# Technical Description

Model: T-154'X'

Date: June 16, 2003

The T-154 Alarm Clock weather band radio is contents into 3 parts which are Weather Band Receiver, Nature/Bell Sound Generator and Real Time Clock Controller.

## 1. Weather Band Receiver:

Weather band signal passed from antenna into the RF amplifier Q21 to amplify it.
Local oscillation frequency is derived from a ~~dingle~~ Single 16.202MHz crystal by means of coil/capacitor. So the ~~location~~ local oscillation can be changed from 161.945MHz to 162.095MHz which depend on the weather band channel selector (SW20) setting.

Both weather band signal and local oscillation frequency will feed to the Mixer (Q25, T8) to generate 455 KHz IF signal.

The 455 KHz IF signal will be amplifier and feed to narrow band FM demodulated by demodulator circuit formed by Q26, Q27, Q28 & Q29 then pass to audio amplifier (IC1) then output to Speaker.

## 2. Nature/Bell Sound Generator

Sound IC (IC2) has been controlled by CPU (IC3) and it will generate nature and bell sounds by handshaking with the CPU. It also had muting control (Q17) to mute weather band receiver output when it is sounding. Also, its sound output level is controlled by Q4, Q8, Q23 and Q30 for 3 step volume control.

## 3. Real Time Clock Controller

The CPU (IC3) has 32.768KHz crystal oscillator (X1) to generate real time clock. It also including LCD driver to show real time clock, alarm time and others on the LCD panel. At the unit is powered by 2 kinds of batteies so it inclusing 2 battery low detection circuit which Q11 and Q15 for AA batteries and Q6 and Q18 for CR2032 back up battery.

IC3 also control back light LEDs by Q1, Q2 and Q3 for 3 steps dimming. Weather band receiver will be turning on or off by electronics switch formed by Q10, Q19 and Q20.

Q16 is electronics switch to detect unit is operating by adaptor or battery and Q5 is buzzer driver.