CiLink

CSAT-6050/XSAT-7080 Transceiver iPaq Link
Installation and Operation Manual
Software Version 1.1.2

Part Number MN/CiLink.IOM
Revision 2
October 26, 2009

IMPORTANT NOTE: The information contained in this document supersedes all previously published information regarding this product. Product specifications are subject to change without prior notice.

Part Number MN/CiLink.IOM   Revision 2

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Preface

About this Manual

This manual provides installation and operation information for the Comtech EF Data (CEFD) CiLink software accessory used with the Comtech EF Data CSAT-5060 C-Band and XSAT-7080 X-Band 5 to 25 Watt, 50 Watt, or 100 Watt Transceivers. This is a technical document intended for earth station engineers, technicians, and operators responsible for the operation and maintenance of these products (referred to singularly throughout this manual as *the transceiver*).

Disclaimer

Comtech EF Data has reviewed this manual thoroughly in order to provide an easy-to-use guide to your equipment. All statements, technical information, and recommendations in this manual and in any guides or related documents are believed reliable, but the accuracy and completeness thereof are not guaranteed or warranted, and they are not intended to be, nor should they be understood to be, representations or warranties concerning the products described. Further, Comtech EF Data reserves the right to make changes in the specifications of the products described in this manual at any time without notice and without obligation to notify any person of such changes.

If you have any questions regarding your equipment or the information in this manual, please contact the Comtech EF Data Customer Support Department.

Reporting Comments or Suggestions Concerning this Manual

Comments and suggestions regarding the content and design of this manual are appreciated. To submit comments, please contact the Comtech EF Data Technical Publications department:

TechnicalPublications@comtechefdata.com.

Conventions and References

Cautions and Warnings

WARNING indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION indicates a hazardous situation that, if not avoided, may result in minor or moderate injury. CAUTION may also be used to indicate other unsafe practices or risks of property damage.

IMPORTANT or NOTE indicates information critical for proper equipment function.

Metric Conversion

Metric conversion information is located on the inside back cover of this manual. This information is provided to assist the operator in cross-referencing non-Metric to Metric conversions.

Recommended Standard Designations

Recommended Standard (RS) Designations are interchangeable with the designations of the Electronic Industries Association (EIA).

Trademarks

Windows is a trademark of the Microsoft Corporation. Other product names mentioned in this manual may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

Safety Notice

This CiLink product is used with equipment that has been designed to minimize exposure of personnel to hazards.

The operators and technicians must:

- Know how to work around, with and on high voltage equipment.
- Exercise every precaution to ensure personnel safety.
- Exercise extreme care when working near high voltages.
- Be familiar with the warnings presented in this manual.

The CSAT-5060 and XSAT-7080 transceiver prime power supply inputs use Neutral Fusing - Double pole / neutral fusing.

Installation Guidelines Regarding Power Line Quality

Comtech EF Data has become familiar with the varying quality of the AC power grid around the world. The following offers some installation guidelines that should help ensure a reliable installation.

- **Surge suppression:** High voltage surges can cause failure of the power supply. These surges are typically caused by circuit switching on the main AC power grid, erratic generator operation, and also by lightning strikes. While the transceiver does have built in surge suppression, if the unit will be installed in a location with questionable power grid quality, Comtech EF Data recommends installation of additional power conditioning/surge suppression at the power junction box.

- **Grounding:** The transceiver provides a grounding terminal. This is provided to allow the user to ground the transceiver to the antenna's grounding network. All components installed at the antenna should be grounded to a common grounding point at the antenna.

- **Electrical welding:** If welding needs to take place at the antenna, disconnect all cables from the transceiver except for the ground wire. Cap all RF connections with terminations. This will prevent damage to the input/output circuitry of the transceiver.

- **Lightning:** Lightning strikes on or around the antenna will generate extremely high voltages on all cables connected to the transceiver. Depending on the severity of the strike, the transceiver's internal surge protection combined with the recommended external suppression may protect the transceiver's power supply. However, if the installation will be in an area with a high probability of lightning strikes, Comtech EF Data recommends the installation of surge suppression on the RF and IF cables.

For further information, contact Comtech EF Data, Customer Support Department.

Statement of RoHS Compliance

The RoHS (*Restriction of Hazardous Substances*) directive 2002/95/EC restricts the use of six hazardous materials found in electrical and electronic products.

Restricted materials are hazardous to the environment and pollute landfills, and are dangerous in terms of occupational exposure during manufacturing and recycling.

The Hewlett-Packard iPAQ rx1950 Pocket PC, used as the delivery platform for CEFD's CiLink software product, has been certified to be free of the following substances mandated under RoHS: **lead (Pb)**, **mercury (Hg)**, **cadmium (Cd)**, **hexavalent chromium (Cr6+)**, **polybrominated biphenyls (PBB)** and **polybrominated disphenyl ethers (PBDE)**.

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The CiLink Version 1.1.2 software installed herein is provided to you through Comtech EF Data Corporation ("CEFD"), for use exclusively with the CEFD CSAT-5060 C-Band and XSAT-7080 X-Band 5 to 25 Watt, 50 Watt, or 100 Watt Transceivers, sold separately. CEFD, the owner of the CiLink software, grants you a non-exclusive, non-transferable license to use CiLink Version 1.1.2 only for its intended purpose. This license includes, but is not limited to, the CiLink software Version 1.1, and any documentation files accompanying the software, and any on-line or electronic documentation (collectively, all of these things are "CiLink"), provided that: (i) CiLink is used only with the accompanying CEFD CSAT-5060 C-Band and XSAT-7080 X-Band 5 to 25 Watt, 50 Watt, or 100 Watt Transceivers; (ii) CiLink is NOT modified; (iii) all copyright notices are maintained on CiLink; and (iv) you agree to be bound by the terms of this EULA. Any future software upgrades to this 1.1.2 version of CiLink will be covered by either a "paid for" maintenance agreement with CEFD or as part of a "paid for" software upgrade. Software upgrades obtained from any source other than CEFD will be considered a license infringement, and will render your license to use CiLink void.

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maintenance or any upgrade feed that is required. Any upgrades obtained through other than CEFD or CEFD will be considered pirated and will be a violation under this agreement.

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IN NO EVENT WILL CEFD BE LIABLE TO YOU OR ANY THIRD PARTY FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES(INCLUDING, WITHOUT LIMITATION, INDIRECT, SPECIAL, PUNITIVE, OR EXEMPLARY DAMAGES, INCLUDING FOR LOSS OF BUSINESS, LOSS OF PROFITS, BUSINESS INTERRUPTION, OR LOSS OF BUSINESS INFORMATION) ARISING OUT OF THE USE OF OR INABILITY TO USE CiLINK, OR FOR ANY CLAIM BY ANY OTHER PARTY, EVEN IF CEFD HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. CEFD'S AGGREGATE LIABILITY WITH RESPECT TO ITS OBLIGATIONS UNDER THIS EULA OR OTHERWISE WITH RESPECT TO CiLINK OR OTHERWISE SHALL NOT EXCEED THE AMOUNT OF THE LICENSE FEE PAID BY YOU TO CEFD FOR CiLINK. BECAUSE SOME STATES/COUNTRIES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATIONMAY NOT APPLY TO YOU.

CEFD also shall have no liability for non-delivery or delay in delivery of products and services arising from any event beyond its reasonable control, whether or not foreseeable by either party, including but not limited to, war, acts of terrorism and events related to such acts, fire, flood, accident, adverse weather, inability to secure transportation, insurrections, riots, or civil commotions, strikes, lockouts, or other labor disturbances; acts of God; or acts, omissions, or delays in acting by, or as a result of, any governmental authority, governmental act or regulation, and other causes or events beyond CEFD's reasonable control, whether or not similar to those which are enumerated above.

8. Export Restrictions

THIS EULA IS EXPRESSLY MADE SUBJECT TO ANY LAWS, REGULATIONS, ORDERS, OR OTHER RESTRICTIONS ON THE EXPORT FROM THE UNITED STATES OF AMERICA OF CiLINK OR INFORMATION ABOUT SUCH CiLINK, WHICH MAY BE IMPOSED FROM TIME TO TIME BY THE GOVERNMENT OF THE UNITED STATES OF AMERICA. YOU SHALL NOT EXPORT CiLINK, OR INFORMATION ABOUT CiLINK, WITHOUT THE EXPRESS CONSENT OF CEFD AND COMPLIANCE WITH SUCH LAWS, REGULATIONS, ORDERS, OR OTHER RESTRICTIONS.

