

## CDM-625 Advanced Satellite Modem Base Modem Hardware Release 2, Base Modem Firmware Release 2.0.2 & Packet Processor Firmware Release 1.3.2

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Comtech EF Data is pleased to announce the availability of the base modem hardware release 2, the modem firmware release 2.0.2 and the packet processor firmware release 1.3.2 for the CDM-625 Advanced Satellite Modem. These new hardware and firmware releases add significant new features to the CDM-625 and enhance a number of existing features.



### Hardware Release 2

The new base modem hardware adds support for jumbo Ethernet frames (2048 byte), IEEE 1588v2 Precision Time Protocol (PTP), and independent timing for ports 3 and 4 of the Quad E1 Drop & Insert (QDI) interface.

The hardware revision of the modem is available through the front panel, under the FAST menu.

Firmware to support PTP is currently planned for February 2012.

The new hardware is available as an option:

- Standard CEFD Front Panel With **New Ethernet Switch** (No Audio F/W)
- CEFD Front Panel with **New Ethernet Switch** (With Audio F/W)

### Base Modem Firmware Release 2.0.2

In addition to supporting the new hardware, the base modem firmware v2.0.2 adds a number of key features and enhancements.

#### **Carrier-in-Carrier Automatic Power Control (CnC-APC)**

Satellite networks are subject to channel degradations due to rain and other environmental factors. In order to ensure a target link availability, network designers must be aware of the rain region (equivalently the probability of given amounts of rain loss occurring) on both sides of a link, and design the terminals and operating point to include the required link margin.

In clear sky operation, the terminals on both sides of the link transmit with RF power on the ground such that they do not exceed the Total Composite Power that has been allocated for that link. The presence of rain or other environmental attenuation (such as dust) lowers the RF power received at the satellite relative to clear sky conditions. In principle, terminals with sufficient RF power could increase their transmit power during rain loss conditions to compensate for the loss without exceeding Total Composite Power.

However, with traditional links that are not utilizing DoubleTalk<sup>®</sup> Carrier-in-Carrier<sup>®</sup> (CnC) technology, the modems themselves cannot in general automatically compensate for rain loss because the modems do not have enough information to determine which side of the link the rain loss is occurring. With traditional non-CnC links, proper implementation of rain loss compensation is a more complex system level function. For this reason, rain loss compensation is not often implemented in practice in traditional links. Our patent-pending Carrier-in-Carrier Automatic Power Control (CnC-APC) mechanism solves the power control optimization problem for CnC links. It provides a unique opportunity for modems on both sides of a CnC link to automatically measure and compensate for rain loss while maintaining the Total Composite Power during all conditions. In

addition to automatically compensating for rain loss, CnC-APC also enables CnC modems to share link margin between modems (i.e. a modem experiencing clear sky conditions can effectively give excess link margin to a distant end modem experiencing rain conditions, thereby further enhancing overall availability). This feature is implemented using values measured by the modems and general rain model knowledge (i.e. a system level implementation is not required).

The net effect of CnC-APC technology is a significant increase in effective link margin and availability for CnC links without exceeding the Total Composite Power.

A white paper with additional details is available on our website.

### ***Jumbo Ethernet Frame Support***

With increased transmission speeds and usage of VLAN and MPLS, the need for larger and larger Ethernet frames for improved efficiency continues to grow. Lack of jumbo Ethernet frame support leads to fragmentation and increased overhead.

The new modem hardware combined with the firmware release 2.0.2 now supports Ethernet frames up to 2048 bytes.

### ***Quad E1 Drop & Insert (QDI) Interface Enhancement***

Quad E1 operation is now enhanced to allow asynchronous E1 streams to be combined together. Prior to this release, it was important that all ports were synchronous to one another in order to operate without data loss. With the new firmware, the modem performs bit stuffing on slower data streams to match them to faster ones. Satellite overhead is used to identify extra data on each port that was sent over the link. The extra data is then removed at the receiver, so that each port's timing is maintained. As a result, it is important that the ports used and the number of timeslots for each port match at both ends of the link. Recommendation G.703 requires that the actual bit rate be within +/- 50 ppm of 2048 kbps.

Modems prior to hardware release 2 use a common receive E1 clock for ports 3 and 4, so it is necessary that ports 3 and 4 at the transmitting modem remain synchronized to one another.

### ***Other features/enhancements include:***

1. Circuit ID on modem web page title bar for identification.
2. FTP Get "custserv:" function to get complete modem configuration and status. Supports Customer Service Entry remote command.
3. Ability to force modem reboot through SNMP.
4. 1:N mode control through SNMP.
5. Support for Robbed-bit Signaling (RBS, aka T1 CAS) in D&I++.
6. Improved acquisition at low symbol rates.
7. Modified Host Access List function to allow disabling/enabling any one of the 4 access lists. The rules have been changed from previous releases, so users do not have to set all four IP ranges in order for the limit to take place.
8. Improved Host Access List function. Disallow Host Access List is enabled if none of the access list is checked (enabled).
9. Quality of Service (QoS) has been separated into Layer 2 QoS and Layer 3 QoS, in order to support Packet Processor Managed Switch mode. QoS remote control command has been modified.
10. Modified EGC remote control command to include EFS (2048 bytes Ethernet Frame Size), and modified QoS command.
11. Added IP address validation when set through SNMP.
12. Redundancy Traffic IP address (IPA) must be different from Management IP Address (IPA).
13. Fixed demodulator acquisition problem at high symbol rate, rate 7/8 TPC.
14. BERT TX pattern now works with web interface
15. Gratuitous ARP request 5 times at boot up time when IP Packet Processor is disabled.

v2.0.2 is also compatible with existing modems in the field, however they will not be able to support jumbo Ethernet frame, Precision Time Protocol or independent timing for ports 3 and 4 of the QDI.

## Packet Processor Firmware Release 1.3.2

The packet processor firmware release 1.3.2 adds new features and enhances existing capabilities. It requires the base modem firmware to be upgraded to v2.0.2.

Key features/enhancements of v1.3.2 include:

### **Managed Switch Mode**

Managed switch modem enables layer 2 operation, including VLAN, with the Packet Processor, providing significant bandwidth savings due to:

- Low overhead Streamline Encapsulation
- Header compression
- Payload compression

### **CRS-500 M:N Redundancy Support in Managed Switch Mode**

M:N redundancy with CRS-500 is now supported in Managed Switch Mode.

### **Jumbo Ethernet Frame Support with New Base Modem Hardware**

The Packet Processor with new base modem HW Release 2 now supports Ethernet frames up to 2048 byte.

### **DHCP Relay Agent**

DHCP Relay Agent can be used in router mode when the DHCP client and server are not on same network.

### **Other features/enhancements include:**

1. Improved web look and feel and improved consistency with different web browsers
2. IGMP tables for joined groups and active multicast streams
3. Support for real-time IQ monitoring with iqmon.exe
4. Reorganized web pages, including consolidating redundancy settings into a single tab and moving firmware information under the Admin tab
5. Access list now works consistently whether or not the packet processor is installed
6. The route and QoS pages now display a reason if they reject a new rule

To learn more about the CDM-625 Advanced Satellite Modem, please refer to our web site, [www.comtechefdata.com](http://www.comtechefdata.com). To place your order, please contact your Comtech EF Data sales associate.



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