

Some More Modifications

I suspect that the problem with chirp is caused by the single gate of the 74HC86 chip which is being used as oscillator, being connected directly to 74HC240 power amplifier. Any tiny change in capacitance or loading of the 74HC240 input (i.e. when it heats up) will be able to pull the crystal frequency and cause the observed chirp. So I made 3 further modifications (less major than the last batch):

First, I utilised the other 3 XOR gates in the 74HC86 as buffers, to isolate the oscillator inverter from the power amplifier. I can't actually think why I didn't do this in the first place, the gates aren't required for anything else.

Secondly, I increased the series resistor (by two 39K resistors in series with the existing 100K) in the frequency shift resistor network that controls the varicap (5mm red LED). This will make the shift voltage have less magnitude. I hope that the new range is approximately the same as it was originally prior to the installation of the 74LS08 buffers, and with the full linearity restored.

Finally, I have piled in a few more capacitors around the 5V voltage regulator which supplies the oscillator. I am a lifelong believer in the principle that you can **never** have too many capacitors in a power supply.

This is the new circuit of the oscillator section, incorporating all the changes since the original design where the oscillator inverter was one of the gates on the 74HC240 (**loads** of chirp!).

30m QRSS beacon: QRV: more modifications

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