

# 实验型调幅发射机装配说明书 (2020 版)

Assembly instructions for experimental AM transmitter (version 2020)

## 实验目的：

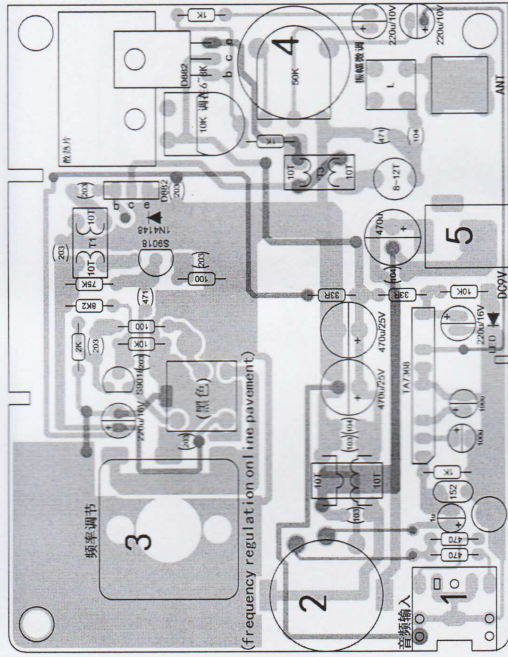
- (1) 了解调幅发射机高频信号振荡原理
- (2) 了解调幅发射机高频信号放大原理
- (3) 了解调幅发射机调制原理

## Objective:

- (1) Understand the principle of high frequency signal oscillation of AM transmitter
- (2) Understand the principle of high frequency signal amplification of AM transmitter
- (3) Understand the modulation principle of AM transmitter

实验型调幅发射机配件发货清单 (2020版)

包装分类	元件类型	类型	规格	数量	
	电阻 (1/6W)	固定	33R	2	
		固定	100R	2	
		固定	470R	2	
		固定	1K	4	
		固定	2K 0R 2K2	1	
		固定	8K2	1	
		固定	10K	2	
		固定	75K	1	
		固定	10K	1	
		可调电阻	50K (5脚)	1	
		双联电位器	50K (5脚)	1	
		可调电阻	50K	1	
	电容	电解	1u (OR 2.2u)	1	
		电解	100u	2	
		电解	220u (10V)	2	
		电解	220u (16V)	2	
		电解	470u (25V)	3	
		瓷片	471	2	
		瓷片	103	2	
		瓷片	203	7	
		瓷片	104	3	
		涤纶	152 0R 332	1	
		可调PVC	AM	1	
			电感	共模电感	10T
高频电感	10T (高频放大)			2	
高频电感	10T5 (滤波)			1	
高频电感	26T (加磁)			1	
	二极管	发光	绿、绿、蓝、黄	1	
		整流	1N443	1	
	三极管	NPN	5901B	2	
			D882	2	
	DC座	5.5mm		1	
		音频座	带开关	1	
		天线座	四脚+热片+螺丝	1	
		调谐电容螺丝	调谐PVC螺丝	1	
		本振	螺	1	
		散热片	铜色	1	
		散热片螺丝	散热片	2	
		散热片垫片	散热片	1	
		集成电路	TAY368	1	
		包装2	音频线		1
		包装3	主PCB板	绿色	1
			元件总数		67



- 1. Input and output terminals:**
  - 1-audio input seat: it can be computer, mobile phone, MP4, etc.
  - 2-volume adjustment knob: the volume shall be appropriate when using, and excessive volume may cause distortion.
  - 3-frequency point adjustment knob can adjust the frequency point at any frequency point of 5301600khz, the best frequency point is 10001600khz, and the transmission power will be reduced below 000khz, which is caused by the tuning circuit. (the frequency point of the finished product board is 1600khz when it is delivered, no components can be adjusted when debugging, and the signal can be received when the medium wave radio is around 1600khz)
  - 4-am modulation depth adjustment knob, adjust the knob to optimize the sound quality.
  - 5-power input base 9V DC, positive inside and negative outside.
  - 6-output antenna: it can be connected with 6 #2.5 mm<sup>2</sup> copper wire as the transmitting antenna for household use.
- 2. Commissioning method of parts:**
  - 530khz frequency point debugging method:
    1. Turn the capacitance of the regulating station clockwise to the end of the terminal; (turn the frequency point of 1600khz anticlockwise to the end of the terminal)
    2. Adjust the modulation depth potentiometer (4 above) to the full end anticlockwise; at this time, adjust it to the maximum depth
    3. Set the radio at 530khz to receive the transmission signal; at this time, connect the transmitter to the power supply, and then slowly adjust the magnetic cap at the top of the oscillation coil until the radio receives the signal at the 530khz frequency point (if the debugging fails, check whether the components are welded correctly again), connect the audio line to load the sound source, and the normal radio can receive the amplitude modulation signal. 1600khz frequency point debugging method: similar to 530khz debugging method, the difference is that the calibration frequency point passes the fine-tuning capacitance at the top of the capacitance of the tuning table.
- 3. Precautions for use:**
  - When using this micro power transmitter, it should avoid the local radio station, not affect others to listen to the radio, and comply with the local radio management regulations; this machine is only used for radio lovers to experiment and test the old medium wave radio, and can not be used for other purposes; when the transmission distance is more than 5 meters, the power supply voltage can be reduced to reduce the transmission power, and the transmission antenna can be shortened to reduce the transmission power.





