

WT-418 circuit description

一. Transmitting section

1. Low frequency amplifying section:

After amplified by U4B, the MIC audio signal comes into the HPF network which is consisted of Q17、Q19. The signal passes the low pass filter U4C.D to the 'D5 FM modulation. D10、U4A、Q20、Q21 form a signal level control circuit.

2. CTCSS section:

CPU send out by RC network alternation, throw Q22 low filter wave into FM modulation.

3. VCO section:

'Q4、'Q5、'D4 work as VCO, the varactor 'D4 value (frequency) is controlled by PLL, 'Q6 is a frequency band switch for RX and TX, 'Q13 is a power switch for power-save mode.

4. Power amplifying section:

'Q3 is a buffer transistor and 'Q10 is a driver, 'Q9 acts as power amplifier, when the signal had been amplified by 'Q9, it will pass to a switch diode 'D2 and send out from the antenna.

二. Receiving section

1. RF section:

The signal received by antenna passed to LPF network, which is consisted of 'L2、'L3, then amplified by 'Q1, and passes to the band-pass filter 'CF2、'Q14, after frequency selection it comes into mixing frequency network 'Q2.

2. Local-oscillator and mixing frequency:

'Q2 is frequency missing transistor, the VCO forms a local-oscillator circuit, the frequency is controlled by PLL, after mixing, 'L17、'C41 output the first IF frequency 21.6MHz.

3. IF section:

'CF1 is a 21.6MHz band-pass, the second IF is 455KHz, U7 (DBL5018V/UTC3361) works as the second mixing, local-oscillator, IF amplifier, demodulation, S/N controller, etc.

4. S/N section:

Commutated by VR1 D9, low pass filtered by RC network, then it will be amplified and outputted by U6 (DBL5018V/UTC3361), 12 pins input, 14 pins output.

5. Low frequency amplifying:

U3 form low frequency hi-pass filter (the CTCSS can't be entered in it) circuit and the audio signal come into power amplifier network after filtered.

6. The audio frequency power amplifying:

After amplified by preamplifier Q26 then the signal come into U9 (LM386), the power amplifier lever, Q16、Q23 are the power control switches for LM386.

7. CTCSS section:

U5 forms the CTCSS low pass filter (the audio signal can't be entered) circuit, after filtered the signal comes into Q28 for regulation and send to CPU.

三. Others

1. PLL section:

The 'U1 (KB8825) works as PLL, 'X1 is a local-oscillation crystal, 'VC1 is a trimmer. The 'X1 is fixed on 12.8MHz and the 'U1 third pins output constant current to control the VCO oscillation frequency, the required frequency is controlled by CPU.

2. LCD section:

[U2] LM1072C is [LCD], it works on the frequency [X3] 32.768KHz and [X2] 3.58MHz, the CPU decides the display content of LCD.

3. Recharge check:

Q27、Q18 form the recharge check circuit.

4. Low votage check:

U8A、R85、R183、R139、R140 form the low-voltage check circuit.

5. Power source:

There are 5 groups power source,
+6V. V+. TX-V+. RX-V+. VDD, in which:

V+ is sourced for the FM radio, PLL、VCO、U7 and as RX low-frequency part.

+6V is a power amplofier source that contains low-frequency and hi-frequency power amplifier.

VDD is a power for CPU power on reset.

TX-V+ is a TX section power and it is controlled by CPU.

RX-V+ is a RX section power and it is controlled by CPU.

6. CPU reset section:

[Q15 D7 R95 R133 R132 C121 C140] composing of cpu reset section.

7. Lcd light section:

[LED1 LED2 R130 R129] composing light section.

8. CPU section:

W742E811 is a 4-bit MCU, it's the core in the whole circuit, and its function can be operated by function keys, as PTT、CALL、MODE、UP、DOWN、VOCL, ect.

Remark:

In the front of part number, there is “ ‘ ” showing in the SCH-WT418-02-A drawing; “ [] ” showing in the SCH-WT418-03-A drawing; no showing in the SCH-WT418-01-A drawing.