

Version 7.1.6 Fullrate notes

Release notes for version 7.1.6 of LEDR Embedded Firmware

Release 7.1.6 contains the following versions of firmware:

Application:	7.1.6
DSP:	2.0.0
FPGA:	E1.1.06
Modem Scripts:	E1.1.05
Option FPGA:	E1.1.04

Compile Date: February 8, 2008 15:21:28

Release Date: February 8, 2008

Please note that the upgrade instructions are contained at the end of this document.

NOTE: In addition to following the instructions at the end of this document there is also a procedure that needs to be followed in order to allow for upgrading from an older version (<6.2.1) of software. Because of a mapping issue the event map of the radio becomes corrupted on an upgrade. In order to avoid this the following procedure needs to be observed:

1. Before beginning the reprogram, as described at the end of this document, save your event map using the "evmap send" command.
2. After reprogramming the radio and booting into the new code issue an even map clear by using the "events init" command. It is also recommended that the log file be cleared with a "log clear" command.
3. After clearing the event map, step 2 above, reload the desired map (saved in step 1) using the "evmap get" command

NEW FEATURES

None.

DEFECT FIXES

1. Previous release had a bad script file attached to it causing LEDR to not connect after being upgraded,

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.

3. A “Reprogram Network” sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

When upgrading to version 6.3.2 issue an "events init" to initialize event maps to their default values.

5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. When upgrading from version 6.1.0 or prior, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - a. Service channel transparent
 - b. DTMF enable
 - c. Subrate Spur entries
 - d. Fullrate Spur entries
 - e. UDP checksum enable
 - f. Console Baud rate
9. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 7.1.5 Fullrate notes

Release notes for version 7.1.5 of LEDR Embedded Firmware

Release 7.1.5 contains the following versions of firmware:

Application:	7.1.5
DSP:	2.0.0
FPGA:	E1.1.06
Modem Scripts:	E1.1.05
Option FPGA:	E1.1.04

Compile Date: Aug 17 2007 10:47:36

Release Date: Aug 17 2007

Please note that the upgrade instructions are contained at the end of this document.

NOTE: In addition to following the instructions at the end of this document there is also a procedure that needs to be followed in order to allow for upgrading from an older version (<6.2.1) of software. Because of a mapping issue the event map of the radio becomes corrupted on an upgrade. In order to avoid this the following procedure needs to be observed:

1. Before beginning the reprogram, as described at the end of this document, save your event map using the "evmap send" command.
2. After reprogramming the radio and booting into the new code issue an even map clear by using the "events init" command. It is also recommended that the log file be cleared with a "log clear" command.
3. After clearing the event map, step 2 above, reload the desired map (saved in step 1) using the "evmap get" command

NEW FEATURES

None.

DEFECT FIXES

2. Allow Redundant Active Event (event #140) to be mapped to alarms and/or LEDs with the "evmap" command.
3. Command "loopback" can now be run at any login level. (see TR# [5458](#)).

KNOWN ISSUES

10. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
11. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.

12. A “Reprogram Network” sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
13. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

When upgrading to version 6.3.2 issue an "events init" to initialize event maps to their default values.

14. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
15. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
16. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
17. When upgrading from version 6.1.0 or prior, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - g. Service channel transparent
 - h. DTMF enable
 - i. Subrate Spur entries
 - j. Fullrate Spur entries
 - k. UDP checksum enable
 - l. Console Baud rate
18. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 7.1.3 Fullrate notes

Release notes for version 7.1.3 Fullrate of LEDR Embedded Firmware

Release 7.1.3 contains the following versions of firmware:

Application:	7.1.3
DSP:	2.0.0
FPGA:	E1.1.06
Modem Scripts:	E1.1.05
Option FPGA:	E1.1.04

Compile Date: Apr 19 2006 16:21:12

Release Date: Apr 20 2006

Please note that the upgrade instructions are contained at the end of this document.

NOTE: In addition to following the instructions at the end of this document there is also a procedure that needs to be followed in order to allow for upgrading from an older version (<6.2.1) of software. Because of a mapping issue the event map of the radio becomes corrupted on an upgrade. In order to avoid this the following procedure needs to be observed:

1. Before beginning the reprogram, as described at the end of this document, save your event map using the "evmap send" command.
2. After reprogramming the radio and booting into the new code issue an even map clear by using the "events init" command. It is also recommended that the log file be cleared with a "log clear" command.
3. After clearing the event map, step 2 above, reload the desired map (saved in step 1) using the "evmap get" command

NEW FEATURES

None.

DEFECT FIXES

1. Initialize ICPO and Step Size at power-up.

KNOWN ISSUES

19. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
20. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
21. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.

22. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

When upgrading to version 6.3.2 issue an "events init" to initialize event maps to their default values.

23. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
24. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
25. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
26. When upgrading from version 6.1.0 or prior, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
- m. Service channel transparent
 - n. DTMF enable
 - o. Subrate Spur entries
 - p. Fullrate Spur entries
 - q. UDP checksum enable
 - r. Console Baud rate
27. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 7.1.2 Fullrate notes

Release notes for version 7.1.2 Fullrate of LEDR Embedded Firmware

Release 7.1.2 contains the following versions of firmware:

Application:	7.1.2
DSP:	2.0.0
FPGA:	E1.1.06
Modem Scripts:	E1.1.05
Option FPGA:	E1.1.04

Compile Date: Mar 21 2006 14:26:02

Release Date: Mar 21 2006

Please note that the upgrade instructions are contained at the end of this document.

NOTE: In addition to following the instructions at the end of this document there is also a procedure that needs to be followed in order to allow for upgrading from an older version (<6.2.1) of software. Because of a mapping issue the event map of the radio becomes corrupted on an upgrade. In order to avoid this the following procedure needs to be observed:

1. Before beginning the reprogram, as described at the end of this document, save your event map using the "evmap send" command.
2. After reprogramming the radio and booting into the new code issue an even map clear by using the "events init" command. It is also recommended that the log file be cleared with a "log clear" command.
3. After clearing the event map, step 2 above, reload the desired map (saved in step 1) using the "evmap get" command

NEW FEATURES

1. Reintroduced Region Number as an optional parameter to both the RFOCAL and RSSICAL commands. This was done for backward compatibility with manufacturing tools. The Region Number value is ignored.

DEFECT FIXES

4. Corrected functionality of PLL IF for H/W Rev A02, model 1400.
5. Changed Sweep Speed for 256 modem (Improves carrier acquisition).

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.

3. A “Reprogram Network” sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

When upgrading to version 6.3.2 issue an "events init" to initialize event maps to their default values.

5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. When upgrading from version 6.1.0 or prior, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - s. Service channel transparent
 - t. DTMF enable
 - u. Subrate Spur entries
 - v. Fullrate Spur entries
 - w. UDP checksum enable
 - x. Console Baud rate
9. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 7.1.0 Fullrate notes

Release notes for version 7.1.0 Fullrate of LEDR Embedded Firmware

Release 7.1.0 contains the following versions of firmware:

Application:	7.1.0
DSP:	2.0.0
FPGA:	E1.1.06
Modem Scripts:	E1.1.05
Option FPGA:	E1.1.04

Compile Date: December 15, 2005 15:11:20

Release Date: December 15, 2005

Please note that the upgrade instructions are contained at the end of this document.

NOTE: In addition to following the instructions at the end of this document there is also a procedure that needs to be followed in order to allow for upgrading from an older version (<6.2.1) of software. Because of a mapping issue the event map of the radio becomes corrupted on an upgrade. In order to avoid this the following procedure needs to be observed:

1. Before beginning the reprogram, as described at the end of this document, save your event map using the "evmap send" command.
2. After reprogramming the radio and booting into the new code issue an even map clear by using the "events init" command. It is also recommended that the log file be cleared with a "log clear" command.
3. After clearing the event map, step 2 above, reload the desired map (saved in step 1) using the "evmap get" command

NEW FEATURES

1. Added the command **RFLOOP DETECT <#>** to sample and display the Power Detection value. This was used as a development tool.
2. Removed the concept of regions for both Power and RSSI Calibration. This is reflected in the modified **RFOCAL** and **RSSICAL** commands.
3. Automatically Dekey the radio if the temperature exceeds the Redundant Temperature (set using the **RDNT TEMP** command).
4. Changed the default Threshold Temperature from 110 to 95 if it is still at the default value (i.e., 110).
5. Generate a **TEMPERATURE EVENT** when the radio temperature exceeds the Threshold Temperature. This condition used to generate a **Performance Degraded Event**.
6. Generate a **TX_POWER_LOOP Event** if the radio becomes saturated.
7. Allow a user with ADMIN permission to execute the **RFOUT OFFSET** command.
8. Allow a user with ADMIN permission to execute the **RSSI OFFSET** command.
9. Require FACTORY permission to execute the LOOPBACK RF command (previously required only ADMIN).