9. Termination

This EULA is effective for so long as you own and operate the CEFD CiLink for its intended purpose with the CEFD CSAT-5060 C-Band and XSAT-7080 X-Band 5 to 25 Watt, 50 Watt, or 100 Watt Transceivers, sold separately. You may terminate this EULA at any time by destroying or returning to CEFD all copies of CiLink in your possession or under your control. CEFD may terminate this EULA for any reason, including, but not limited to, if CEFD finds that you have violated any of the terms or conditions of this EULA, including upgrading this software from a source other than CEFD. Upon receiving notification of termination by CEFD, you agree to return to CEFD all copies of CiLink and to certify in writing that all known copies, including backup copies, have been destroyed. All provisions relating to confidentiality, proprietary rights, and non-disclosure shall survive the termination of this CiLink EULA, and termination will in no event affect any liability or obligation which arose prior thereto.

10. Notice

All notices to CEFD shall be in writing and shall be made either via e-mail or conventional mail. Notices to CEFD must be sent to the attention of Customer Service at techsupport@comtechefdata.com, if by e-mail, or at Comtech EF Data Corporation, 2114 West 7th Street, Tempe, AZ 85821 USA if by conventional mail. Notices to you may be sent either to the e-mail address, or to the conventional mail address, if supplied to CEFD or posted as a notice on our Web site located at www.comtechefdata.com.

Any notices or communication under this EULA will be deemed delivered to the party receiving such communication (i) two business days after deposit with a commercial overnight carrier, with written verification of receipt; (ii) five business days after the mailing date, if sent by conventional US mail, return receipt requested; or (iii) on the delivery date if transmitted by confirmed e-mail.

11. General

This EULA shall be construed, interpreted and governed by the laws of the State of Maryland without regard to conflicts of law provisions thereof. Notwithstanding, the parties agree that none of the provisions in this EULA will be governed by the Uniform Computer Information Transactions Act ("UCITA") as enacted by the State of Maryland or any other jurisdiction. The exclusive forum for any disputes arising out of or relating to this EULA shall be an appropriate state court sitting in Montgomery County, Maryland, or a federal court sitting in the State of Maryland, USA. You may not transfer or assign this EULA or any of your rights or obligations hereunder to any third party. Any waiver or modification of this EULA shall only be effective if it is in writing and signed by both parties hereto. If any part of this EULA is held invalid or unenforceable, that portion shall be construed in a manner consistent with applicable law to reflect, as nearly as possible, the original intentions of the parties, and the remaining portions shall remain in full force and effect. This EULA shall constitute the entire Agreement between the parties hereto.

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Contact the Comtech EF Data Customer Support Department for:

- Product support or training

- Reporting comments or suggestions concerning manuals

- Information on upgrading or returning a product

A Customer Support representative may be reached at:

Comtech EF Data
Attention: Customer Support Department
2114 West 7th Street
Tempe, Arizona 85281 USA

480.333.2200 (Main Comtech EF Data number)
480.333.4357 (Customer Support Desk)
480.333.2161 FAX

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- **Contact** the Comtech EF Data Customer Support Department. Be prepared to supply the Customer Support representative with the model number, serial number, and a description of the problem.

- **Request** a Return Material Authorization (RMA) number from the Comtech EF Data Customer Support representative.

- **Pack** the product in its original shipping carton/packaging to ensure that the product is not damaged during shipping.

- **Ship** the product back to Comtech EF Data. (Shipping charges should be prepaid.)

Online Customer Support

An RMA number request can be requested electronically by contacting the Customer Support Department through the online support page at **www.comtechefdata.com/support.asp**:

- **Click** on "**Service**" for detailed instructions on our return procedures.

- **Click** on the "**RMA Request** Form" hyperlink, then fill out the form completely before sending.

- **Send e-mail** to the Customer Support Department at **service@comtechefdata.com**.

For information regarding this product's warranty policy, refer to the End User License Agreement, p. vii.

Notes:
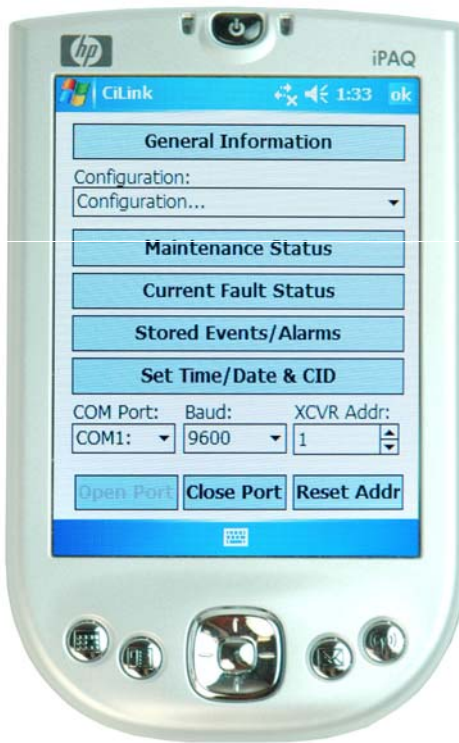
Chapter 1. INTRODUCTION

1.1 Overview

This manual is a technical document intended for earth station engineers, technicians, and operators responsible for the operation and maintenance of the CSAT-5060 and XSAT-7080 transceiver systems. It is prepared with the assumption that the End User is familiar with the functionality and operability of the the CEFD CSAT-5060 and XSAT-7080 transceivers with which this product is designed to interface, as well as the handheld device – whether it is the supplied HP iPAQ rx1950 series Pocket PC supplied by CEFD, or any other compatible desktop, portable or handheld computing device – used to host the CiLink program.

CEFD strongly encourages the End User to become familiar with the instruction and operations manual provided with the aforementioned products before proceeding further.

The Comtech EF Data (CEFD) CiLink (**C**SAT/XSAT **i**PAQ **Link**) software accessory supports the monitor and control of all functionality of CEFD's low to high power CSAT-5060 C-Band and XSAT-7080 X-Band 5 to 25 Watt, 50 Watt, or 100 Watt Transceiver systems.

CiLink is designed to monitor the functions of the transceiver, and provide the control for remote command inputs to the Up and Down converter sections. It allows configuration for standalone and 1:1 redundant system installations. It controls the attenuator settings, and it monitors the alarm systems and logs any alarms that might occur.

Communication between the CSAT/XSAT transceiver and CiLink-enabled handheld device is accomplished with an adapter cable connecting the 19-pin remote communications port at the transceiver to an autosynchronization adapter cable[1] via a 9-pin RS-232 or RS-485 serial interface. The autosynchronization cable, in turn accommodates the power supply and data interface for the handheld device.

While Comtech EF Data provides CiLink pre-installed on a Hewlett-Package iPAQ rx1950 series Pocket PC, the CiLink program is designed to operate on any portable computing device running the Microsoft Windows Mobile 5.0 operating system (as well as Windows XP or earlier operating systems) and Microsoft's ActiveSync Version 4.0 or later synchronization program for Windows Mobile and other Windows CE-based devices.

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[1] See **Chapter 2. SETUP – 2.1 Getting Started** regarding computing device cable selection for non-HP products.

1.2   Using Memory Expansion Cards

The HP iPAQ Pocket PC supports Secure Digital / Multimedia Memory Cards (SD/MMC) such as the HP 512MB MINISD shown in Figure 1-1. While not required for normal operation (and not provided by CEFD), these expansion cards offer the advantage of being able to transfer a software program such as CiLink between handheld devices, as permissible under the End User License Agreement.