一、机器主要技术指标:

- (1) 输入电压: 9V
- (2) 整机电流: 约 50mA
- (3) 高频功率: 约 400mW

二、关于波形:

Q1 及 Q2 甲类工作状态, 用示波器测试为正弦波, 无失真; Q3 及 Q4 在丙类工作状态, 此类高频放大用示波器观测会有一些失真, 但不影响载波的调制过程; 用频谱分析仪测试波形完整、谐波成份小。

以下为国外买家测试的波形成果:

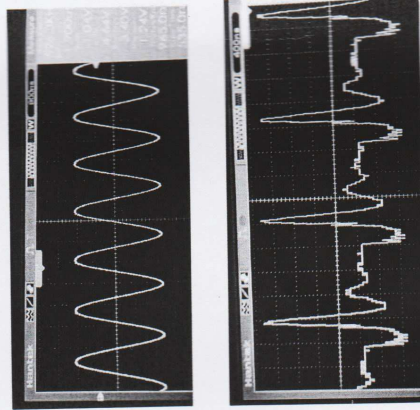
1. Main technical indicators of the machine:

- (1) Input voltage: 9V
- (2) Overall current: About 50mA
- (3) High frequency power: About 400mW

2. About waveforms:

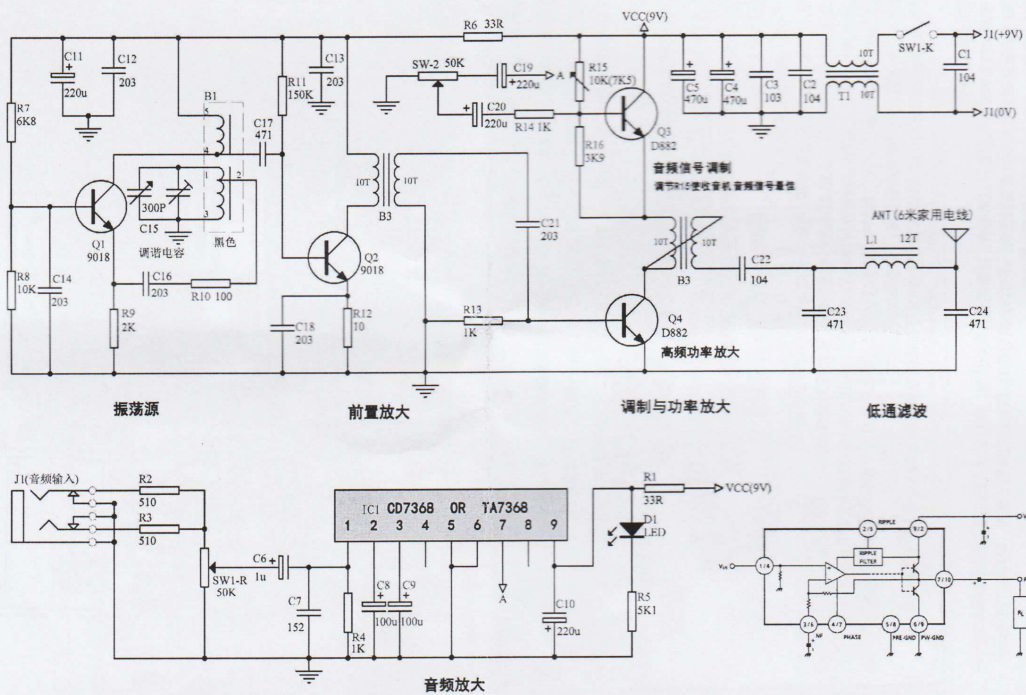
Q1 and Q2 are in class A working state, tested as sine wave with oscilloscope, without distortion; Q3 and Q4 are in class C working state, such high-frequency amplification will have certain distortion when observed with oscilloscope, but will not affect the modulation process of carrier wave; the test waveform is complete with spectrum analyzer, and the harmonic component is small.

The following are the waveform results tested by foreign buyers:



实验型调幅发射机原理图

Schematic diagram of experimental AM transmitter





实验型调幅发射机原理图  
Schematic diagram of experimental AM transmitter

