



LT2510 FIRMWARE RELEASE

FW RELEASE NOTES FOR VERSION 2.4-1

Laird Technologies is pleased to announce the release of FW v2.4-1 for the LT2510 platform. Version 2.4-1 incorporates a number of improvements over the v1.7-1 firmware release. Although key information is provided in the notice for each issue/feature, this is really an abridged version of the information presented in the User's Manual.

EFFECTIVE:

Version 2.4-1 will begin shipping on all LT2510 products immediately.

CORRECTED ISSUES:

1. 9-bit mode had the following issues in v1.7-1:
 - a. 9-bit mode only worked correctly with mark and space parity. It now supports mark, space, odd and even parity.
 - b. 9-bit mode did not work correctly in API Receive.
 - c. 9-bit mode could cause the radio to freeze, requiring a reboot, when sending packets larger than 5,000 bytes and ignoring CTS.
2. Upon issuing the deep sleep command, the radio would occasionally not go to sleep. This has been present since inception.
3. An issue was found which prevented the RF receiver from taking incoming data packets when the serial TX interface was busy. Although this issue could affect any network, it is most apparent when operating at slower baud rates as the TX interface is busy for longer periods of time. The end result is reduced bandwidth. This has been present since inception.

NEW FEATURES:

1. **Auto Destination on Beacons Only:** Address 0x56, bit 7. Default: Enabled. When set, restricts destination address to only be changed on reception of a beacon from the Server. The destination address will not be changed upon receiving a packet from a peer. When clear, destination address is changed by reception of beacon or packet. Note: Auto Destination (Address 0x56, bit 4) must be set for this mode to function.
2. **Override Auto 485 Timing:** Address 0x57, bit 5. Default: Enabled. Separated this function from Auto Config. When clear, 485 (and end of packet) timing is determined automatically by the radio. When clear, timing is derived from EEPROM parameters. It is strongly recommended that this mode be left enabled. Additionally, when upgrading firmware on an existing radio, this mode will likely not be enabled in the EEPROM and will need to be set for the radio to operate properly.

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8/3/2010

3. **Hop Packet Delineation:** Address 0x57, bit 6. Default: Disabled. When set, delineates incoming data as a packet every hop. This does not disable RF_Packet_Size or Interface_Timeout. Refer to the warnings listed in the User's Manual as this mode can negatively affect RF bandwidth.
4. **Discard Framing Error Packets:** Address 0x57, bit 7. Default: Disabled. When set, the radio checks for serial framing errors before transmitting packets and discards the entire packet if an error is detected.
5. **Beacon Skip:** Address 0x6F. Default: 0x00. When enabled, the transceiver will skip the number of beacons specified in order to conserve power. This mode can provide an average current consumption reduction of about 20%.
6. **Sniff Report:** Address 0x45, bit 1. Default: Disabled. Prior to this firmware version, Sniff Permit performed the dual purpose of permitting packets to be sniffed and sending sniffed packets to be sent out the serial port. The duality made it impossible to make a passive sniffer. With this release, Sniff Permit has the sole purpose of permitting packets to be sniffed. Sniff Report causes sniffed packets to be sent out the serial port. Sniff Permit must be set for Sniff Report to function.
7. **Sleep Pin GIO_1:** Address 0x45, bit 6. Default: Disabled. When enabled, GIO_1 is used to indicate to the host when the radio is sleeping. GIO_1 will transition Low at the start of a sleep cycle and high at the completion of a sleep cycle.
8. **Sleep Calibration:** Address 0xC1, bit 5. Sleep Calibration Enable causes the Client to constantly calculate a calibration factor based on differences between the watch crystal and Server beacon. A full calibration occurs roughly every 54s. If the radio is put to sleep before completing a full calibration, the calibration will not be as accurate and the radio will not be able to sleep as long and still maintain synchronization with the Server upon waking.
9. **Remote I/O:** Address 0x57, bit 3. Default: Disabled. Remote I/O mode allows GPIOs on two radios to be joined together so their states will be reflected on corresponding pins on the other radio. Enabling Remote I/O will cause the local radio to transmit its GPIO states whenever there is a change. Additionally, the radio can be configured to permit GIO_7 (A/D In) to control GIO_3 (PWM Out). Note that updates can only be sent once every 13.3ms, so this feature would not be useful in audio applications.

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10. **Status Request Error Report:** A new command was added to permit the radio to report hardware anomalies. Here are the details:

Command: 0xCC 0x00 0x01

Response: 0xCC ERROR[3..0]

Where ERROR is a 32-bit bitmask for reporting errors. The bits currently defined are as follows (all undefined bits will be reported as 0):

Bit 0: Set at boot if the 32kHz external sleep crystal fails to start, therefore, the internal crystal is used.

Bit 1: Set upon waking from sleep if the external interrupt woke the radio, clear if the timer woke the radio.

Bit 2: Set if the last reset was due to brown-out or power-on reset. Clear if it was due to external (pin) or watchdog (soft) reset.

Bit 3: Set while the sleep timer is performing calibration and full accuracy has not yet been reached.

11. **Sleep:** A sleep command (0xCC 0x86 ...) has been created to permit the radio to enter into a very low power consumption mode, yet maintain frequency synchronization with its Server. Three sleep modes are available. Consult the User's Manual for additional information.

PM1: The radio draws roughly 200uA current and maintains sync with its Server.

PM2: The radio draws roughly 50uA current and maintains sync with its Server.

PM3: The radio draws roughly 50uA current and does not maintain sync with its Server.

KNOWN ISSUES:

1. The Status Request Error Report command does not appear to correctly report bit 0. Bit 0 is always reported as clear (0). This is not considered a major issue and will be corrected in a future release.