IMPORTANT *The HP iPAQ's CPU features a flash-memory controller that ensures preconfigured and stored CiLink® settings are retained even if the iPAQ's rechargeable 1100mAh lithium-ion battery gets low or fails completely.*

Figure 1-1. SD/MMC
(not included with kit)

1.3   HP iPAQ rx1950 Series Pocket PC – Key Operational Specifications Reference

Operating system	Microsoft Windows Mobile 5.0 for Pocket PC
Processor	Samsung 300Mhz
Memory	32MB SDRAM / 64MB ROM
Display	3.5-inch transflective Thin Film Technology (TFT) display color display, 16-bit (64 colors), 240 x 320 maximum resolution
Expansion	(1) SD/MMC slot (SDIO)
Connectivity	Integrated WiFi (IEEE 802.11b), Serial infrared (IrDA port), USB
Power	1100mAh removable / rechargeable lithium-ion battery; 100-240V~400mA 50-60Hz LPS AC power adapter
Operating humidity range	0-90%
Miscellaneous compliance standards	UL, CUL, NOM, CAS NRTL/C, FCC Class B Certified

Chapter 2. SETUP

2.1 Getting Started

The items shown in **Figure 2-1** depict what is minimally required to use this installation and operations manual:

CEFD CiLink Kit P/N LKFT/12453			
Item	Qty	CEFD Part number	Description
1	1	LFPL/HPIPAQ-P2	HP rx1950 series iPAC Pocket PC with pre-installed CiLink program
2	1	PP/IPAQ-ACADAPT	AC Adapter Travel Kit
3	1	CA/HP-IPAQ*	Universal USB / Serial Autosync Cable: iPAQ data interface to USB and CSAT/XSAT 9-pin serial RS-232 / RS-485 connectors
4	1	LFCA/WR9902-1	Comtech EF Data RoHS adapter cable: CSAT/XSAT 19-pin J5 COMM Port connector to 9-pin serial RS-232 / RS-485 connector

* This interface cable is product-specific. If a handheld device other than an HP iPAQ series product is used, the appropriate serial adapter cable must be acquired for proper connection and operation as outlined in this manual.

Figure 2-1. CiLink Kit LKFT/12453

Operation of the CiLink Kit requires interface with the J5 COMM port of one of the CSAT-5060 C-Band and XSAT-7080 X-Band series Transceivers shown in **Figure 2-2**, installed either as a standalone unit or in redundancy:
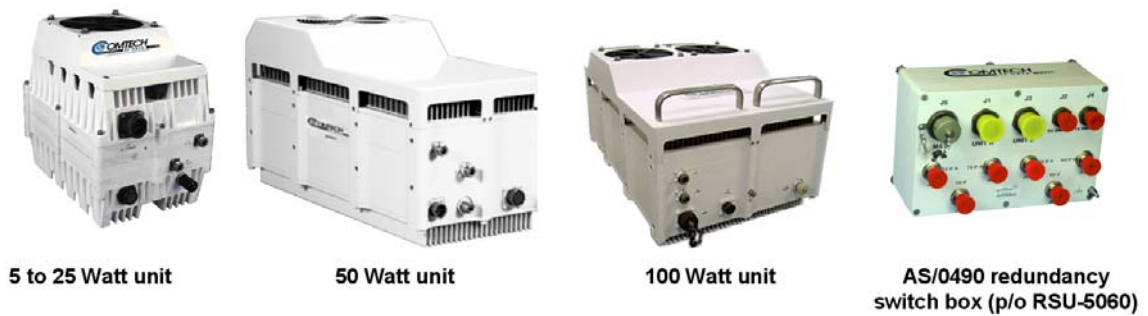
**Figure 2-2. Comtech EF Data's Family of Low to High Power CSAT-5060 C-Band
or XSAT-7080 X-Band Transceivers**
(sold separately)

2.2   HP iPAQ Pocket PC Connections

As shown in **Figures 2-3 (a)** through **2-3 (c)**, assemble the Transceiver Adapter Cable 9-pin serial connector to the Autosync Adapter Cable; connect the iPAQ power supply to the Autosync Adapter Cable; then plug the cable into the iPAQ charging / communications port.
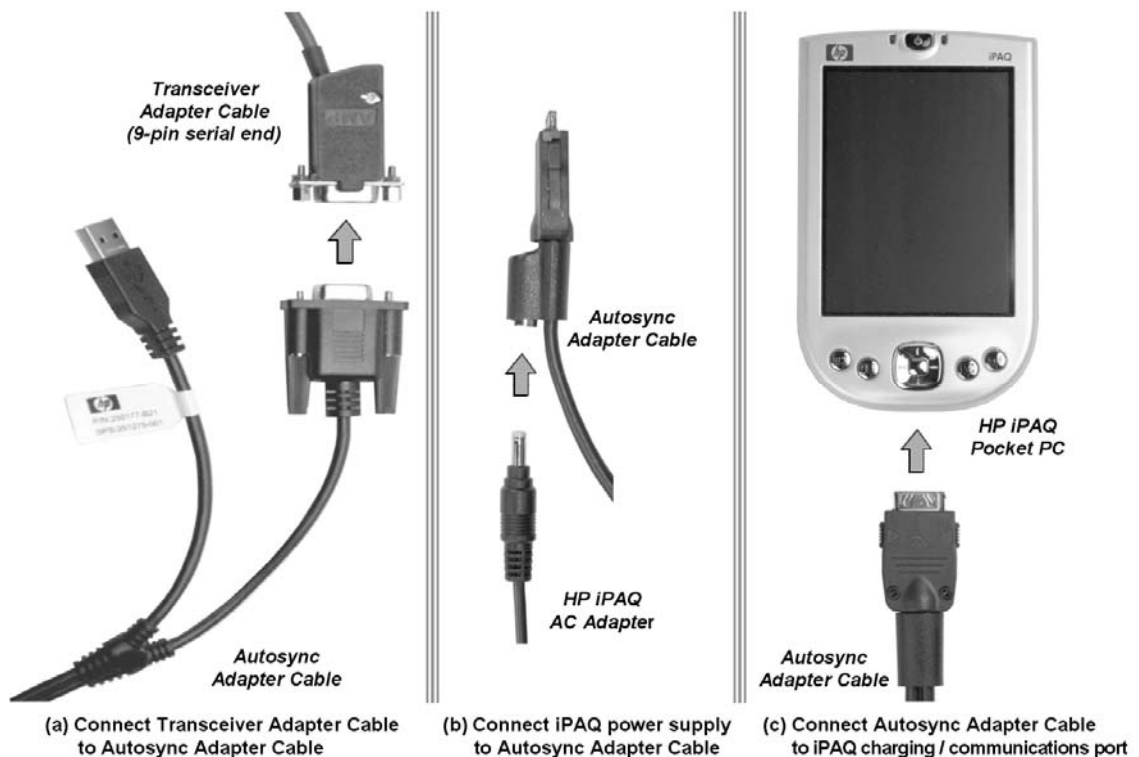

Figure 2-3. Device Cable Connections

2.3 Transceiver Cable Connection

IMPORTANT

Throughout this manual, 'transceiver' and 'XCVR' are used interchangeably to refer to the CSAT-5060 or XSAT-7080 interface.

Figures 2-4 through 2-6 depict connection of the Transceiver Adapter Cable 19-pin connector end to the J5 COMM port at either a standalone transceiver or at the AS/0490 switch box used in an RSU-5060 redundant installation [see **Figure 2-6**].

For either connection, the J5 COMM port features a keyed configuration [see **Figures 2-4(a)** and **2-4(b)**].

Engage the primary alignment key, then plug the connector into the J5 port by pushing the connector forward to engage both the alignment key and the secondary keyed tabs [**see Figure 2-5(a)**].

Complete the connection by turning the connector sleeve clockwise until the sleeve lockdown tabs engage fully with an audible 'click' [see **Figure 2-5(b)**].