10. Add the following valid modem combinations:
 - C1 – 25 kHz – 64 KBPS, 32-QAM,
 - C4 – 100 kHz – 384 KBPS, 32-QAM,
 - B7 – 1 MHz – 2048 KBPS – 16 QAM,
 - A4 – 200 kHz - 384 KBPS – QPSK
11. The **EVENT DESC** for 64 and 65 was changed to **RESERVED** (was **FAN TROUBLE**).
12. Removed “The Marconi Fix” which would reset the transmitter every 5 to 10 minutes if the radio was not linked.
13. The Part number is now changed depending on whether the Subrate or Fullrate Firmware version is running. Set Part Number to “MDS Part #06-345A01” (subrate).

DEFECT FIXES

1. This release includes changes to the RF Control Loop that were introduced as part of the “Lighthouse” release 7.0.0 and 7.0.1. These changes are:
 - Rewrote the RF control loop section. This is to fix the “occasional” occurrence of a radio reporting that the rf had failed, causing the default radio to go offline and switch to the backup radio, when in fact the default radio’s rf had not failed.
 - Made slight modifications to the newly re-written RF Loop Control code. The changes handle saturation (Alarm and set internal flags) and properly switch to the redundant radio.
2. Improved the Power Control Tracking to reduce the “bounce”.
3. Modified the Power Control Logic to allow it to recover from a saturation state.
4. Assure that **REBOOTING** message remains on LCD while rebooting.
5. For E1 radios, changes were made to the register programming for the E1 framers:
issue:
When running a protected link, it is not possible to replace a radio in the system without injecting errors in the payload. This causes a continual stream of errors to be injected into the system until both radios are powered up and rebooted.

Investigation has shown that the source of the problem is the framer configuration. The equalizer in the Receive LIU is frozen which prevents the device from compensating for changes in the line characteristics.

solution:

The framer Receive LIU Configuration register (addr. 0x22) should be modified from the current value of 0x39h to the correct value 0x31h. Please note that this modification should be made to all four framers in the system.

additionally:

There are a few performance features in the framer that we should be taking advantage of but we currently are not.

LFGAIN, bits 3-0 of the CLAD Configuration Register should be set to 0xF rather than 0x6. This change increases the loop filter gain of the clock rate adapter and significantly reduces the measured output jitter on the payload interface.

JAUTO, bit 4 in the Jitter Attenuator Configuration (JAT_CR addr 0x002) should be set. This allows the jitter attenuator to adjust its clock accordingly as it approaches its thresholds. Therefore allowing for larger swings in input jitter before resulting in a bit error.

JCENTER, bit 3 of the same register above should be strobed (set and cleared) each time we recover from an RLOS or RALOS on the payload port. This feature recenters the jitter attenuator's pointers and will result in a more consistent latency.

6. Scripts version 2.1.2 provides improved SNR for all modem types.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

When upgrading to version 6.3.2 issue an "events init" to initialize event maps to their default values.

5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. When upgrading from version 6.1.0 or prior, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - y. Service channel transparent
 - z. DTMF enable
 - aa. Subrate Spur entries
 - bb. Fullrate Spur entries
 - cc. UDP checksum enable

dd. Console Baud rate

9. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Fullrate Version 6.3.5 notes

Release notes for version 6.3.5 of LEDR Embedded Firmware

Release 6.3.5 contains the following versions of firmware:

Application:	6.3.5
DSP:	2.0.0
FPGA:	E1.1.06
Modem Scripts:	E1.1.05
Option FPGA:	E1.1.04

Compile Date: January 18, 2006 11:40:26

Release Date: January 18, 2006

Please note that the upgrade instructions are contained at the end of this document.

NOTE: In addition to following the instructions at the end of this document there is also a procedure that needs to be followed in order to allow for upgrading from an older version of software. Because of a mapping issue the event map of the radio becomes corrupted on an upgrade. In order to avoid this the following procedure needs to be observed:

1. Before beginning the reprogram, as described at the end of this document, save your event map using the "evmap send" command.
2. After reprogramming the radio and booting into the new code issue an even map clear by using the "events init" command. It is also recommended that the log file be cleared with a "log clear" command.
3. After clearing the event map, step 2 above, reload the desired map (saved in step 1) using the "evmap get" command

NEW FEATURES

1. NONE

DEFECT FIXES

2. Included correct FullRate Scripts.
3. Corrected Modem command to allow C7 modems w/ FullRate FPGA.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.

3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

When upgrading to version 6.3.2 issue an "events init" to initialize event maps to their default values.

5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. When upgrading from version 6.1.0 or prior, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - ee. Service channel transparent
 - ff. DTMF enable
 - gg. Subrate Spur entries
 - hh. Fullrate Spur entries
 - ii. UDP checksum enable
 - jj. Console Baud rate
9. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 6.3.4 notes

Release notes for version 6.3.4 of LEDR Embedded Firmware

Release 6.3.4 contains the following versions of firmware:

Application:	6.3.4
DSP:	2.0.0
FPGA:	2.01
Modem Scripts:	2.11
Option FPGA:	1.68

Compile Date: December 5, 2005 14:06:14

Release Date: December 5, 2005

Please note that the upgrade instructions are contained at the end of this document.

NOTE: In addition to following the instructions at the end of this document there is also a procedure that needs to be followed in order to allow for upgrading from an older version of software. Because of a mapping issue the event map of the radio becomes corrupted on an upgrade. In order to avoid this the following procedure needs to be observed:

1. Before beginning the reprogram, as described at the end of this document, save your event map using the "evmap send" command.
2. After reprogramming the radio and booting into the new code issue an even map clear by using the "events init" command. It is also recommended that the log file be cleared with a "log clear" command.
3. After clearing the event map, step 2 above, reload the desired map (saved in step 1) using the "evmap get" command

NEW FEATURES

- None

DEFECT FIXES

4. Corrected an initialization bug for models 1400S and 1400F.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.

4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

When upgrading to version 6.3.2 issue an "events init" to initialize event maps to their default values.

5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. When upgrading from version 6.1.0 or prior, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - kk. Service channel transparent
 - ll. DTMF enable
 - mm. Subrate Spur entries
 - nn. Fullrate Spur entries
 - oo. UDP checksum enable
 - pp. Console Baud rate
9. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 6.3.3 notes

Release notes for version 6.3.3 of LEDR Embedded Firmware

Release 6.3.2 contains the following versions of firmware:

Application:	6.3.3
DSP:	2.0.0
FPGA:	2.01
Modem Scripts:	2.11
Option FPGA:	1.68

Compile Date: October 28, 2005 11:03:00

Release Date: October 28, 2005

Please note that the upgrade instructions are contained at the end of this document.

NOTE: In addition to following the instructions at the end of this document there is also a procedure that needs to be followed in order to allow for upgrading from an older version of software. Because of a mapping issue the event map of the radio becomes corrupted on an upgrade. In order to avoid this the following procedure needs to be observed:

1. Before beginning the reprogram, as described at the end of this document, save your event map using the "evmap send" command.
2. After reprogramming the radio and booting into the new code issue an even map clear by using the "events init" command. It is also recommended that the log file be cleared with a "log clear" command.
3. After clearing the event map, step 2 above, reload the desired map (saved in step 1) using the "evmap get" command

NEW FEATURES

- None

DEFECT FIXES

1. Correct AIS generation in a Protected, Hitless environment. The new FPGA (2.01) monitors the receive status of both radios to determine when AIS should be sent.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.

3. A “Reprogram Network” sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

When upgrading to version 6.3.2 issue an "events init" to initialize event maps to their default values.

5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. When upgrading from version 6.1.0 or prior, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - qq. Service channel transparent
 - rr. DTMF enable
 - ss. Subrate Spur entries
 - tt. Fullrate Spur entries
 - uu. UDP checksum enable
 - vv. Console Baud rate
9. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 6.3.2 notes

Release notes for version 6.3.2 of LEDR Embedded Firmware

Release 6.3.2 contains the following versions of firmware:

Application:	6.3.2
DSP:	2.0.0
FPGA:	2.00
Modem Scripts:	2.11
Option FPGA:	1.68

Compile Date: October 24, 2005 13:09:55

Release Date: October 24, 2005

Please note that the upgrade instructions are contained at the end of this document.

NOTE: In addition to following the instructions at the end of this document there is also a procedure that needs to be followed in order to allow for upgrading from an older version of software. Because of a mapping issue the event map of the radio becomes corrupted on an upgrade. In order to avoid this the following procedure needs to be observed:

1. Before beginning the reprogram, as described at the end of this document, save your event map using the "evmap send" command.
2. After reprogramming the radio and booting into the new code issue an even map clear by using the "events init" command. It is also recommended that the log file be cleared with a "log clear" command.
3. After clearing the event map, step 2 above, reload the desired map (saved in step 1) using the "evmap get" command

NEW FEATURES

1. Changed the default values for the ADF4153 Synthesizer (model 900F/S, Board rev A07). These are:
 - Charge pump (icpo) – 2.04 mA,
 - Model 900S:
 - NAS – 28,
 - PLL Step 125000 kHz,
 - Model 900F:
 - NAS – 31,
 - PLL Step 250000 kHz,
2. Maintain Transceiver/PLL configuration parameters through a power cycle. These include ICPO, IFCPO, RDIV and NAS (where applicable).
3. Added features used for LEDR iMUX:
 - Console Echo command (i.e., con echo [on|off]) suppresses the echoing of commands as they are typed on the console.

