

Honor Tone Ltd.

8701 Circuit Description

Circuit description

For 8701

Prepared by:

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Circuit Description

RF

I) TX Path

1. The antenna port has given -10 to -5dBm transmitted power.
2. There are matching network with TX/RX path switch between the antenna port and the PA, it is consist of a Duplex IC component and an antenna with band pass filter.
3. L9, L4, C73, C84, and C16 work as a band pass filter, which used for reduce the power dissipation as there is high power flowing along this path.
4. The frequency of TX LO is injected from VCO filter to PA , C13,C14, C15, R4, and R5 acts as band pass filter, the VCO frequency of the VCO filter to PA and give better isolation between them in order to improve the problem of malfunction.
5. L5, L6 and VCCTX act as switch to switching the TX VCO, the VCCVTX will be turned on once the PLL is locked in VCO mode, L5, L6, C21, C22 and C23 is prevent the VCO noise leak out from VCO circuit to VCC.
6. The carry frequency and adjusted by VCO frequency. The VCO sensitivity is 600KHz/V for both in TX mode and in RX mode.
7. There are 32 steps used to adjust the VCO by software for both in TX mode and in RX mode.
8. The MIC amplifier from C26 is a feedback capacitor. R10 is a feedback resistor. D1and D2 is worked as a limiter. (the voltage gain is about 0 ~ 34dB, The audio signal will send to the input of compressor)
9. The CMPI compress the audio signal to increase the average modulation level. The standard output level is -12.5dBV. The compressor input is 100mV. The output of compressor will send to next stage for summator amplifier.
10. Summator amplifier is implement C20, R7 with MODI and MODO. The modulated signal and data signal feeds from summator amplifier (standard deviation is ~ 50KHz, maximum deviation is ~ 80KHz). The output signal will be sent to next stage for VCO circuit modulated.
11. X1 is a 10.24MHz crystal. In order to give smaller loop bandwidth in VCO to give better phase noise performance.

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12. RX Path

1. Antenna port input -105dBm sensitivity for saw filter Pin 6, Pin 3 output it. The saw filter is used to attenuate the unwanted signal.
2. C1, C2, C3, C4 and L1, L2, L3 were used to match between the saw filter and input port of RF combo IC. The meshwork attenuates the image signal.
3. The frequency of RX LO is injected from VCO filter to 1st mixer, C6, C7, R1, and R2 act as a band pass filter, the VCO frequency of the VCO filter to mixer and give better isolation between them in order to improve the problem of malfunction.
4. L7, L8 and VCCVRX act as switch for switching the RX VCO, the VCCVRX will be turned on once the PLL is locked in VCO mode, L7, L8, C52, C53 and C54 is prevent the VCO noise leak out from VCO circuit to VCC.
5. The 1st IF filter FL3 with $\pm 150\text{KHz}$ bandwidth provide better adjacent selectivity and 2nd IF image rejection.
6. The 2nd IF filter FL2 and FL1 IF filter also is with $\pm 150\text{KHz}$ bandwidth for further enhance the adjacent channel selectivity. The IF signal of limit is injected from Limiter to the 2nd mixer.
7. The audio signals that carried data signal demodulation from R20, C47 and C48 demodulator.
8. R18, C39 and C40 bandpass filter is connected between DETO and DATAI. The data signal current amplifier output from DATAI.
9. R21, C44 and C46 lowpass filter is connected between DETO and RXAI, the audio signal input for RX gain amplifier.
10. The audio signal will send to the RX gain amplifier through volume control. The expander expand the audio signal to reduce the noise level. The standard output level to next stage for earpiece amplifier.
11. The audio level is adjusted with software in order to input of expander, the Volume control have 8 steps, each step is 3dB difference.
12. RSSI built in the level is tuned to -80dBm from and inform CPU.
13. Detects the battery low voltage and inform CPU.

BASEBAND

(I) Base Part

1. The line input signal is 140mV at 1KHz, when the line is placed (connected with?) from computer. This signal will send to the MIC amplifier to increase the signal level for compressor IC to process.
2. HPF is implemented with a 3-pole high pass filter, which consists of RC component. The roll off frequency is about 1KHz while 6KHz with +3dB tolerance. The signal will send to RF section for microphone amplifier.
3. Q202, Z201, R226 and C214 acts as voltage regulator to supply stable voltage to CPU and RF module part

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4. The LED201, LED202 act as a charge indicator and a power indicator respectively.
5. The Q203 acts as charging circuit used for detect charging and inform CPU.
6. Q201, Q202, Q204 acts as quick charge to control the link at the charge state and talk off state respectively.
7. X200 is a 4MHz, which offered external frequency to tuning and inject the CPU.

(II) Remote Part

1. The line input About 8mV at 1KHz, when the line is placed from computer. This signal will send to the MIC amplifier to increase the signal level for compressor IC to process.
2. High pass filter consists of R124, C126. The roll off frequency is about 1KHz while 8KHz is +3dB. The signal will be sent to RF section for microphone amplifier.
3. IC101 acts as voltage regulator to give stable voltage supply to CPU part
4. The LED101 is TALK and MUTE indicator.
5. X100 is 4MHz offered external frequency tuning and inject the CPU.
6. SW103 is talk and mute button, press button a second to talk on or talk off mode. In talk on state press this button, the MIC will be Muted or not.
7. SW101 and SW102 act as volume high and low controller.