(a) Transceiver Adapter Cable (19-pin connector end)
(b) Transceiver (COMM) or Switch Box (M&C) J5 port
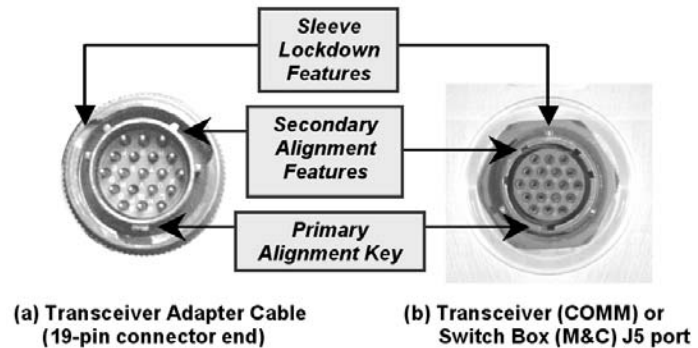
Figure 2-4. 19-pin Connector Key Alignment
Transceiver Adapter Cable connection to J5 COMM port

(a) Connector-to-port connection
(b) Connection lockdown
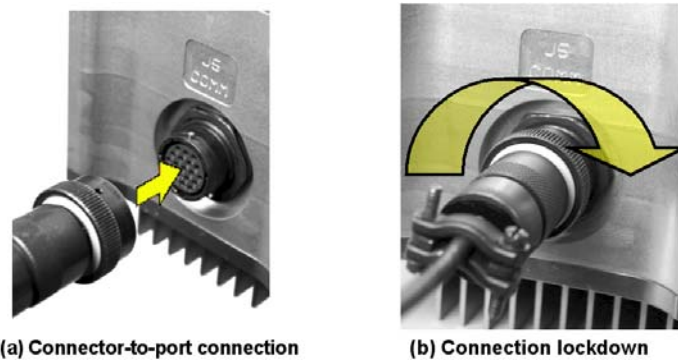
Figure 2-5. Transceiver Connection
Transceiver Adapter Cable connection to J5 COMM port

(a) RSU-5060 redundant system
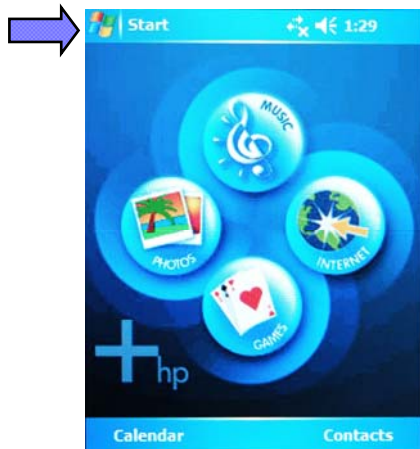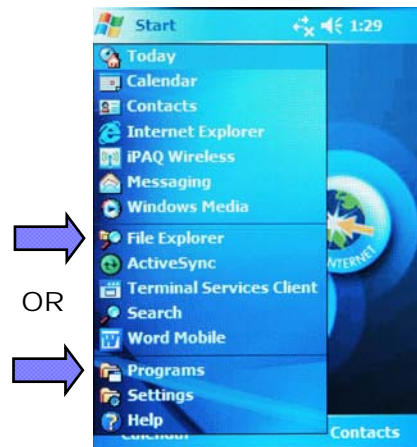(b) Connection at switch box
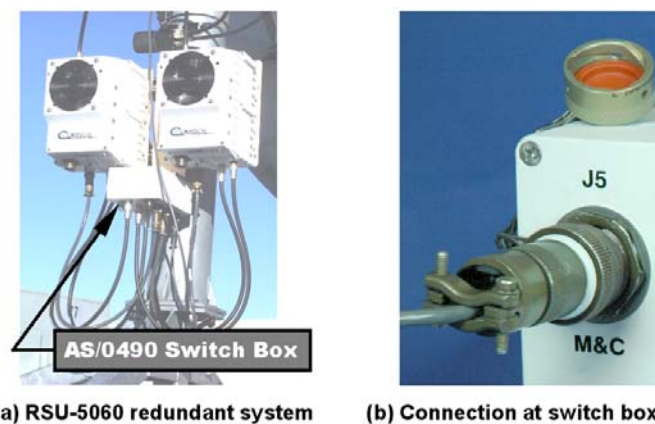
Figure 2-6. RSU-5060 Redundant System Connection
Transceiver Adapter Cable connection to J5 M&C port at the AS/0490 switch box

2.4   Opening a CiLink Session
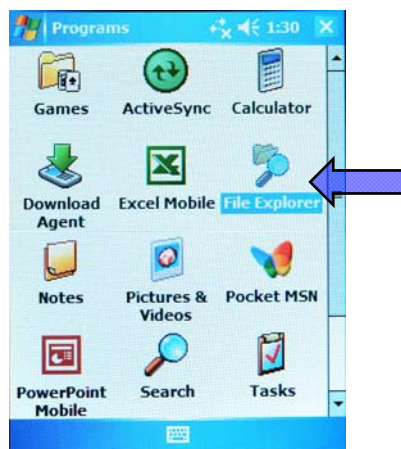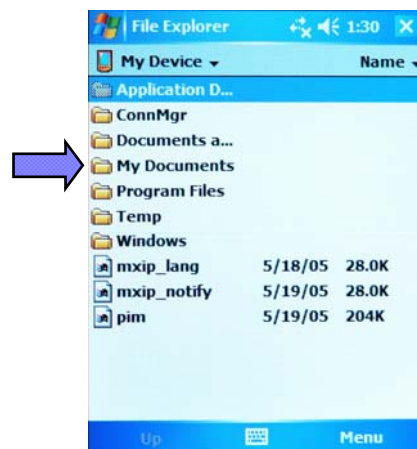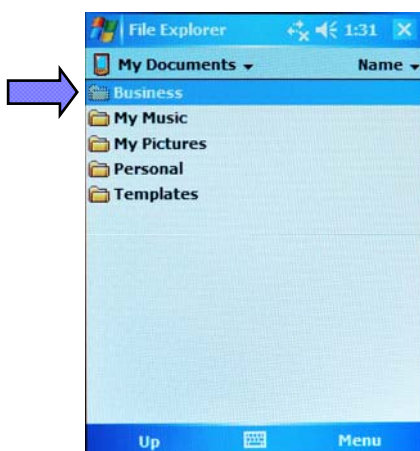
(a) Windows Mobile 5.0 Home Page
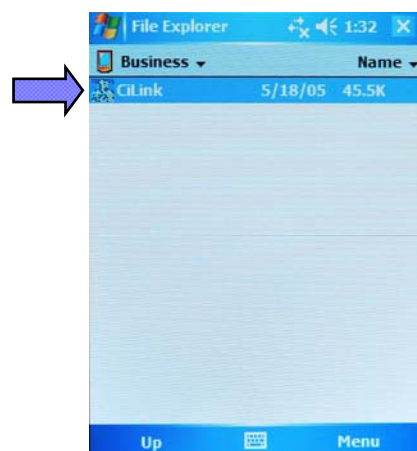
OR

(b) Start menu selections

(c) From Programs: Select File Explorer

(d) Select "My Documents"

(e) Select "Business" folder

(f) Select "CiLink" to open program

Figure 2-7. Starting CiLink from the Windows Mobile 5.0 Home Page

Figure 2-7 on the preceding page illustrates the sequence of actions for establishing a CiLink operating session (note that, throughout this manual, the term 'tap' or 'select' refers to using the HP iPAQ stylus to navigate through the differing program screens and parameter selections).

Once all cable connections are complete, turn on the HP iPAQ. Depending on the battery's charge status, the device will either run through a cold boot or activate at the default iPAQ Entertainment (Home) page.

Figure 2-7(a)   From the iPAQ Entertainment page: Using the navigation stylus, tap [Start] , then **File Explorer** from the active menu [**Figure 2-7(b)**]. If it is not already an available selection from the **Start** menu, **File Explorer** may be activated by selecting **Programs** from the **Start** menu, then tapping the **File Explorer** icon as shown in **Figure 2-7(c)**.

**Figure 2-7(d)**   From **File Explorer**, select **My Documents**.

Figure 2-7(e)   Select the **Business** folder. This folder contains the CiLink program.

Figure 2-7(f)   Tap the **CiLink** file to open the program.

As shown in **Figure 2-8**, upon activation the primary functionality of CiLink is disabled until a communications link is established with the transceiver.

In this and all subsequent CiLink® program screens, the presence of ▼ or [⬆⬇] in a parameter box denotes availability of a dropdown box containing multiple parameter selections for that item.

2.4.1 Default Communications Settings
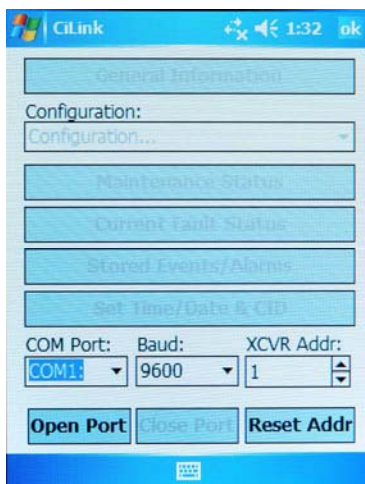
COM Port establishes routing of communications between the HP iPAQ and the transceiver signal source. These selectable communications values are automatically populated by the handheld device's operating system.

[For the HP iPAQ, **COM1** is assigned to the charger / comm. port, **COM2** is generally reserved for the serial IrDA connection, and **COM3** is assigned to the WiFi connection.]