- Panel command (i.e., panel [on|off]) disables the login and network panels on the Front Panel.
 - Added imux subcommand to Group command. Syntax is group imux [0|1|2], where:
 - 0 Disables imux support in the FPGA,
 - 1 enables imux test mode in the FPGA and
 - 2 enables imux mode in the FPGA.
4. Includes Sub-Rate FPGA version 2.0.0 which adds LEDR iMUX support

DEFECT FIXES

1. Prevent LEDR Sub-Rate/Full-Rate in-operative radio condition.
 - May not configure a sub-rate modem if the Full-rate FPGA is installed and
 - Will not configure a sub-rate modem at boot-up if the Full-rate FPGA is installed (defaults to the 1XT1 modem and sets the “FR FPGA, SR MODEM” event (147))
2. Version 2.0 of the FPGA also addresses a condition where the secondary radio is a space diversity system would not properly switch to the correct (i.e. good) RX data.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A “Reprogram Network” sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

When upgrading to version 6.3.2 issue an "events init" to initialize event maps to their default values.

5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. When upgrading from version 6.1.0 or prior, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)

ww. Service channel transparent
xx. DTMF enable
yy. Subrate Spur entries
zz. Fullrate Spur entries
aaa. UDP checksum enable
bbb. Console Baud rate

9. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).
10. When in a redundant configuration, AIS will be generated on an E1 system even though the second transceiver RX is still functional - this was fixed a while back and is now broken again. For now run with AIS disabled on the radio.

Version 6.3.0 notes

Release notes for version 6.3.0 of LEDR Embedded Firmware

Release 6.3.0 contains the following versions of firmware:

Application:	6.3.0
DSP:	2.0.0
FPGA:	1.31
Modem Scripts:	2.11
Option FPGA:	1.68

Compile Date: Sep 26 2005 10:26 AM

Release Date: Sep 26 2005

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Added support for the ADF4153 Frequency Synthesizers. These will be used on Board Rev1, models 900S and 900F.

DEFECT FIXES

None

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.
5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.

8. When upgrading version 6.1.0, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - ccc. Service channel transparent
 - ddd. DTMF enable
 - eee. Subrate Spur entries
 - fff. Fullrate Spur entries
 - ggg. UDP checksum enable
 - hhh. Console Baud rate
9. When upgrading to version 6.1.3, issue an "events init" to initialize event maps to their default values.
10. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 6.2.1 notes

Release notes for version 6.2.1 of LEDR Embedded Firmware

Release 6.2.1 contains the following versions of firmware:

Application:	6.2.1
DSP:	2.0.0
FPGA:	1.31
Modem Scripts:	2.11
Option FPGA:	1.68

Compile Date: Dec 15 2004 09:37:00

Release Date: Dec 16 2004

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

none

DEFECT FIXES

1. Fixed problem with pll step size not being displayed correctly at the command prompt when the pll command was issued either during a query or a step size change

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.
5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.

8. When upgrading version 6.1.0, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - iii. Service channel transparent
 - jjj. DTMF enable
 - kkk. Subrate Spur entries
 - lll. Fullrate Spur entries
 - mmm. UDP checksum enable
 - nnn. Console Baud rate
9. When upgrading to version 6.1.3, issue an "events init" to initialize event maps to their default values.
10. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).
11. When in a hot-standby (1+1) configuration the serial service channel port issues duplicate characters on the port

Version 6.2.0 notes

Release notes for version 6.2.0 of LEDR Embedded Firmware

Release 6.2.0 contains the following versions of firmware:

Application:	6.2.0
DSP:	2.0.0
FPGA:	1.31
Modem Scripts:	2.11
Option FPGA:	1.68

Compile Date: Dec 6 2004 15:54:25

Release Date: Dec 10 2004

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

none

DEFECT FIXES

1. Fixed T/R 2820 – Duplicate characters when using Service Channel in a protected system.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.
5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.

8. When upgrading version 6.1.0, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - ooo. Service channel transparent
 - ppp. DTMF enable
 - qqq. Subrate Spur entries
 - rrr. Fullrate Spur entries
 - sss. UDP checksum enable
 - ttt. Console Baud rate
9. When upgrading to version 6.1.3, issue an "events init" to initialize event maps to their default values.
10. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).
11. When in a hot-standby (1+1) configuration the serial service channel port issues duplicate characters on the port

Version 6.1.3 notes

Release notes for version 6.1.3 of LEDR Embedded Firmware

Release 6.1.3 contains the following versions of firmware:

Application:	6.1.3
DSP:	2.0.0
FPGA:	1.31
Modem Scripts:	2.11
Option FPGA:	1.68

Compile Date: Nov 23 2004 12:54:32

Release Date: Nov 23 2004

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

none

DEFECT FIXES

1. This version will now work with subsequent FPGA/Script/Option upgrades on both new and old hardware revisions
2. Updated Modem scripts:
 - a. Corrected full rate carrier recovery loop BW
 - b. Improved RX lock retry performance
3. DSP is now reset before load begins

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.
5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")

6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. When upgrading version 6.1.0, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)

uuu.	Service channel transparent
vvv.	DTMF enable
www.	Subrate Spur entries
xxx.	Fullrate Spur entries
yyy.	UDP checksum enable
zzz.	Console Baud rate
9. When upgrading to version 6.1.3, issue an "events init" to initialize event maps to their default values.
10. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).
11. When in a hot-standby (1+1) configuration the serial service channel port issues duplicate characters on the port

Version 6.1.2 notes

Release notes for version 6.1.2 of LEDR Embedded Firmware

Release 6.1.2 contains the following versions of firmware:

Application:	6.1.2
DSP:	2.0.0
FPGA:	1.31
Modem Scripts:	2.10
Option FPGA:	1.68

Compile Date: Nov 4, 2004 16:25:58

Release Date: Nov 8, 2004

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. This release contains support for both older and newer hardware revision of the 1400 series radios
2. The Front Panel Display will now display a message if the radio is in the process of rebooting

DEFECT FIXES

1. This version will now work with subsequent FPGA/Script/Option upgrades

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.
5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.

7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. When upgrading version 6.1.0, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - a. Service channel transparent
 - b. DTMF enable
 - c. Subrate Spur entries
 - a. Fullrate Spur entries
 - b. UDP checksum enable
 - c. Console Baud rate
9. When upgrading to version 6.1.2, issue an "events init" to initialize event maps to their default values.
10. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).
11. When in a hot-standby (1+1) configuration the serial service channel port issues duplicate characters on the port

Version 6.1.0 notes

Release notes for version 6.1.0 of LEDR Embedded Firmware

Release 6.1.0 contains the following versions of firmware:

Application:	6.1.0
DSP:	2.0.0
FPGA:	1.31
Modem Scripts:	2.10
Option FPGA:	1.68

Compile Date: Oct 12 2004 15:12:58

Release Date: Oct 13 2004

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. This release contains support for both older and newer hardware revisions of the 1400 series radios

DEFECT FIXES

1. Fixed "test 2" (config test) - now passes when run
2. The UDP checksum parameter (ip configuration) is now able to be changed and stored when port=AIR (Previously would only work with port=ETH)
3. With version 5.2.4, under certain circumstances, running "evmap dump" would result in the radio being rebooted. Now a warning message will be issued stating the evmap dump values are inaccurate. After upgrade, an "events init" should be issued (see known issues below) to prevent this.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. When upgrading version 6.1.0, the following configuration parameters will be reset to factory defaults (afterwards, they will then be able to be modified and stored normally)
 - d. Service channel transparent
 - e. DTMF enable
 - f. Subrate Spur entries
 - d. Fullrate Spur entries
 - e. UDP checksum enable
 - f. Console Baud rate
9. When upgrading to version 6.1.2, issue an "events init" to initialize event maps to their default values.
10. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).
11. When in a hot-standby (1+1) configuration the serial service channel port issues duplicate characters on the port

Version 5.2.4 notes

Release notes for version 5.2.4 of LEDR Embedded Firmware

Release 5.2.4 contains the following versions of firmware:

Application:	5.2.4
DSP:	1.4.0
FPGA:	1.31
Modem Scripts:	2.10
Option FPGA:	1.68

Release Date: 07/23/2004

Please note that the upgrade instructions are contained at the end of this document.

