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-osicillator, 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-osillation 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 it's 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.