Baud sets the data transmission speed between the HP iPAQ and the transceiver data source. Selectable rates are 1200, 2400, 4800, 9600, and 19200 Baud.

Figure 2-8. CiLink Main Menu

COM1 and 9600 Baud are the default communications settings between the HP iPAQ and the transceiver.

From this page, tapping the [ok] icon at the top right-hand corner of the screen causes the user to exit the CiLink program and return to Windows.

Subsequent sections of this manual describe all CiLink program operations in detail, beginning with establishing an operational interface between the handheld device and the transceiver.

Notes:

Chapter 3. OPERATIONS

3.1   Establishing the Communications Link

Before proceeding further, the transceiver installation must be powered on. Note that the transceiver does not contain a 'Power On/Off' switch; the transceiver is powered ON by connecting the J3 "AC Power" connector to the appropriate prime power source.

> ⚠️ **WARNING**
>
> ***Never turn the CSAT-5060 or XSAT-7080 ON or operate the unit without proper waveguide termination on the J2 "RF OUTPUT" port. Individuals can be exposed to dangerously high electromagnetic levels.***

Once all connections are properly established between the handheld device and the transceiver, and the transceiver is powered ON, select **Open Port** from the CiLink main page [**Figure 3-1(a)**].

(a) Connecting to transceiver   (b) Connection active / system online
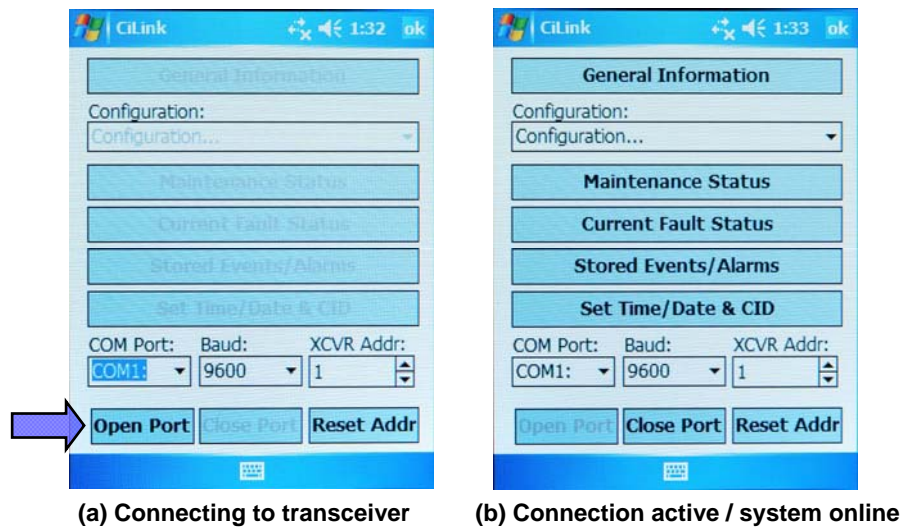
Figure 3-1. Establishing the transceiver communications link

CiLink functionality is enabled and the command bars activate once the communications link with the transceiver is established [**Figure 3-1(b)**]. This functionality is available for as long as the transceiver remains 'online' with CiLink. Conversely, select **Close Port** [**Figure 3-1(b)**] to terminate the session and disable CiLink's functionality.
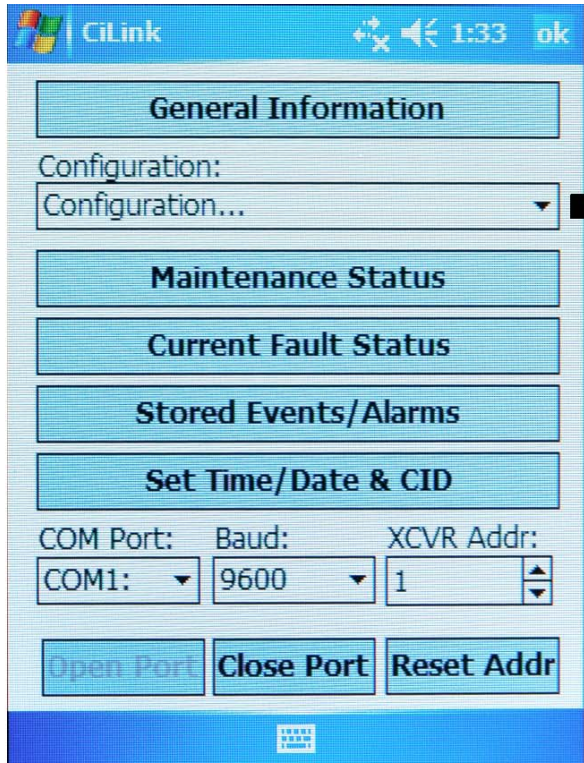
3.2   Setting the Transceiver Address

IMPORTANT

Use this command only when connected to a single transceiver. This command is not compatible for use with redundant configurations.

If the transceiver's address is known, select the appropriate value (1 to 9999) from the **XCVR Addr:** box. If this address in unknown, tap **[Reset Addr]** to automatically reset the standlone transceiver's address to a value of 1.

CiLink is now ready to perform maintenance and control functions for the transceiver.

3.3   The CiLink Main Menu Screen

Figure 3-1 shows the CiLink Main Menu screen. Detailed information about CiLink's available functions is explained on the indicated pages:

**Figure 3-2. The CiLink Main Menu screen**

Note: Some functionality – **Open Port / Close Port, XCVR Addr: / Reset Addr,** and **COM Port: / Baud:** – has been previously defined in this manual. Additionally, three command icons featured throughout CiLink and their operability are applicable throughout the remainder of this manual:

ICON	FUNCTION
Get Data	Tap the **[Get Data]** icon to **refresh** the active screen with existing configured data from the currently selected transceiver.
Set Data	Tap the **[Set Data]** icon to **save** any parameters that may have changed; the system is updated with the data currently displayed on the active screen.
ok	As described on page 2-8, tapping the **[ok]** icon from the **Main Menu** *exits* the CiLink program and returns the user to Windows.
	However – for all other functions, tapping the **[ok]** icon on any command screen that is nested below the **Main Menu** (and requires user input) serves to **reject** *all* changes made to the programmable parameters within that active screen, and returns the user to the **Main Menu** screen.

3.3.1 Main Menu → General Information

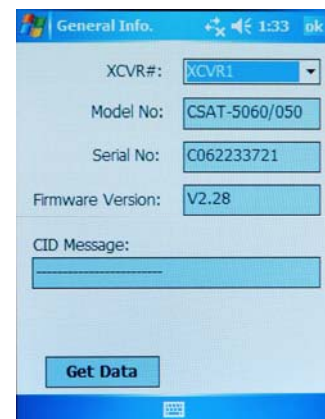The **General Information** screen displays the status parameters for the currently selected transceiver.

The currently selected transceiver is the unit that will be polled for status information in the **General Info. XCVR#** selection box:
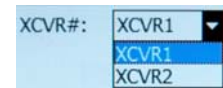
XCVR1 is the default selection and **XCVR2** is not selectable if CiLink is set to operate under standalone (non-redundant) system parameters (see **Configuration → System Type** for detailed information).

Once the appropriate selection is made, the **General Information** screen displays the following data:

- **Model No.** – the currently selected transceiver model number.

- **Serial No.** – the currently selected transceiver serial number.

- **Firmware Version** – the currently selected transceiver firmware version.

- **CID (Circuit Identification) Message** – the currently selected transceiver programmable text message.

Tap **[Get Data]** to **refresh** the active screen with configured data from the currently selected transceiver. Otherwise, tap **[ok]** to **return** to the **Main Menu** from the **General Information** screen.

> *Any parameter displayed in a shaded box – on this screen as well as all others – provides the user with non-selectable, status-only information.*
>
> **IMPORTANT**

3.3.2 Main Menu → Configuration

There are five configuration modes from which to choose when using CiLink. The configuration mode and a brief description is provided here, with detailed information provided on the pages indicated:

- **System Type** (page 3-5) – Selects between a standalone system (one transceiver) and a 1:1 redundant system.

- **Signal Path** (page 3-6) – Select to view and change the following transceiver parameters:

  Up Converter parameters
  TX Status On/Off
  Frequency
  Amplifier Attenuation (00.00-20.00 dB)
  Amp On/Off
  Mute On/Off

  -and-

  Down Converter parameters
  RX Status On/Off
  Frequency
  Amplifier Attenuation (00.00-20.00 dB)
  Amp On/Off
  Mute On/Of

- **LNA** (page 3-7) – Select to view or change Current Source Enable/Disable; Fault Logic On/Off; Enable/Disable the allowable Current Window, and adjust the alarm monitoring percentage ranges for the Current Window.