NOTE: In addition to following the instructions at the end of this document there is also a procedure that needs to be followed in order to allow for upgrading from an older version of software. Because of a mapping issue the event map of the radio becomes corrupted on an upgrade. In order to avoid this the following procedure needs to be observed:

1. Before beginning the reprogram, as described at the end of this document, save your event map using the "evmap send" command.
2. After reprogramming the radio and booting into the new code issue an even map clear by using the "events init" command. It is also recommended that the log file be cleared with a "log clear" command.
3. After clearing the event map, step 2 above, reload the desired map (saved in step 1) using the "evmap get" command

NEW FEATURES

None

DEFECT FIXES

1. Network upgrade and other UDP based functions were non functional with 5.2.3

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.

3. A “Reprogram Network” sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.
5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).
9. The UDP check summing feature can only be enabled/disabled when the Ethernet interface is set to "ETH"
10. When in a hot-standby (1+1) configuration the serial service channel port issues duplicate characters on the port

Version 5.2.3 notes

Release notes for version 5.2.3 of LEDR Embedded Firmware

Release 5.2.3 contains the following versions of firmware:

Application:	5.2.3
DSP:	1.4.0
FPGA:	1.31
Modem Scripts:	2.10
Option FPGA:	1.68

Release Date: 06/23/2004

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. UDP check summing is now configurable via the web interface.
2. The console baud rate is now preserved across system resets.
3. G.821 statistics for the composite link are now available via the web interface.
4. Miscellaneous improvements to the RF modem (lock time performance).

DEFECT FIXES

1. rfocal now properly terminates the end of the RF output power calibration table. Formerly, it would append a bogus entry to the end of the table.
2. The rfout "offset" feature now works properly. Formerly minimum and maximum RF output power values were reported WITHOUT accounting for the power offset and the power value at the low end of the calibration table was not settable.
3. The "g821 clear all" command now logs a G821_COUNTERS_CLEARED event (146) instead of LINK_UNAVAILABLE.
4. UDP check summing may now be set if the "IP port" is set to AIR. Formerly, it would always remain ON.
5. The UDP check summing menu item for the front panel display now displays "UDP CHECKSUM". Formerly, it would display "UDP CHECKSUMMIN"
6. Killing non-existent telnet sessions is now handled gracefully. Formerly the radio would stop responding and eventually reboot.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.
5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.
7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 5.2.2 notes

Release notes for version 5.2.2 of LEDR Embedded Firmware

Release 5.2.2 contains the following versions of firmware:

Application:	5.2.2
DSP:	1.4.0
FPGA:	1.31
Modem Scripts:	2.00
Option FPGA:	1.68

Release Date: 03/16/2004

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Improved modem signal-to-noise ratio (SNR) measurement
2. Improved link acquisition time for all modem speeds
3. Composite G.821 statistics are displayable for radios in a 1+1 configuration via the "g821 comp" command.
4. Signal-to-noise ratio (SNR) is logged with events. See the "log" command.
5. UDP packet check summing is configurable (for TFTP and SNMP) via the "ip" command.
6. Redundant mode test mode configuration is persistent and its timeout is configurable. See the "rdnt" command for usage.

DEFECT FIXES

1. The switchover temperature threshold event (configured via "rdn temp") logs a TEMPERATURE event in the event log. Formerly no event was logged.
2. The "trend ifec" command displays instantaneous statistics. Formerly it displayed cumulative statistics.
3. The "fec" and "log" commands accept the abbreviated "clr" sub-command. The "g821" command accepts the "clear" sub-command.
4. The demodulator self-test ("test demod") restores the demodulator to normal operating state upon completion. Formerly it didn't, effectively bringing down the RF link.
5. The web interface allows configuration of system description and system time via the "general" configuration frame.

6. The web interface preserves the event log viewing filter selections across visits to the event log web page.
7. AIS (for the T1/E1 interface) is properly generated for hitless systems. Formerly if either modem in a hitless system unlocked, LEDR would generate AIS. Now both modems must fail for AIS to be generated.
8. AIS (for the T1/E1 interface) is properly generated for the dual upstream/downstream failure case. Formerly LEDR would treat local RAI as higher priority than AIS from another system (and RAI is
9. Disabled--see below).
10. Transmitter output power is properly reported (via "rfout") when the output power is truly outside the calibration points, most saliently when the transmitter is powered off ("txkey off").
11. TFTP "config get" and "config getall" run to completion. Formerly these commands locked up processing the transceiver settings.
12. The eia530 command is able to set DTR and RTS from telnet from an account with write permissions. Formerly it would decline, citing "insufficient permissions".
13. Fixed a bug with the raw service channel which caused it to cease sending data (effectively stopping the over the air network communications, serial service channel and orderwire).
14. Corrected inaccuracies in G.821 counters.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.
5. When using 1+1 configuration, ensure that both radios are upgraded to 5.2.2 before using the protected mode test mode feature ("rdnt pmode")
6. Due to reliability issues, RAI generation (for the T1/E1 interface) has been disabled.

7. The console baud rate is configurable ONLY for the radio applications. The LEDR bootstrap loader remains hard-coded at 9600 baud.
8. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 5.1.9 notes

Release notes for version 5.1.9 of LEDR Embedded Firmware

Release 5.1.9 contains the following versions of firmware:

Application:	5.1.9
DSP:	1.4.0
FPGA:	1.31
Modem Scripts:	2.10
Option FPGA:	1.68

Release Date: 04/28/2004

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

None.

DEFECT FIXES

1. The changes included in this revision all are within the modem scripts. A change to an improper setting in the modulator has been corrected. This remedies the unstable lock issue detected in version 5.1.8.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.
5. There is an issue with some of the lower data rates in the radios and some of the higher modulation types (i.e. 32QAM in 50kHz). In these cases and excessive frequency offset may cause the radios to not lock. Please consult with technical services before upgrading older links at the lower data rates (sub-768kbit). Frequency offsets >1.1kHz may cause issues (issuing command COFFSET shows current frequency offset).

Version 5.1.8 notes

Release notes for version 5.1.8 of LEDR Embedded Firmware

Release 5.1.8 contains the following versions of firmware:

Application:	5.1.8
DSP:	1.4.0
FPGA:	1.31
Modem Scripts:	2.00A
Option FPGA:	1.68

Release Date: 03/01/2004

Please do not use this version it contains an unstable modem script.

Version 5.1.7 notes

Release notes for version 5.1.7 of LEDR Embedded Firmware

Release 5.1.7 contains the following versions of firmware:

Application:	5.1.7
DSP:	1.4.0
FPGA:	1.31
Modem Scripts:	1.45
Option FPGA:	1.68

Release Date: 12/16/2003

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

None

DEFECT FIXES

1. Changes to the EIA-530 Protected Interface. This defect was not introduced until version 5.0.0. Radios connected by a switch chassis using the EIA-530 interface would work properly when initially powered up, but would fail to work after any switchovers occurred.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

Version 5.1.6 notes

Release notes for version 5.1.6 of LEDR Embedded Firmware

Release 5.1.6 contains the following versions of firmware:

Application:	5.1.6
DSP:	1.4.0
FPGA:	1.31
Modem Scripts:	1.45
Option FPGA:	1.68

Release Date: 12/9/2003

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. *Protected Composite Changes - traffic quality:* This change gives a measure of the uncorrectable errors with hitless switching enabled in a protected system. The concept of a "Composite Uncorrectable Block" has been added to both the trend and the fec commands. The count value is a measure of the number of simultaneous uncorrectable blocks given the receive data from both receivers.
2. *Calibration of the entire subband:* This change applies to 1400's only. Customers want to be able to change frequencies of their radios, but currently they are calibrated only at the ordered frequency of the radio. We will now calibrate the rssi and output power values at various frequencies throughout the band in order to support this.
3. *G.821 reset all from SNMP:* The demod G.821 reset all SNMP object now clears all G.821 stats.
4. *Log Unrecoverable FEC alarm:* Whenever uncorrectable blocks are encountered, this event is logged. This event will be generated no more than once per minute so that a burst of errors will not saturate the event log.

DEFECT FIXES

1. *Network node dropout problem:* Nodes in the network list have sometimes spontaneously dropped out for periods of time. Although it has been a problem with previous versions of software, the problem had become more pronounced with version 5.0.
2. *Command inconsistencies (fec, trend commands):* The fec and trend commands did not allow upper and lowercase letters as with all other commands.
3. *Modify time via web server:* The web server previously would allow date changes, but not time.
4. *Warm Standby:* Warm standby operation is now functional.

