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OM008HE Circuit Description

1. TX

1.1 Low-frequency amplifier:

MIC 转换之音频信号经 U3B 放大进入 U3C;U3D;U4D 组成的 HPF 网络, 然后进入 U4B 低通网络再到 FM 调制。

Audio signal which amplified by U3B, conversed by MIC comes into HPF network composed of U3C,U3D,U4D, then coming into FM modulation passed low-pass network U10B.

1.2 Level Control:

D6.U3A.Q9.构成电平控制电路。

The level control circuit is composed of D6,U3A and Q9.

1.3 CTCSS:

由 CPU 发出经 RC 网络 D/A 转换由 U4A; U4D 低通滤波后进入 FM 调制。

The CTCSS is sent by CPU, passed RC network, D/A,then comes into FM modulation after low-passed by U4A and U4D.

1.4 VCO:

Q9.Q8.D3 构成压控振荡器, 音频信号在此进行调制, 频率的改变通过 PLL 控制变容二极管 D3 而变化, Q10 为 RX 和 TX 频段切换, Q6 为压控振荡器电源开关。

Q9,Q8 and D3 are made of the VCO, audio signal can

be modulated here and passes PLL to control the varactor diode D3 to change frequency. Q10 is a frequency range switch for RX and TX status, Q6 is a VCO power switch.

1.5 Hi-frequency amplifier:

Q7; Q11 为缓冲级, Q5 为推动管, Q4 为功放管, 经 Q4 放大之信号经过开关二极管 D2 从天线发射出去。

The buffer level is composed of Q7 and Q11, Q5 is a driving transistor, Q4 is a power amplifier, amplified by Q4 the signal passes the switch diode D2 to emission from antenna.

2. RX

2.1 RF:

天线接收信号经 L10.L11 组成的 LPF 网络选频, Q1 放大, 进入带通滤波器 CF1, 经选频后进入混频级。

The signal received by antenna passes LPF network, which composed of L10 and L11 for selection frequency, after amplified by Q1, then passes band-pass filter CF1 to mixing.

2.2 Local-oscillation and mixing:

Q2 为混频管, 本振由 VCO 组成, 振荡频率受 PLL 控制, 混频后得第一中频 21.6MHZ 从 Q2 输出。

Q2 is a mixing transistor, local-oscillation is made by

VCO, the oscillation is controlled by PLL, after mixing, Q2 outputs the 1st IF is 21.6MHz.

2.3 IF:

CF2 为带通滤波器，Q3 为第一中频放大管，第二中频为 450KHZ,U6 (DBL5018V) 承担第二次混频，本振、中放、检波、静噪控制等。

CF2 is a brand-pass filter, Q3 is a amplifier for the 1st IF, the 2nd IF is 450KHz, U6(DBL5018V) works as the 2nd mixing, local-oscillation, IF, demodulation, S/N control and etc.

2.4 S/N:

经 D1 整流，RC 低通滤波,U6 (DBL5018V) 为放大后输出。

Regulated by D1, low-passed by RC, the S/N signal can be amplified and outputted by U6(DBL5018V).

2.5 Low-frequency amp.:

U2A.U2B.U2C.U2D 组成低频高通滤波（不让 CTCSS 码进入）电路，将音频信号滤波后送至功放级。

U2A, U2B,U2C and U2D are made up the low-frequency filter circuit(CTCSS code can't be entered), audio signal is sent to power amplifier network after filtered here.

2.6 Audio power amplifier:

音频信号经开关电位器 VOL 选择音量后进入 LM386 功放级，

Q2.Q13 为 LM386 电源控制开关管。

The audio signal passes the VOL1, the volume switch, for selecting volume to come into power amplifier LM386. the power control switch of LM386 is composed of Q2 and Q13.

2.7 CTCSS:

U1A.U1B.U1C.U1D 组成 CTCSS 低通滤波(不让音频信号进入)电路, 经滤波后送到 Q8 整形并送到 CPU.

CTCSS low-pass filter circuit (audio signal can't be entered) is composed of U1A,U1B,U1C and U1D, after amplified the signal will be sent to Q8 for regulation and then sent to CPU.

3. Others

3.1 PLL:

锁相环由 U1 (TB31202NF) 承担, X1 为本振晶体, VC1 为微调电容, 使其振荡频率固定在 21.15MHZ 上, 输出恒定电流控制振荡频率, 具体执行由 CPU 内部程序决定。

U1 (TB31202NF) works as a PLL circuit, X1 is a local-oscillation crystal, VC1 is a trimmer to fix the oscillation frequency at 21.15MHz, and output constant current controls the oscillation frequency, the concrete action is controlled by CPU.

3.2 LCD:

液晶显示由 GS31132 承担, 其工作在双时钟模式下, 频率为

32.768KHZ 和 4.5MHZ，显示内容由 CPU 内部程序决定。

GS31132 is a LCD driver works at the double clock mode status, its one frequency is 32.768KHZ and another is 4.5MHz, CPU controls display content of LCD.

3.3 Recharge check:

Q1、Q14、CPU 组成充电检测电路。

The recharge check circuit is composed of Q1,Q14 and CPU.

3.4 Low-voltage check:

R5、R9、CPU 组成欠压检测电路。

Low-voltage check circuit is composed of R5,R9 and CPU.

3.5 Power Source:

本电路电源共有四组，分别为+7.2V、V+、TX-V+、RX-V+，其中：

V+为 CPU、PLL、VCO、CPU 上电复位电路、及接收低频部分等电源。

There are 4 groups source circuit: +7.2V, V+,Tx-V+ and Rx-V+, in which :

V+ is a power for CPU, PLL,VCO, CPU power on reset circuit, RX low-frequency and etc.

+7.2V 为功放包括低频功放和低频功放等电源。

+7.2V is a power amplifier which contains low-frequency and

hi-frequency power amplifier source and etc.

TX-V+为发射部分电源，受 CPU 控制。

Tx-V+ is a power source for TX section, controlled by CPU.

RX-V+为接收部分电源，受 CPU 控制。

RX-V+ is a power source for RX section, controlled by CPU.

3.6 CPU:

S3P7335 为 4-bit 单片机，是整个电路核心部分，其功能可由各功能开关 PTT.CALL.MODE.UP.DOWN.MON 操作。

S3P7335 is a 4-bit MCU, the core in the whole circuit, its function is can be operated by function keys, as PTT, CALL, MODE, UP, DOWN and MON.

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