

WM-PRO Adjustment Procedure

1) Preparation

Provide the power (9V DC) into the battery terminals (plus and minus side)
Then, turn the power switch to the position F1.

2) Output power adjustment

- a) Connect the lapel microphone (provided as a standard accessory) into the 3.5mm jack and also connect the antenna into the input terminal of Spectrum Analyzer. The microphone cord and antenna should be parallel.
- b) Then, adjust T103, 104, 105, 106, VC101 and VC102 to maximize the output power level and minimize the spurious.
- c) Then, turn the power switch to the position F2. The same adjustment will be applied if the output level and spurious are so different between F1 and F2.

3) Adjust the transmitter frequency

- a) Connect the frequency counter terminal into the ground side of 3.5mm microphone jack.
- b) Adjust T101 to show the frequency as it should be. (Allowance $\pm 500\text{Hz}$)
- c) Turn the power switch to F2 and adjust T102 for its frequency.

4) Adjust the maximum frequency deviation

- a) Connect the audio oscillator to 3.5mm jack and then connect the valve voltmeter and the linear detector to (-) line of cable between oscillator and 3.5mm jack.
- b) Set the oscillator output at -20dBV ($0\text{dBv}=1\text{V}$, Oscillator frequency: 1KHz) and adjust the VR102 to set the deviation at $\pm 12\text{KHz}$.

5) Adjustment of modulation sensitivity

Set the same configuration above (4), and set the oscillator output at -36.5dBV . Adjust VR101 to set up the modulation at $\pm 7\text{KHz}$.

6) Additional checking points

Lower voltage check: Reduce the voltage to 5V and check not to light up LED.

1) The voltage and current drain in the RF section.

2) Detail circuit information

1) Frequency stabilization

This is the crystal oscillation method and its frequency stabilization depends on quality. Our frequency allowance will be within $\pm 10\text{ppm}$ at temperature -10C to $+60\text{C}$. In order to increase its stabilization, we use thermistor and temperature compensating capacitors.

2) Spurious suppression

In order to suppress the spurious, LC type filter has been applied after the power amplification. Its detail circuit is posted below. It is organized by a compound tuning circuit and pi type low pass filter.

3) Limiting circuit

In order to suppress the amplitude of Audio signal, we increase the gain of first amplifier of microphone and apply the limiter circuit for pre-emphasis and low pass filter output at the AF (IC102).