Poelgeest  
PA0SNY

25 oktober 2018 – Rev 0 (Nederlandse versie)  
March 5, 2021 – Rev 1 (English version)

## S-meter reading FT-8900

### S-Meter Sensitivity (A-7 SM L/V)

1. Inject a 440.050 MHz signal at a level of  $-5$  dB $\mu$  from the RF Signal Generator.
2. Press the "Sub" band DIAL knob momentarily, if needed, to switch the "Main" band to be the "Right" band.
3. Tune the "Right" band frequency to 440.050 MHz.
4. Press and hold in the "Left" DIAL knob to set the Alignment parameter to "A-7 SM L/V."
5. Press the "Left" band [LOW] key, then adjust the "Left" DIAL knob, as needed, so that the S-meter deflects 1 dot.
6. Increase the RF Signal Generator output level to +23 dB $\mu$ .
7. Press the "Left" band [V/M] key, then adjust the "Left" DIAL knob, as needed, so that the S-meter deflects full scale.
8. Tune the "Right" band frequency to 146.050 MHz.
9. Inject a 146.050 MHz signal at a level of  $-5$  dB $\mu$  from the RF Signal Generator.
10. Press the "Left" band [LOW] key, then adjust the "Left" DIAL knob, as needed, so that the S-meter deflects 1 dot.
11. Increase the RF Signal Generator output level to +23 dB $\mu$ .
12. Press the "Left" band [V/M] key, then adjust the "Left" DIAL knob, as needed, so that the S-meter deflects full scale.
13. Press the "Sub" band DIAL knob momentarily, if needed, to switch the "Main" band to be the "Left" band.
14. Tune the "Left" band frequency to 440.050 MHz.
15. Inject a 440.050 MHz signal at a level of  $-5$  dB $\mu$  from the RF Signal Generator.
16. Press the "Left" band [LOW] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects 1 dot.
17. Increase the RF Signal Generator output level to +23 dB $\mu$ .
18. Press the "Left" band [V/M] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects full scale.
19. Tune the "Left" band frequency to 146.050 MHz.
20. Inject a 146.050 MHz signal at a level of  $-5$  dB $\mu$  from the RF Signal Generator.
21. Press the "Left" band [LOW] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects 1 dot.
22. Increase the RF Signal Generator output level to +23 dB $\mu$ .
23. Press the "Left" band [V/M] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects full scale.
24. Tune the "Left" band frequency to 52.050 MHz.
25. Inject a 52.050 MHz signal at a level of  $-5$  dB $\mu$  from the RF Signal Generator.
26. Press the "Left" band [LOW] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects 1 dot.
27. Increase the RF Signal Generator output level to +23 dB $\mu$ .
28. Press the "Left" band [V/M] key then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects full scale.
29. Tune the "Left" band frequency to 29.050 MHz.
30. Inject a 146.050 MHz signal at a level of  $-5$  dB $\mu$  from the RF Signal Generator.
31. Press the "Left" band [LOW] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects 1 dot.
32. Increase the RF Signal Generator output level to +23 dB $\mu$ .
33. Press the "Left" band [V/M] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects full scale.
34. Tune the "Left" band frequency to 868.95 MHz.
35. Inject an 868.95 MHz signal at a level of  $-3$  dB $\mu$  from the RF Signal Generator.
36. Press the "Left" band [LOW] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects 1 dot.
37. Increase the RF Signal Generator output level to +31 dB $\mu$ .
38. Press the "Left" band [V/M] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects full scale.
39. Tune the "Left" band frequency to 350.050 MHz.
40. Inject a 350.050 MHz signal at a level of  $-5$  dB $\mu$  from the RF Signal Generator.
41. Press the "Left" band [LOW] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects 1 dot.
42. Increase the RF Signal Generator output level to +23 dB $\mu$ .
43. Press the "Left" band [V/M] key, then adjust the "Right" DIAL knob, as needed, so that the S-meter deflects full scale.

This extensive procedure can be found in the Service Manual.