5. *Transmitter lockup problem*: a transmitter lockup condition due to periods of faded signal strength has been identified and fixed.
6. *Charge pump change - microphonics*: The charge pump currents for the 1400 series synthesizers have been changed to improve microphonic performance.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
4. **NOTE**: An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

Version 5.0.0 notes

Release notes for version 5.0.0 of LEDR Embedded Firmware

Release 5.0.0 contains the following versions of firmware:

Application:	5.0.0
DSP:	1.4.0
FPGA:	1.30
Modem Scripts:	1.45
Option FPGA:	1.66

Release Date: 10/13/2003

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Protected Mode Changes

- a. Radio A is the top unit and B is the bottom unit in a protected system (previously there was the concept of a "default" radio).
- b. Radio A will ALWAYS be active unless it is failed and B is good.
- c. Because of the last item, the concept of a forced switchover no longer applies. A will always want to be the active radio. In order to provide the user the ability to test a particular radio in a protected system, a "protected mode" setting has been added so that the user can choose: Radio A Only, Radio B Only, or Auto Switch.
- d. The A/B/Auto settings have been added to each of the interfaces. At the console, the "rdnt pmode [a | b | auto]" command. At the front panel under the Redundant menu, the "Protected Mode" option has been added that supplies the options "A ONLY", "B ONLY", or "AUTO". At the web interface Protected screen and via the snmp agent, the "Protected Mode" options are "Auto Switch", "Radio A Only", and "Radio B Only".
- e. The Switch Xcvr option has been removed from all interfaces.

2. G.821 Changes

- a. G.821 statistics are not reset when the modem becomes locked.
- b. The modem unlocked time is added to unavailable seconds.

3. Miscellaneous Changes

- a. The previously tested fractional E1 changes for Aquila were merged into this release.
- b. Fixed a problem with the web server. It sometimes returned a content length of 0 bytes and caused the browser to not display the html information.

DEFECT FIXES:

None

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. Warm Standby alarms. In Warm Standby mode, occasional demodulator acquisition alarms occur. Although this does not affect data performance, MDS suggests operating protected systems in Hot Standby.
4. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
5. Warm Standby is not fully functional.
6. **NOTE:** An upgrade to this version of software from 4.4.6 and earlier software versions will cause the existing radio EVMAP settings to be reset to their default values. If the settings have been modified from their defaults, the mapping can be stored and retrieved using the EVMAP command and a computer running the ledr tftp application.

Version 4.4.6 notes

Release notes for version 4.4.6 of LEDR Embedded Firmware

Release 4.4.6 contains the following versions of firmware:

Application:	4.4.6
DSP:	1.4.0
FPGA:	1.30
Modem Scripts:	1.45
Option FPGA:	1.66

Release Date: 10/11/2002

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

None

DEFECT FIXES

1. Fixed protected problems when getting tcp message buffer and got NULL while all buffers are used.
2. Clean up EtherNet Tx.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. Warm Standby alarms. In Warm Standby mode, occasional demodulator acquisition alarms occur. Although this does not affect data performance, MDS suggests operating protected systems in Hot Standby.
4. The command "RDNT SWXCVR" cannot be used until radio is powered-up for 2 minutes, after the protected system is fully initialized. Or it may not switch.
5. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
6. Warm Standby is not fully functional.

Version 4.4.3 notes

Release notes for version 4.4.3 of LEDR Embedded Firmware

Release 4.4.3 contains the following versions of firmware:

Application:	4.4.3
DSP:	1.4.0
FPGA:	1.30
Modem Scripts:	1.45
Option FPGA:	1.66

Release Date: 10/01/2002

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

None

DEFECT FIXES

1. Fixed problems with events log pointer corruption and LEDs not showing up after an upgrade from 4.3.0 to 4.4.x.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. Warm Standby alarms. In Warm Standby mode, occasional demodulator acquisition alarms occur. Although this does not affect data performance, MDS suggests operating protected systems in Hot Standby.
4. The command "RDNT SWXCVR" cannot be used until radio is powered-up for 2 minutes, after the protected system is fully initialized. Or it may not switch.
5. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
6. Warm Standby is not fully functional.

Version 4.4.2 notes

Release notes for version 4.4.2 of LEDR Embedded Firmware

Release 4.4.2 contains the following versions of firmware:

Application:	4.4.2
DSP:	1.4.0
FPGA:	1.30
Modem Scripts:	1.45
Option FPGA:	1.66

Release Date: 9/30/2002

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

None

DEFECT FIXES

1. Fixed an FSET command problem with 400 & 900MHz radios.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. Warm Standby alarms. In Warm Standby mode, occasional demodulator acquisition alarms occur. Although this does not affect data performance, MDS suggests operating protected systems in Hot Standby.
4. The command "RDNT SWXCVR" cannot be used until radio is powered-up for 2 minutes, after the protected system is fully initialized. Or it may not switch.
5. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
6. Warm Standby is not fully functional.

Version 4.4.1 notes

Release notes for version 4.4.1 of LEDR Embedded Firmware

Release 4.4.1 contains the following versions of firmware:

Application:	4.4.1
DSP:	1.4.0
FPGA:	1.30
Modem Scripts:	1.45
Option FPGA:	1.66

Release Date: 8/22/2002

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

None

DEFECT FIXES

1. Fixed intermittent Redundant switching, especially when booting up from cold.
2. Fixed protected switching when performing "rfout" adjustment.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. Warm Standby alarms. In Warm Standby mode, occasional demodulator acquisition alarms occur. Although this does not affect data performance, MDS suggests operating protected systems in Hot Standby.
4. The command "RDNT SWXCVR" cannot be used until radio is powered-up for 2 minutes, after the protected system is fully initialized. Or it may not switch.
5. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
6. Warm Standby is not fully functional.

Version 4.4.0 notes

Release notes for version 4.4.0 of LEDR Embedded Firmware

Release 4.4.0 contains the following versions of firmware:

Application:	4.4.0
DSP:	1.4.0
FPGA:	1.30
Modem Scripts:	1.45
Option FPGA:	1.66

Release Date: 8/15/2002

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Added orderwire alert event - Order wire alert is now logged as an event, so it can be mapped to an external alarm or remote alarm for operator convenience. Event is added to SNMP MIB also.
2. Added DTMF enable/disable feature - this can be used to disable DTMF when in noisy environment and DTMF function is not required.
3. Added "event init savemap" to re-initialize without resetting events map.
4. Added event to log Protected Link switching activities - added RDNT_ACTIVE event which is a pulsed event that is set when the radio goes active and cleared when it goes inactive. Event is added to SNMP MIB also.
5. ARP Table now saved in Config File in format ARP_ENTRIES[index]=ip. When sending, ARP_ENTRIES[0]=0.0.0.0 is sent if no config arp table entries. When getting, ARP_ENTRIES[0] will trigger all arp table entries to be flushed from the config data.
6. Added Network Table to MIB - added to the common ledr MIB: ledrNetworkTable and ledrNetworkTableEntry objects with ledrNetTabUnitID, ledrNetTabIPAddr, ledrNetTabRFHops, ledrNetTabEthHops, and ledrNetTabPort table entries.
7. Added reprogram status to MIB - added to the common ledr MIB: new ledrFwProgStatus leaf under ledrFirmware object. 4 supported values: not started, in progress, complete failed, verify failed, complete ok.
8. Added DIA530 RTS and DTR setting to "Config" command so it can be saved to configuration file.
9. Added access privilege to SUPER user to use "interface -o" command.

10. Added default configuration support via "model" command for mds700S and mds700F.
11. Added evmapping to config data for NV RAM Storage
12. BERT command overrides AIS conditions.
13. Added ledRssiNumeric leaf object (Integer) to LedrPerformance object in commonledr MIB so that the RSSI value can be trended from SNMP manager.
14. Changed ENGR and FACT passwords to eliminate potential security issues.

DEFECT FIXES

1. Fixed problems associated with Radio disappearing from NET, NSD stops, and network services hung.
2. Fixed problem associated with SNMP Request for Alarm LED Status generating AlarmTrap.
3. Fixed FE1 C6 +CAS issue - The radios did not pass SA bytes transparently, even in fstruct mode 8. Sometimes they do pass the SA bytes, but stop doing so after a period of time, and even a reboot usually does not restore proper SA byte operation.
4. Improve DTMF detection reliability - reduced False DTMF detection to eliminate unwanted network traffic.
5. Fixed issue with Alarm output initialized to open when active open - enter "alarm out all active open" command then "events init" command. Notice output alarms report false alarm conditions because they are initialized to open.
6. Corrected spelling errors (Satellite, etc...).
7. Fixed problems associated with RF loopback when AIS is on and remote radio is generating AIS. RF loopback overrides AIS conditions.
8. Modified 1400 PLL missing and spurs schemes to boost RF performance.
9. Fixed problems associated with E1 BERT & CAS framing.
10. Fixed problems associated with "Config send" from the far end of an E1 link.
11. 11) Fixed problems associated with "Conifg getAll" not restoring correctly - save restore RxPllIfLo setting. Notes: Old config file should put "PLL_1400_RX_IF_LO=Off" or "PLL_1400_RX_IF_LO=On" right after "RADIO_MODEL=..." line.
12. Fixed problems associated with Protected Radio Switch Over From Radio With <0 dBm.