- **Miscellaneous** (page 3-8) – Select to view or change Cold Start, Auto Fault Recovery (AFR), Local Reference Oscillator Adjustment, External Reference Fault Logic, and Up and Down Converter slope adjustments.

- **Redundancy Controller** (page 3-9) – Online Unit (XCVR) selector, Operating Mode AUTO/MAN, Waveguide Switch Status OK/FT, Controller Voltages monitoring +5VDC and +12VDC.
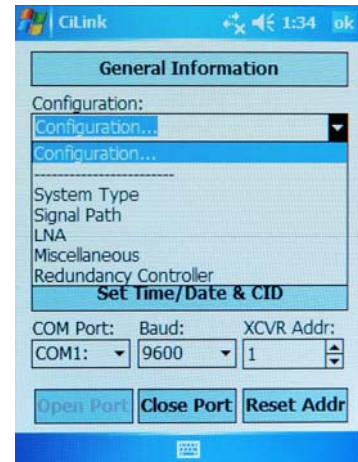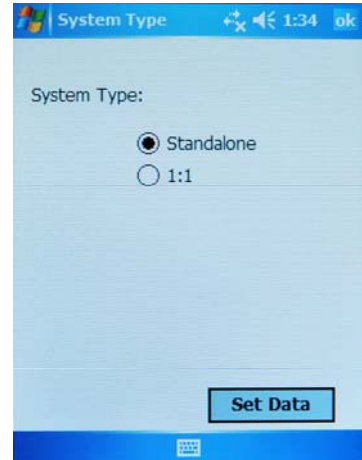
Either select a configuration mode to proceed further, or tap **[ok]** to **return** to the **Main Menu** from the drop-down **Configuration** screen.

3.3.2.1   Main Menu → Configuration → System Type

There are two modes of operation when using CiLink: **Standalone** and **1:1**.

- **Standalone** – The standalone mode is typically selected when CiLink is used with a single transceiver.

- **1:1 (One-for-One)** – The 1:1 mode is selected when two transceivers are used in a redundant system configuration with a redundant controller box (RED box – see Figure 2-6 on page 2-3). This mode can allow the user to control the online / offline transceiver through the RED box. Refer to page 3-9 to review the **Redundancy Controller** control and operating parameters.

When the **1:1** system is selected, the major difference in CiLink's functionality is the ability to select **XCVR1** or **XCVR2.** When selecting **XCVR1**, the parameters and controls are displayed for the first transceiver. Alternately, when **XCVR2** is selected, the corresponding parameters and controls are displayed for the second transceiver.

IMPORTANT

The Redundancy Controller *configuration mode* **(Main Menu → Configuration → Redundancy Controller)** *is selectable only if CiLink has been configured as a 1:1 system.*

If a 1:1 System Type is selected in absence of a redundant system (i.e., when a standalone unit is connected to the handheld device), an error message displays:
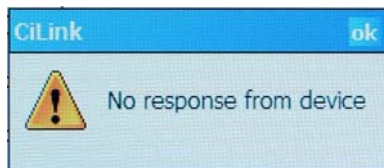
See page 3-9 for more information.
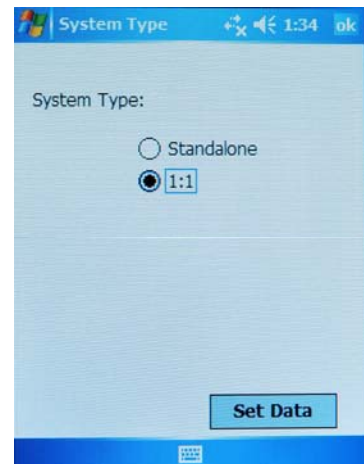
Select the desired System Type, then tap **[Set Data]** to **save** the active system setup selection. Otherwise, tap **[ok]** to **return** to the **Main Menu** from the **Configuration → System Type** screen.

3.3.2.2   Main Menu → Configuration → Signal Path

The currently selected transceiver is the unit that will be polled for status information in the **Signal Path** configuration **XCVR#** selection box:

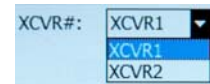**XCVR1** is the default selection and **XCVR2** is not selectable if CiLink is set to operate under standalone (non-redundant) system parameters (see **Configuration → System Type** for detailed information).

The *status-only* **ONLINE/OFFLINE** field to the right of the **XCVR#** selection box indicates the active line status of the currently selected transceiver.

The Up Converter and Down Converter sections allow the user to view and/or change the following transceiver parameters:

- **TX** *status-only* – This is a summary of the **Amp=On**, **Mute=Off** and no faults present (Up Converter section)

- **RX** *status-only* – This is a summary of the **Mute=Off** and no faults present (Down Converter section)

- **Amp [On/Off]▼** – The user can change the state of the amplifiers in the currently selected transceiver to **On** or **Off**.

- **Mute [On/Off]▼** – The user can mute the output of the currently selected transceiver when set to **On**.

- **Attenuation** – Both transmit and receive attenuation are user-configurable. The TX attenuation can be selected between 00.00 dB and 25.00 dB in 0.25 dB increments; the RX attenuation can be selected between 00.00 dB and 20.00 dB in 0.25 dB increments.

- **Frequency** – Both transmitter and receiver frequencies are user-configurable. The TX or RX frequency can be selected to any frequency divisible by either 1.0 MHz or 2.5 MHz in the valid TX or RX frequency range.
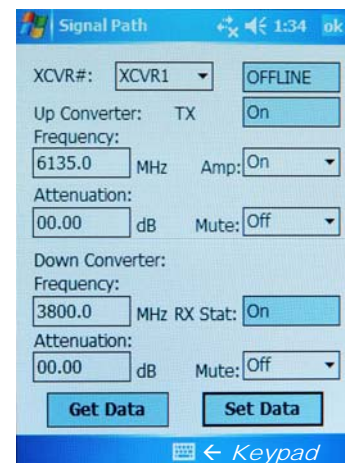
> ***The Up and Down Converter Frequency and Attenuation settings can only be changed if the currently selected XCVR is ONLINE. Use the Windows Keypad to manually enter new values for these settings in the provided data fields.***
> **IMPORTANT**

Tap **[Set Data]** to **save** the updated configuration selections. Otherwise, tap **[ok]** to **return** to the **Main Menu** from the **Configuration → Signal Path** screen *without* saving any changes.

3.3.2.3   Main Menu → Configuration → LNA (Low Noise Amplifier)

The currently selected transceiver is the unit that will be polled for status information in the **LNA** configuration **XCVR#** selection box:
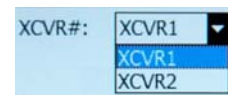
XCVR1 is the default selection and **XCVR2** is not selectable if CiLink is set to operate under standalone (non-redundant) system parameters (see **Configuration → System Type** for detailed information).

The *status-only* **ONLINE/OFFLINE** field located to the right of the **XCVR#** selection box indicates the active line status of the currently selected transceiver.

- **Current Source [Enable/Disable]▼** – The transceiver has the circuitry to source up to 400 mA of current at 12 VDC to power an LNA.

  > **IMPORTANT**
  > ***Care should be taken when directly connecting the transceiver to lab test equipment – a DC block should be used between the "RF IN" port and the RF test source to protect the test equipment in case the source is accidentally turned on.***
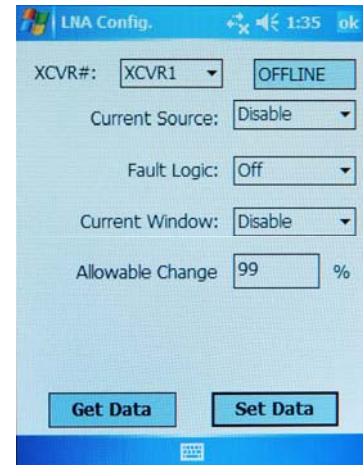
- **Fault Logic [On/Off] Current Window [Enable/Disable]▼**, **Allowable Change** – When the transceiver has been configured to supply current to the LNA (refer to **Current Source** on this page) adjustable LNA current monitoring is available.

