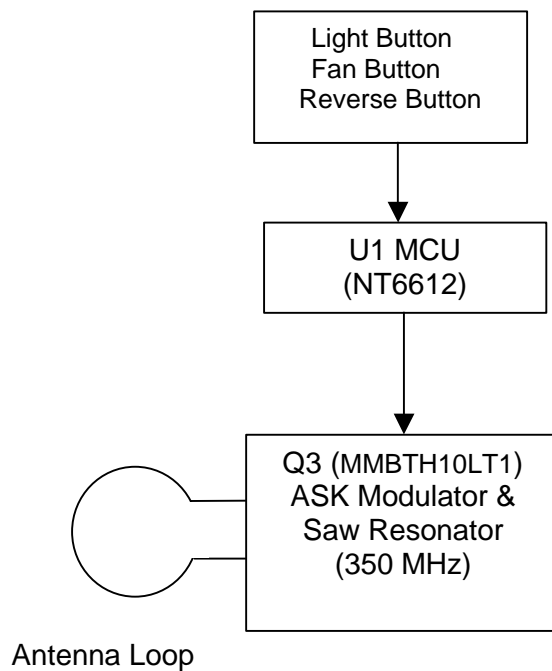# LCD Fan & Light Remote Control Transmitter Block Diagram

Description:

The top box of the diagram below represents all of the potential keys that may be pressed for the LCD remote transmitter. Pressing any key generates an encoded PCM code word which will modulate on a 350 MHz RF carrier for transmission. The encoded PCM code word is obtained from Mircocontroller U1 and is ASK modulated by the RF oscillator formed by transistor Q3. Mircocontroller U1 also provides four selectable security bits which can be set by the user.   The frequency is formed by SAW resonator SAW1 to 350 MHz

```
          ┌──────────────────┐
          │   Light Button   │
          │    Fan Button    │
          │  Reverse Button  │
          └────────┬─────────┘
                   │
                   ▼
          ┌──────────────────┐
          │     U1 MCU       │
          │    (NT6612)      │
          └────────┬─────────┘
                   │
                   ▼
          ┌──────────────────┐
          │ Q3 (MMBTH10LT1)  │
    ◯─────│  ASK Modulator & │
          │  Saw Resonator   │
          │    (350 MHz)     │
          └──────────────────┘
 Antenna Loop
```

LCD Fan & Light Remote Control RF Transmitter Coding

Description: The International remote uses the following code words to modulate on a 350 MHz RF carrier by using ASK modulation.
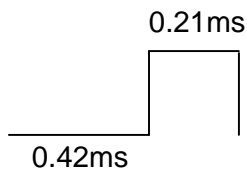
Code words format:

0001	+	xxxx	+	bbbb	+	s	+	d	+	ff
header		dip_code		brightness		light on/off		fan direction		fan speed

	light on/off	fan direction	fan speed
0000:100%	0:on	0: reverse	00:HI
0001: 95%	1:off	1: normal	01:ME
.·			10:LO
.·			11:OFF
.·			
.			
1111: 25%			

Code "0" is represented as:

0.42 ms

0.21ms
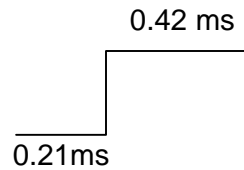
Code "1" is represented as:

0.21ms

0.42ms

The interval between two code words is about 5.36ms.

LCD Fan & Light Remote Control Receiver Block Diagram

Description:

Refer to the block diagram of the LCD remote receiver below. Power is supplied to the receiving and control circuits through a 5-Volt regulator U2, which is not shown in the diagram. Transistor Q1 is the front amplifier to amplify the signal received from the monopole antenna. Transistor Q2 is the super-regenerative receiving stage, whose frequency can be factory tuned by coil L2. Op-Amp U1 is configured as the detector. Microcontroller U3 converts the PCM data signal and outputs 4 data bits to perform the desired actions to control the fan speed and light bulb brightness. Microcontroller U3 also provides four selectable security bits which can be set by the user and must match that of the hand-held remote transmitter to be a valid command.

Monopole Antenna

```
+----------------+      +----------------+      +----------------+
| RF front Amp   |      | Super-regener- |      | Detector Op-amp|
| Q1             | ---> | ative stage    | ---> | U1             |
| (MMBTH10LT1)   |      | Q1             |      | (LM358)        |
|                |      | (MMBTH10LT1)   |      |                |
+----------------+      +----------------+      +----------------+

                     +----------------+
                     | Microcontroller|
                     | U3             | <---
                     | (S3C9454)      |
                     +----------------+

      +----------------+          +----------------+
      | Fan Speed      |          | Light Brightness|
      | Control        |          | Control        |
      +----------------+          +----------------+
```