

PocketWizard OEM Radio Transmitter Module (T42)
Mfg. by LPA Design for Sekonic Light Meters

Theory of operation:

The radio transmitter modules consist of a CPU chip, PLL, and VCO/AM Modulator.

The CPU is a microcontroller with firmware that connects the radio module to the host CPU of the Sekonic Light meters. The two CPU's (host & module) talk by way of logic level RS-232 commands.

When the module CPU receives a command to change to a new channel, it loads the PLL with a new reference divider number from a channel look up table in it's internal ROM.

The module has the ability to switch between 32 different "channels". See the frequency table for details.

When the module gets a trigger command or a trigger pulse on the trigger input pin, it powers up the PLL and VCO parts on the board. It loads the PLL with the divider number, waits for a PLL lock detection, then keys on the RF amplifier and does a "fine" adjustment to the PLL.

When the amplifier is turned on, the VCO in the PLL can shift off frequency by as much as 50KHz. By letting the PLL adjust for one milisecond before starting the actual command data pulses, the frequency error drops to less than 10KHz maximum at the start of the RF command.

Once the PLL has been locked and the "fine tune" adjustment has completed, the modules CPU keys ON and OFF (OOK) the RF amplifier to AM modulate the carrier.

The command packet is shifted out at 15uS bit rate for either 16 or 24 bits depending on the channel.

Channels 17-32 are 24 bit, channels 1-16 are 16 bit.

Each command transmission is sent three times with a blanking period of 3ms between each copy.

The 1ms "fine tune" PLL adjustment is only done once at the very beginning of a "full burst". The PLL, RF amplifier and CPU are then put into a low power shut down mode until the next trigger.

Frequency Table:

Channel Frequency Comments

| | | |
|------|-----------|--|
| 1-16 | 344.04MHz | All on same frequency, but different codes sent (16 bits) |
| 17 | 346.5MHz | 24 bits sent (Compatible with LPA Design PocketWizard MAX) |
| 18 | 347.0MHz | " |
| 19 | 347.5MHz | " |
| 20 | 348.0MHz | " |
| 21 | 348.5MHz | " |
| 22 | 349.0MHz | " |
| 23 | 349.5MHz | " |
| 24 | 350.0MHz | " |
| 25 | 350.5MHz | " |
| 26 | 351.0MHz | " |
| 27 | 351.5MHz | " |
| 28 | 352.0MHz | " |
| 29 | 352.5MHz | " |
| 30 | 353.0MHz | " |
| 31 | 353.5MHz | " |
| 32 | 354.0MHz | " |