13. Fixed problems associated with SNMP ledrSpanMapping MIB object returning genErr when SETTING.
14. Fixed problems associated with clearing FEC using Web interface.
15. Fixed problems associated with Data Service Channel transparency - Added "transparent" subcommand to "svch" command (Also added service channel parameters to config file / config manager). This feature allow "ESC" to be filtered or not according to user re-programmable setting.
16. Fixed problems associated with No NSD over protected system.
17. Fixed problems associated with protected link not generating Tx Alarm when Tx power drops.
18. Fixed problems associated with routes in config data being incorrectly stored/displayed
19. Fixed problems associated with TMD pin assertion at remote radio when in loopback remote mode.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. Warm Standby alarms. In Warm Standby mode, occasional demodulator acquisition alarms occur. Although this does not affect data performance, MDS suggests operating protected systems in Hot Standby.
4. The command "RDNT SWXCVR" cannot be used until radio is powered-up for 2 minutes, after the protected system is fully initialized. Or it may not switch.
5. A "Reprogram Network" sometimes fails with protected system. Work around by configuring radio to standalone and remove redundant cable.
6. Warm Standby is not fully functional.

Version 4.3.0 notes

Release notes for version 4.3.0 of LEDR Embedded Firmware

Release 4.3.0 contains the following versions of firmware:

Application:	4.3.0
DSP:	1.3.0
FPGA:	1.30
Modem Scripts:	1.45
Option FPGA:	1.66

Release Date: 4/9/2002

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Increased Network ARP and Route limits.
2. Added remote BOOT feature without confirmation so SUPER user of remote radio can force a reset to remote radio in the occasion that the return link is down.

DEFECT FIXES

1. Fixed Clock Recovery issue with EIA530 Interface - With back-to-back Repeater radios, Demod Acquisition Alarm was intermittently cascading to other radios.
2. Fixed Network Management and remote login-in hang-up - Radios would disappear from NET and Network Self-Discovery seized. Remote login would suddenly hang.
3. Enhanced Gateway heavy traffic handling and eliminate the chance for it to reboot under problematic network environment.
4. Fixed intermittent reboot when adjusting VOX from the front panel.
5. Fixed Redundant Network Self-Discovery handling so sibling radio will not be disappeared from Net list.
6. Fixed Link Unavailable Event Latches.
7. Enhanced slow Telnet response.
8. Eliminate intermittent Echo of characters in Telnet sessions.
9. Invert RTS Enable in FPGA - incorrectly inverted before.

KNOWN ISSUES

1. Front panel may intermittently scroll menu when the network is heavily congested. Work around by correcting network congestion issues.
2. The "loopback outb" command does not work every time due to intermittent 3rd party vendor hardware limitation. Re - issue command again.
3. Gateway radio may reboot when network is heavily congested. Work around by correcting network congestion issues
4. Warm Standby alarms. In Warm Standby mode, occasional demodulator acquisition alarms occur. Although this does not affect data performance, MDS suggests operating protected systems in Hot Standby.

Version 4.2.0 notes

Release notes for version 4.2.0 of LEDR Embedded Firmware

Release 4.2.0 contains the following versions of firmware:

Application:	4.2.0
DSP:	1.3.0
FPGA:	1.24
Modem Scripts:	1.45
Option FPGA:	1.66

Release Date: 5/7/2001

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Let Rlogin/Telnet to perform "interface -o" command with automatic RESET.

DEFECT FIXES

1. Fixed 2xE1, 4xE1 problem in option FPGA image.
2. Filtered warning message for CAS/16 timeslot when in full E1's modes.

KNOWN ISSUES

1. Front panel Vocoder error when changing volume or vox settings via console while displaying volume or vox front panel menu item. Work-around: Escape from current front panel vocoder menu and re-enter vocoder volume or vox commands twice.
2. "loopback outb" command does not work every time.
3. For protected systems only: Protected NSD may cause intermittent problems with network connectivity. MDS strongly suggests disabling Protected NSD using the command "rdnt nsd off" when logged in with Administrator privileges. For full details, contact MDS technical support at +1-716-241-5510 or by email at support@microwavedata.com.
4. Warm Standby alarms. In Warm Standby mode, occasional demodulator acquisition alarms occur. Although this does not affect data performance, MDS suggests operating protected systems in Hot Standby.

Version 4.1.0 notes

Release notes for version 4.1.0 of LEDR Embedded Firmware

Release 4.1.0 contains the following versions of firmware:

Application:	4.1.0
DSP:	1.3.0
FPGA:	1.24
Modem Scripts:	1.45
Option FPGA:	1.66

Release Date: 4/9/2001

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Addition of fractional E1 capability
2. Alarm inputs can now be relayed to remote radios as events and inherited all functionalities as an event.
3. Added SNMP BERT status objects so now user can look at T1/E1 line BERT status.

DEFECT FIXES

1. Front Panel menu Line Chooser allows READ user access to read items' status.
2. SNMP manager can now walk the entire MIB tree.
3. SNMP Bert Pattern can now be set to "none".
4. When upgrading from version 2.3.x to 3.2.1 (or newer version), RF and RSSI offsets will be correctly cleared.
5. "Config getAll ..." command in 1400 models now correctly save and restore PLL characteristic
6. Settings so RX frequency configuration can be restored from configuration file.
7. Inhibited modem combo "16QAM, 1xE1 (2Mbps), 500kHz Bandwidth" due to regulation.

KNOWN ISSUES

1. Front panel Vocoder error when changing volume or vox settings via console while displaying volume or vox front panel menu item. Work-around: Escape from current front panel vocoder menu and re-enter vocoder volume or vox commands twice.
2. "loopback outb" command does not work every time.

3. For protected systems only: Protected NSD may cause intermittent problems with network connectivity. MDS strongly suggests disabling Protected NSD using the command "rdnt nsd off" when logged in with Administrator privileges. For full details, contact MDS technical support at +1-716-241-5510 or by email at support@microwavedata.com.
4. Warm Standby alarms. In Warm Standby mode, occasional demodulator acquisition alarms occur. Although this does not affect data performance, MDS suggests operating protected systems in Hot Standby.

Version 3.2.2 notes

Release notes for version 3.2.2 of LEDR Embedded Firmware

Release 3.2.2 contains the following versions of firmware:

Application:	3.2.2
DSP:	1.3.0
FPGA:	1.24
Modem Scripts:	1.45
Option FPGA:	1.63

Release Date: 2/28/2001

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Support of new 28F160C3T INTEL FLASH device. Basically, configure chip as B3 FLASH compatible so it can be reprogrammed without blocks being locked.

DEFECT FIXES

None

KNOWN ISSUES

1. "Front panel Vocoder error when changing volume or vox settings via console while displaying volume or vox front panel menu item. Work-around: Escape from current front panel vocoder menu and re-enter vocoder volume or vox commands twice."

Version 3.2.1 notes

Release notes for version 3.2.1 of LEDR Embedded Firmware

Release 3.2.1 contains the following versions of firmware:

Application:	3.2.1
DSP:	1.3.0
FPGA:	1.24
Modem Scripts:	1.45
Option FPGA:	1.60

Release Date: 1/26/2001

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

None

DEFECT FIXES

1. Turn off Tx Key and restore to previous state when performing Tx PLL self-test. This prevents from potentially blowing up the Rx LNA if Tx Pll self-test is invoked while keyed.

KNOWN ISSUES

1. "Front panel Vocoder error when changing volume or vox settings via console while displaying volume or vox front panel menu item. Work-around: Escape from current front panel vocoder menu and re-enter vocoder volume or vox commands twice."

Version 3.2.0 notes

Release notes for version 3.2.0 of LEDR Embedded Firmware

Release 3.2.0 contains the following versions of firmware:

Application:	3.2.0
DSP:	1.3.0
FPGA:	1.24
Modem Scripts:	1.45
Option FPGA:	1.60

Release Date: 12/28/2000

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Use exponential scale for front panel VOX threshold adjustment menu.

DEFECT FIXES

1. Default viewing angle on the front panel has been changed to accommodate a new LCD panel.
2. Vocoder voice VOX was incorrectly disabled with last new DSP code release.

KNOWN ISSUES

1. "Front panel Vocoder error when changing volume or vox settings via console while displaying volume or vox front panel menu item. Work-around: Escape from current front panel vocoder menu and re-enter vocoder volume or vox commands twice."

Version 3.1.1 notes

Release notes for version 3.1.1 of LEDR Embedded Firmware

Release 3.1.1 contains the following versions of firmware:

Application:	3.1.1
DSP:	1.3.0
FPGA:	1.24
Modem Scripts:	1.45
Option FPGA:	1.60

Release Date: 11/20/2000

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Default viewing angle on the front panel has been changed to accommodate a new LCD panel.