  Setting the **Fault Logic** to **On** or **Off** allows the user to control whether or not the redundancy controller switches on an LNA current alarm in the redundant configuration. The transceiver allows the user to select whether or not the summary fault relay is activated if the LNA current moves out of a prescribed window.

  The alarm is configured by attaching the LNA, turning on the current source, **enabling** the **Current Window**, then setting the **Fault Logic** to **On**. Then, the **Allowable Change** feature permits the user to 'calibrate' the current and define an operational range window, specifying a current usage percentage value of anywhere from ± 20% to ± 50% to trigger an alarm.

  The user can disable this 'window detect' feature by setting the window value to ± 99%.

Tap **[Set Data]** to **save** the updated configuration selections. Otherwise, tap **[ok]** to **return** to the **Main Menu** from the **Configuration → LNA** screen *without* saving any changes.

3.3.2.4   Main Menu → Configuration → Miscellaneous

The currently selected transceiver is the unit that will be modified in the **Miscellaneous** configuration **XCVR#** selection box:
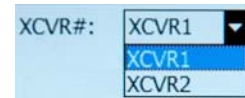
XCVR1 is the default selection and **XCVR2** is not selectable if CiLink is set to operate under standalone (non-redundant) system parameters (see **Configuration → System Type** for detailed information).

The *status-only* **ONLINE/OFFLINE** field to the right of the **XCVR#** selection box indicates the active line status of the currently selected transceiver.

- **Cold Start [On/Off]▼** – The transceiver provides an optional '**Cold Start**' feature that ensures that the internal 10 MHz reference signal is at a stable temperature prior to allowing the RF and IF outputs to be turned on. A fixed cold start interval of 15 minutes is used. At the end of the 15-minute interval, the RF and IF outputs automatically turn on, providing all fault conditions and appropriate settings are met. If a transceiver was powered on with **Cold Start: On**, the operator can override this function by selecting **Cold Start: Off**.
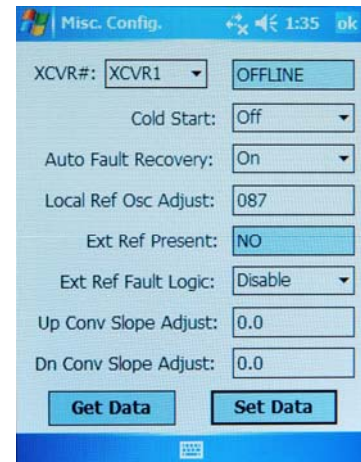
- **Auto Fault Recovery (AFR) [On/Off]▼** – This parameter defines how the transceiver responds to momentary fault conditions. If **AFR** is **Off** and a fault condition occurs that causes the RF or IF output to be muted, then that fault condition clears and the transceiver will remain muted. If **AFR** is **On**, and the same situation occurs, the transceiver will automatically be unmuted and return to normal operating mode. To protect against repetitive momentary faults, if the transceiver experiences five occurrences of the same fault, the **AFR** parameter will automatically be set to **Off**.

> ❗ **IMPORTANT**
>
> ***The Cold Start and AFR settings can only be changed if the currently selected transceiver is ONLINE.***

- **Local Ref Osc Adjust** – A fine adjustment of the internal 10 MHz frequency is provided as a user controllable parameter. This parameter can be varied within the range of 000 to 255.

- **Ext Ref Present** *status only* – If an external reference is connected to the transceiver, this parameter will display the status of the signal.

- **Ext Ref Fault Logic [Enable/Disable]▼** – The transceiver allows the user to select whether or not the summary fault relay is activated if the internal 10 MHz reference loses lock with the external reference attached to J4 'EXTERNAL REF IN' port.

- **Up/Dn Conv Slope Adjust** – The TX and RX channel slopes can be adjusted from 0.0 (factory setting) to 1.0 in 0.1 steps. 1.0 corresponds to approximately 2 dB of positive slope.

Tap **[Set Data]** to **save** the updated configuration selections. Otherwise, tap **[ok]** to **return** to the **Main Menu** from the **Configuration → Miscellaneous** screen *without* saving any changes.

3.3.2.5 Main Menu → Configuration → Redundancy Controller

- **Force Online Unit #** ▼ – This allows the user to observe or select which transceiver in a redundancy configuration is currently online.

  To switch between units, tap the trigger to display the options (**XCVR1** or **XCVR2**), then highlight the desired transceiver. Select **[Set Data]** to update the configuration and bring the selected unit online.

  > ⓘ **IMPORTANT**
  > *The **Online Unit**, as idenitifed on this screen, should not be confused with the 'Currently Selected XCVR' option available on several other screens. The menu on this page is the only one where the user has the capability to 'force' a transceiver to be the **Online Unit**.*
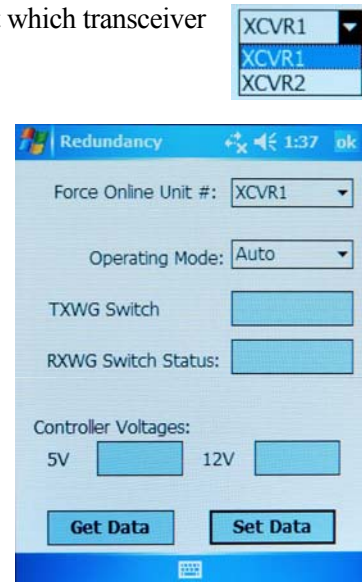
- **Operating Mode [Auto/Manual]**▼ – This allows the user to control the operating mode of the RSU-5060 (RED Box). When in **Auto** mode, the RED box monitors the state of **XCVR1** and **XCVR2**. If the online unit fails, the RED box will automatically command both the TX and RX transfer switches to change position.

  > ⓘ **IMPORTANT**
  > ***If the offline unit is also faulted, no switchover will occur.** **Manual** **mode will not monitor fault status for automatic switchover.** **To change operating modes, tap the trigger (▼) to display the two options, highlight the desired mode, then select** **[Set Data].***

- **TXWG Switch [OK/FT]** *status only* – Reports the fault status of the TX waveguide switch.

- **RXWG Switch Status [OK/FT]** *status only* – Reports the fault status of the RX waveguide switch.

- **5V / 12V Controller Voltages** *status only* – Displays the RED box internal power supply voltages.

Tap **[Set Data]** to **save** the updated configuration selections. Otherwise, tap **[ok]** to **return** to the **Main Menu** from the **Configuration → Redundancy Controller** screen *without* saving any changes.

3.3.2.5.1   Redundancy Controller Error States

If the user attempts to configure the Redundancy Controller when CiLink has been set up for standalone operation, the following error message displays:
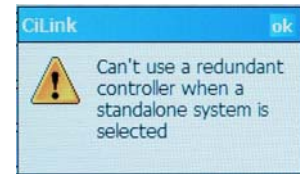
If the user has set up the CiLink system for 1:1 system operations in the absence of a redundant system installation, the following error message displays:
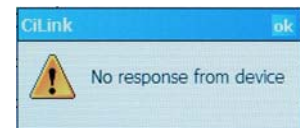
3.3.3   Main Menu → Maintenance Status

The currently selected transceiver is the unit that will be polled for status information in the **Maintenance Status XCVR#** selection box:
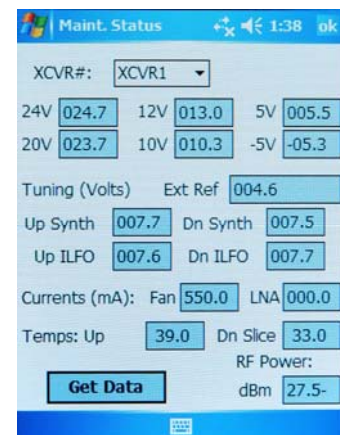
XCVR1 is the default selection and **XCVR2** is not selectable if CiLink   is set to operate under standalone (non-redundant) system parameters (see **Configuration → System Type** for detailed information).

> **IMPORTANT**
>
> *The information provided on the* **Maintenance Status** *screen furnishes information on a* **status only** *basis. All information furnished on this screen is refreshed each time the* **Maintenance Status** *screen is selected, if the currently selected transceiver is changed, or if the* **[Get Data]** *icon is selected.*

- **XCVR Internal Voltages** – The transceiver unit monitors the six internal DC voltages: **24**, **20**, **12**, **10**, **+5** and **–5**. The voltages are displayed for the currently selected transceiver.

- **Tuning (Volts)** – The transceiver monitors the four tuning voltages that are variable depending on frequency.

