

#### Free board 2FT transmitter

1. MCU will scan the key matrix, ID key, channel key and the movement of track ball. If any signal change come from above mention. It will turn convert the data package with checking the low battery status data, and prepare for modulate to the VCO directly.
2. When MCU received the signal of any key, or from track ball. Firstly, MCU will turn on the RF power, program the synethizer code of PLL( phase lock loop), PLL will lock the exact frequency.( eg. 26.985MHz)
3. The reference LO( local oscillator) will support the exact 10.24MHz to the PLL and VCO, to compare the phase to let VCO to lock the exact frequency(e.g. 26.985MHz)
4. Buffer amplifier is to change the impedance between VCO (high impredance) to low impredance
5. (PA)Power amplifier is to support enough current to drive the antenna
6. Matching circuit is to match the impredance between PA and antenna.

#### Free board 2FT receiver

1. When the PC power on, the receiver will start the PnP process. No-matter the interface is PS2 or USB
2. MCU will program the synethizer code of PLL( phase lock loop), PLL will lock the exact frequency.( eg. 37.680MHz) of VCO
3. When the RF signal comes(e.g. 26.985MHz), the low noise amplifier (LNA) will amplify the signal about 14 dB.
4. The adding signal to pass through mixer 1 will generate 10.695MHz intermediate frequency(IF). It means that the original signal (26.985MHz) will down convert to 10.695MHz
5. IF1 filter is perform a filtering function of 10.695MHz (IF1)
6. Reference crystal not only perform the reference function, and also with the local oscillator (LO)function
7. When the IF signal pass through the second mixer, it will generate the second IF2 455KHz.
8. After the IF2 amplifier will work for a AGC (auto gain control) function, and the signal more stable
9. A 455KHz resonator will perform the LO function.
10. When the IF2(455KHz) pass through discriminator, the demodulating signal will come out. We called it base band signal.
11. AF AMP will work as a data slicer, it amplify the signal to square wave digital signal.

12. This digital signal will send to MCU. MCU will sample the signal to check it is valid or not.
13. If the signal it valid, MCU will convert the signal of the interface to PC. No-matter is PS2 or USB and let PC to do their exact activity.
14. MCU also scan the reset lock key to check user has to press this key or not.