DEFECT FIXES

None

KNOWN ISSUES

None

Version 3.1.0 notes

Release notes for version 3.1.1 of LEDR Embedded Firmware

Release 3.1.0 contains the following versions of firmware:

Application:	3.1.0
DSP:	1.3.0
FPGA:	1.24
Modem Scripts:	1.45
Option FPGA:	1.60

Release Date: 11/13/2000

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Improved DTMF detection.
2. Improved service channel data delivery performance in high traffic environments.

DEFECT FIXES

1. Fixed "unknown command" response in Telnet when a carriage return is entered with no command.

KNOWN ISSUES

None

Version 3.0.0 notes

Release notes for version 3.0.0 of LEDR Embedded Firmware

Release 3.0.0 contains the following versions of firmware:

Application:	3.0.0
DSP:	1.1.0
FPGA:	1.24
Modem Scripts:	1.44
Option FPGA:	1.56

Release Date: 9/25/2000

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. The HTTP server has been fully released and is started at boot-up.
2. Added plesiochronous mode.
3. Added frame compression.
4. Added robbed-bit signaling.
5. Improved jitter performance in AMI mode.
6. Added the "clear" subcommand to the line error command (linerr clear).
7. Added support for QPSK.
8. FDL is not supported.

DEFECT FIXES

1. Fixed SelfTest All object in SNMP.
2. Fixed problem where the ping daemon would fail to start.

KNOWN ISSUES

None

Version 2.4.3 notes

Release notes for version 2.4.3 of LEDR Embedded Firmware

Release 2.4.3 contains the following versions of firmware:

Application:	2.4.3
DSP:	1.1.0
FPGA:	1.21
Modem Scripts:	1.44
Option FPGA:	1.56

Release Date: 7/20/2000

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

None

DEFECT FIXES

1. Fixed factory calibration issue.
2. Updated 2.4.2 to correct script version

KNOWN ISSUES

Refer to 2.4.0

Version 2.4.2 notes

Release notes for version 2.4.2 of LEDR Embedded Firmware

Release 2.4.2 contains the following versions of firmware:

Application:	2.4.2
DSP:	1.1.0
FPGA:	1.21
Modem Scripts:	1.38
Option FPGA:	1.56

Release Date: 7/18/2000

Please do not use this version it contains incorrect modem scripts.

Version 2.4.1 notes

Release notes for version 2.4.1 of LEDR Embedded Firmware

Release 2.4.1 contains the following versions of firmware:

Application:	2.4.1
DSP:	1.1.0
FPGA:	1.21
Modem Scripts:	1.44
Option FPGA:	1.56

Release Date: 7/12/2000

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

None

DEFECT FIXES

1. Added ability to enable or disable fan monitoring.

KNOWN ISSUES

Refer to 2.4.0

Version 2.4.0 notes

Release notes for version 2.4.0 of LEDR Embedded Firmware

Release 2.4.0 contains the following versions of firmware:

Application:	2.4.0
DSP:	1.1.0
FPGA:	1.21
Modem Scripts:	1.44
Option FPGA:	1.56

Release Date: 7/10/2000

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Customer Data Service channel support has been added. The customer data service channel port (located on the rear panel) provides broadcast ASCII data transmission.
2. Full-rate radios are now defaulted to unframed mode in 1, 2 and 4E1 (i.e. fstruct mode 8). Unframed E1 causes the radio to treat the input data stream transparently. That is, it makes no attempt to recover frame alignment. Therefore, line error counting will only record linecode violations detected. Note that in both the framed and unframed cases, the radio only monitors the framing, and makes no changes to the data.
3. 2xE1 support has been added.
4. Proxy ARP has been added to the radio to ease routing configurations of external IP and NMS equipment. The "gateway" radio will proxy ARP for all radios which are located over-the-air from the radio's Ethernet network. The "arp" command has been added to allow the user to add additional host IPaddresses for which to proxy. This is useful when a device, such as a mux, is located at the end of a string of radios.
5. User login and logouts are recorded in the event log.
6. Added "rfout actual", "rfout offset", and "rssi offset" commands to allow simple adjustment of the RF output and RSSI calibrations.
7. Configuration file upload/download can be performed through the console port.
8. Modem setting 64kbps/32QAM has been enabled.
9. The owner string is passed amongst the radios and shows up in the network table (accessed using the "network" command). This can be useful in identifying radios in the network. Note that this feature can be enabled/disabled using the "network owner" command.

10. IP masquerading has been added to the protected version of the radio so that when a "gateway" radio fails or is removed, the sibling radio will forward IP packets in its place. Note that this feature can be enabled/disabled using the "rdnt nsd" command.
11. The "events filter" command has been expanded to ease disabling events for unused E1 lines.
12. The "eia530 rts" command has been added to enable/disable RTS at the EIA-530 port. Also, the "dtr" command has been moved to be a subcommand under the "eia530" command.
13. The functionality of the ACTIVE LED on the front panel has changed for non-protected radios. When the radio is actively transmitting the ACTIVE LED will be illuminated.
14. The USER_RDNT_SWITCH event is logged when a user forces a transceiver switch on a protected radio.
15. The interleave depth is now accessible in the common ledr MIB.
16. The carrier offset is now accessible in the common ledr MIB.
17. The "all" subcommand has been added to the "trapfilter" command.
18. The "rfout pad" command has been added to allow an attenuator to be added to the transmit path and have the radio report an RF output power which is lowered by the attenuator value.

DEFECT FIXES

1. The "telnetd" command now reports all telnet sessions correctly. Previously, if two telnet sessions were connected and the first session was terminated, "telnetd" would report no sessions connected.
2. Setting the interface type to current mode no longer causes loss of link.
3. The DUPLICATE_ID event now clears when the condition ceases.
4. The fan status affects the protected status.
5. The "verify" command detects a missing option FPGA image.
6. The "!" history command has been restricted from access in telnet sessions.
7. The outbound ping command formerly failed occasionally. This has been fixed.

KNOWN ISSUES

1. DO NOT use SNMP Telnet detection polling.

2. Upgrading from version 1.4.0 to version 2.2.1 to version 2.4.0 will cause the external alarm names to be reset to their default values.
3. The E1/T1 line names are restricted to 15 characters or less.
4. Running version 2.3.1 and version 2.4.0 on radios in the same network with owner string passing enabled ("network owner on" command) causes networking problems. Notably the network table ("network" command) will consistently change and rlogin will be unstable.
5. SNMP does not properly indicate when a radio is in server-remote loopback mode.
6. Using the "all" selection for the self test initiation from SNMP does not work.
7. The clock mode table in the Framed E1/T1 MIB should be removed since it can not be retrieved.
8. Unkeying the radio from SNMP may cause a response timeout at the SNMP manager. The ramp down time may exceed the manager's timeout. The timeout can be increased or the error may be ignored.

Version 2.3.1 notes

Release notes for version 2.3.1 of LEDR Embedded Firmware

Release 2.3.1 contains the following versions of firmware:

Application:	2.3.1
DSP:	1.1.0
FPGA:	1.18
Modem Scripts:	1.44
Option FPGA:	1.50

Release Date: 5/20/2000

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

None

DEFECT FIXES

1. Changes made to the synthesizer control to assist in manufacturability.

KNOWN ISSUES

Refer to 2.3.0

Version 2.3.0 notes

Release notes for version 2.3.0 of LEDR Embedded Firmware

Release 2.3.0 contains the following versions of firmware:

Application:	2.3.0
DSP:	1.1.0
FPGA:	1.18
Modem Scripts:	1.44
Option FPGA:	1.50

Release Date: 4/21/2000

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Configuration file upload/download via TFTP.
2. Configuration file upload/download and event log file upload can be performed from SNMP.
3. The alarm inputs and outputs can be named. 16 characters per alarm name.
4. A timeout can be specified for network reprogramming using TFTP.
5. Warm-standby is supported for protected radios.
6. G.821 monitoring for full-rate.
7. Alarm inputs are triggered on programmable logic levels.
8. Protected transceiver switch can be commanded from either radio.
9. The front panel LCD backlight can be turned on and off.
10. The "boot -o" command was added to reboot to the other image.
11. The "rdnt" command indicates when the radio is not connected to the switching chassis.
12. Support for warm-standby has been added to the redundant MIB.
13. The "trapfilter all" command has been added to add all trap types.
14. 4E1 is now supported in all versions of the full-rate radio.