- **Currents (mA)** – The cooling fan and the LNA currents are displayed in milliamps.

- **Temperatures** – The Up Slice and Down Slice temperatures are displayed in degrees C.

- **RF Power (dBm)** – The actual RF output power of the Up Converter is displayed in dBm.

Tap **[Get Data]** to **query** the selected transceiver and **refresh** the information parameters. Otherwise, tap **[ok]** to **eturn** to the **Main Menu** from the **Maintenance Status** screen.

3.3.4   Main Menu → Current Fault Status

The currently selected transceiver is the unit that will be polled for status information in the **Current Fault Status XCVR#** selection box:
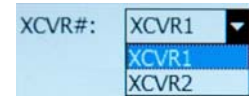
XCVR1 is the default selection and **XCVR2** is not selectable if CiLink is set to operate under standalone (non-redundant) system parameters (see **Configuration → System Type** for detailed information).

> *The information provided on the* **Current Fault Status** *screen furnishes information on a* **status only** *basis. All information furnished on this screen is refreshed each time the* **Current Fault Status** *screen is selected, if the currently selected transceiver is changed, or if the* **[Get Data]** *icon is selected.*
>
> *Each shaded status window on this screen displays the parameter's active status as operating either within operational limits* **[OK]** *or in faulted conditions* **[FT]***.*

- **XCVR Internal Voltages** – The transceiver unit monitors the six internal DC voltages: **24**, **20**, **12**, **10**, **+5** and **–5** for the currently selected transceiver. The monitor circuitry will display a fault if any of these voltages are ±10% out of range.

- **Lock Detects** – The transceiver monitors the four phase lock loops (PLLs) for each transceiver. A fault is displayed for any and each PLL that is not locked.

- **Currents (mA)** and **Temps** – The **Fan** and **LNA** are monitored for excessive and low currents. A fault is displayed if these currents are out of their prescribed window.

If the temperature rises out of specification for the transceiver, a fault will appear in the **HeatSink** field.

As the heat sink temperature continues to rise, the transceiver will automatically disable the FET amplifiers and display a **ShutDn** (shutdown) fault.

- **Processor** – The **Chksum** (checksum), **IIC** Bus, and **Battery** are monitored for proper operation and will display a faulted condition when the processor system is not functioning properly.

Tap **[Get Data]** to **query** the selected transceiver and **refresh** the information parameters. Otherwise, tap **[ok]** to **return** to the **Main Menu** from the **Current Fault Status** screen.

3.3.5   Main Menu → Stored Events / Alarms

The currently selected transceiver is the unit that will be polled for status information in the **Stored Events / Alarms XCVR#** selection box:
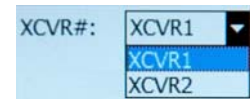
XCVR1 is the default transceiver and **XCVR2** is not available if CiLink is set to operate under standalone (non-redundant) system parameters (see **Configuration → System Type** for detailed information). This indicates *status only* and the currently selected transceiver cannot be changed on this screen.
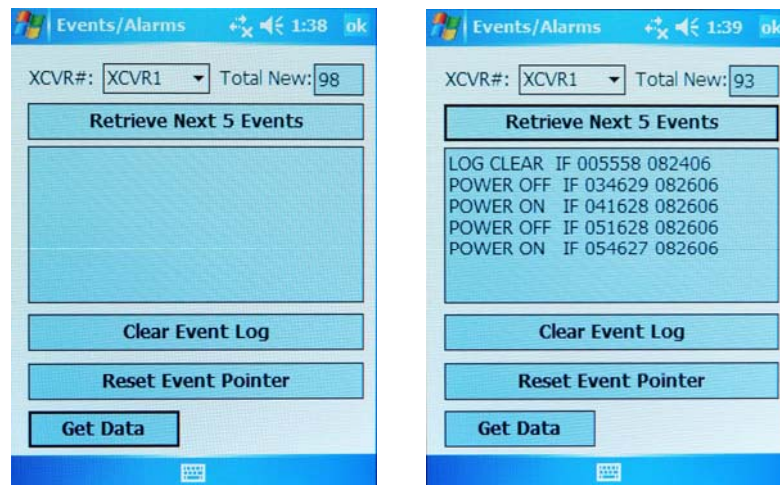
Querying of stored events and alarms is facilitated through reference or selection of the following features:

- **Total New** *status only* – Displays the number of events that have occurred since last viewing the stored events log. The count drops in increments of five as events are displayed in the Event Window.

- **Retrieve Next 5 Events** – Selecting this feature displays a maximum of five sequential events in the Event Window, posting in the order received since last retrieving the contents of the stored events log.

- **Clear Event Log** – Selecting this feature erases any events in the event log and clears the Event Window as shown in the image on the left.

- **Reset Event Pointer** – Selecting this feature resets the event pointer to the top of the event list to show the start of the event log.

Tap **[Get Data]** to **refresh** the stored events log with newly-acquired event data. Otherwise, tap **[ok]** to **return** to the **Main Menu** from the **Stored Events & Alarms** screen *without* further querying the currently selected transceiver for data.

3.3.6 Main Menu → Set Time / Date & CID

The currently selected transceiver is the unit that will be modified in the **Set Time / Date & CID XCVR#** selection box:

XCVR1 is the default selection and **XCVR2** is not selectable if CiLink is set to operate under standalone (non-redundant) system parameters (see **Configuration → System Type** for detailed information).

- **Date** – Displays the date of the currently selected transceiver.

- **Time** – Displays the time of the currently selected transceiver.

- **Now** – Displays the date and time of the HP iPAQ Pocket PC.

- **CID (Circuit Identification) Message** – Displays the CID message for the currently selected transceiver.
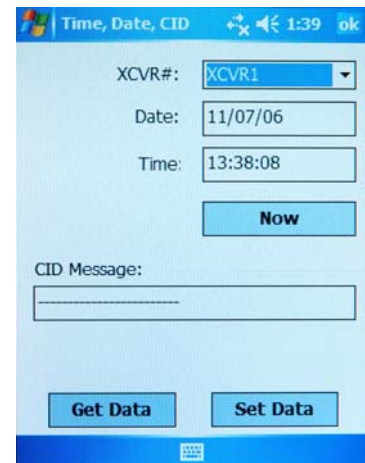
Tap **[Get Data]** to **obtain** the indicated Date, Time and CID message *from* the currently selected transceiver.

Tap **[Set Data]** to **send** the indicated Date, Time and CID message *to* the currently selected transceiver.

Otherwise, tap **[ok]** to **return** to the **Main Menu** from the **Set Time / Date & CID** screen *without* further querying CiLink or the currently selected transceiver.

Notes:

METRIC CONVERSIONS

Units of Length

Unit	Centimeter	Inch	Foot	Yard	Mile	Meter	Kilometer	Millimeter
1 centimeter	—	0.3937	0.03281	0.01094	6.214×10^{-6}	0.01	—	—
1 inch	2.540	—	0.08333	0.2778	1.578×10^{-5}	0.254	—	25.4
1 foot	30.480	12.0	—	0.3333	1.893×10^{-4}	0.3048	—	—
1 yard	91.44	36.0	3.0	—	5.679×10^{-4}	0.9144	—	—
1 meter	100.0	39.37	3.281	1.094	6.214×10^{-4}	—	—	—
1 mile	1.609×10^5	6.336×10^4	5.280×10^3	1.760×10^3	—	1.609×10^3	1.609	—
1 mm	—	0.03937	—	—	—	—	—	—
1 kilometer	—	—	—	—	0.621	—	—	—

Temperature Conversions

Temperature	° Fahrenheit	° Centigrade
Water freezes	32	0
Water boils	212	100
Absolute 0	-459.69	-273.16

Formulas
$°C = (F - 32) * 0.555$
$°F = (C * 1.8) + 32$

Units of Weight

Unit	Gram	Ounce Avoirdupois	Ounce Troy	Pound Avoirdupois	Pound Troy	Kilogram
1 gram	—	0.03527	0.03215	0.002205	0.002679	0.001
1 oz. avoir.	28.35	—	0.9115	0.0625	0.07595	0.02835
1 oz. troy	31.10	1.097	—	0.06857	0.08333	0.03110
1 lb. avoir.	453.6	16.0	14.58	—	1.215	0.4536
1 lb. Troy	373.2	13.17	12.0	0.8229	—	0.3732
1 kilogram	1.0×10^3	35.27	32.15	2.205	2.679	—