DEFECT FIXES

1. The front panel updates when console baud rate is changed.
2. Front panel loopback handles E1/T1.
3. Continuous prompting at the console has been fixed by handling characters one at a time.
4. Fractional/T1/E1 commands have been filtered dependent on interface configuration.
5. "ver frw" subcommand has been removed.
6. Trap sent to invalid IP address no longer prints asynchronous message.
7. "trend" from rlogin no longer puts console in "garble mode".
8. "icopy" checks for invalid arguments.
9. Menus have been reworked for full-rate configuration and reporting including: data interface, select line "all" removed, reframe criteria, and loopback local.
10. "log" command handles invalid arguments.
11. "modem" command displays everything in kbps.
12. Events trigger only the specified alarm outputs.
13. SNMP ledrRedundantInfo.XcvrActive reports TRUE for standalone radio.
14. SNMP ledrLineInterface is read-only.
15. Remote radio's AIS does not get stuck when turning off remote loop at local radio.
16. IP address of 0.0.0.0 received from NSD is ignored, no longer causing reboots.
17. Fullrate types removed from subrate loopback object in SNMP.
18. If a protected radio powers up failed, the event is logged.
19. The temperature threshold causes a performance degradation event.
20. BERT is functional.
21. "evmap" command allows more than one LED or alarm output to be mapped.

KNOWN ISSUES

1. Data Service channel is not yet implemented.
2. If the SCSI cable is removed from a protected unit, the status and active indications may be incorrect.
3. The RDNT_SWITCH event is not being logged on protected units.
4. A 16 character line name causes problems in SNMP.
5. If the active radio of a protected chassis has a loss of signal it will generate AIS even if the other receiver is still locked. To avoid this problem, disable AIS generation when hitless switching is enabled.
6. The alarm input and output contact settings can be changed by a read-only user.
7. If the alarm output active state is set to "open", the alarm output is still closed when an event is generated.
8. If a string of more than 40 characters is sent to the console using a computer scripting application (such as a ProComm Plus macro), the 40th character will be lost.
9. If the radio can not go into "loopback remote" mode, it does not provide an error message.
10. Some defects remain from 2.2.0 - see 2.2.0 and 2.1.0 release notes below

Version 2.2.0 notes

Release notes for version 2.2.0 of LEDR Embedded Firmware

Release 2.2.0 contains the following versions of firmware:

Application:	2.2.0
DSP:	1.1.0
FPGA:	1.18
Modem Scripts:	1.38
Option FPGA:	1.46

Release Date: 2/29/2000

Please note that the upgrade instructions are contained at the end of this document.

This software only contains a new main FPGA version. It corrects a problem in the EIA-530 subrate data path that crept in when E1 was added. It does not have any application software differences from version 2.1.0.

Version 2.1.0 should never be used for subrate radios.

Version 2.1.0 notes

Release notes for version 2.1.0 of LEDR Embedded Firmware

Release 2.1.0 contains the following versions of firmware:

Application:	2.1.0
DSP:	1.1.0
FPGA:	1.17
Modem Scripts:	1.38
Option FPGA:	1.46

Release Date: 2/17/2000

Please note that the upgrade instructions are contained at the end of this document.

NEW FEATURES

1. Support for Fractional T1 in the LEDR 900S1.
2. Support for a single E1 full-rate for the LEDR 1400F and 400F.
3. Support for redundant hot standby for the LEDR 900S and LEDR 1400F.
4. The SNMP MIB was completely restructured to allow for extensibility and flexibility. The MIB now consists of 5 files, which are based upon the common, full-rate/fractional, redundant and subrate objects. Users only need include the mib files that correspond to their version of the LEDR radio.
5. Added an outgoing ping command to the console port commands.
6. Added the ability to read the state of the alarm inputs and outputs using the alarm command.
7. Added Support for the LEDR 1400 and LEDR 400
8. The "status" command has been added which provides the tx and rx frequencies, bandwidth, data rate, modulation type, interleave depth, clock mode, RSSI, SNR, RxLock state, RF output power, txkey state, PA temperature, IP address, IP netmask, and IP gateway.
9. If the time/date have not been set, a message is displayed on power-up to let the user know to program them.
10. Configuration data will be maintained for upgrades from ALL previous versions of software. Previously, it was maintained only 1 version back.
11. The event number is sent first in all SNMP traps.

12. Added an option for loopback time out.

DEFECT FIXES

1. When firmware was upgraded to version 1.4.0 (as opposed to a brand new radio), the configuration data self-test occasionally failed - Fixed
2. The hardware was modified to remove the ability to read the internal voltage of the radio, therefore the voltage object was removed from the MIB - Fixed
3. Users were incorrectly logged out of the console port while utilizing the console menus after ten minutes - Fixed
4. Changed logout command for rlogin from "bye" to "logout"
5. "passwd" command from telnet should not be allowed since password changes should only be allowed via SNMP or local console connection for security reasons - Fixed
6. Users were incorrectly allowed to execute the BIT Test from the front panel when not logged in - Fixed
7. IP Netmask, Gateway and Port occasionally did not get set properly. Users must now reboot on all IP changes (similar to a PC) - Fixed TR#440
8. SNR reports invalid number when modem is unlocked - Make it report 0 dB - Fixed TR#257
9. Rfout displayed as whole dBm target power if within spec - Fixed TR#417
10. Fixed orderwire "alert all" - Fixed TR#407
11. Disallow multiple reprogram sessions - Fixed TR#377
12. Front panel power out displayed improperly when unit unkeyed - Fixed TR#480
13. Rlogin sessions now properly timed out after 10 minutes - Fixed TR#498
14. Placing unit from local loopback directly to remote loopback did not work properly, needed to go thru loopback none to get it to work. Fixed TR#488
15. Added commands for Admin (SUPER) user - alarm, pmmode, rfocal and rssical for system alignment and tuning - Fixed TR#419
16. Unit ID has been changed to be read-only in the common LEDR MIB.

KNOWN ISSUES

1. Duplicate Unit ID detected alarm does not properly clear

2. In "route print" command, netmask is occasionally displayed as 0.0.0.0 when it is actually set correctly.
3. SNMPc displays garbage characters or UNK for write only objects - This is a known limitation of the SNMPc 4.2 MIB Browser!
4. Unkeying the radio should more gracefully ramp power down.
5. In 1400, the transmitter should be unkeyed if any of the pll's go out of lock (not just the txpll).
6. The front panel does not update the baud rate of the console port if changed from another user interface (like console, telnet, etc...)
7. The Loopback console menus do not support E1/T1 loopback modes.
8. T1 ESF outbound loopback not supported in SNMP.
9. Pinging a local radio takes approximately 40 milliseconds. It could be faster.
10. G.821 Performance monitoring is not yet implemented for individual Fractional T1 or E1 line interfaces, it exists on the RF link only.
11. Radio redundant status may get confused when the cable from the radio to the protected chassis is removed. The correct radio will be active, however.
12. The redundant switch command does not work properly and is disabled. To execute a manual switch, users should unkey the active radio. The switch will occur provided that the inactive radio is not already in a failed state.
13. Loopback via SNMP does not work. Suggest using telnet.
14. If IP address and netmask are set to 0.0.0.0, the remote radio may reboot itself. Do not set IP address to 0.0.0.0.
15. Executing the trend command from rlogin may cause the rlogin session to lock-up. This clears itself in 10 minutes when the session times out. It shows up as garbled characters at the console port on the remote radio.
16. This software does not presently support Warm Standby.
17. This software does not yet support an SNMP alarm-naming table.
18. The line error reporting from the console menu does not show any data, it only allows enabling or disabling.

19. Serial Reprogramming from the Flash Utility may rarely stop programming after a subsection of the image. Restart the programming process either from where it left off or all over again.
20. If a computer sends down a command line to the console over 40 characters, every 40th character is missed.

TFTP Firmware Upgrade Notes

TFTP Software Upgrade instructions:

Software Upgrade via TFTP (may be local or over the air):

Note: This process may take up to 30 minutes when using the embedded service channel of the LEDR Radio for IP traffic.

- Copy the file ledr.mpk into a known directory (for example c:\windows\temp\)
- Launch a TFTP server on a PC connected either directly or via a LAN (or over the air) to the Ethernet port of the LEDR Radio.
- Obtain and document the TFTP server PC IP address (For example 192.168.1.2).
- Point the TFTP server to the directory from which you desire to upload the new software. In the SNMPC TFTP server, you should execute the "set root" command and point to the known directory where ledr.mpk has been copied (For example set root to c:\windows\temp\).
- Telnet and login (or remote login via "rlogin") to the radio which you desire to reprogram.
- Verify the active image from which you are currently executing by typing, "boot". The software will be programmed into the inactive image.
- Execute the command "reprogram network ledr.mpk [IP address]". In the command, in place of [IP address], you should actually type the IP address of the TFTP server. For example, "reprogram network ledr.mpk 192.168.1.2"
- If desired, the status of the transfer during reprogramming may be displayed by typing "reprogram status".
- The TFTP Server and radio will notify you when the programming is complete.
- Verify which image area has been programmed by typing "ver ext". The inactive area will show new Software version.
- Reboot the software by typing the command "boot 1 or boot 2", depending upon which image has the newly programmed software.
- If desired, upon testing of the new firmware, reprogram the other image by typing "icopy"

