Remote Protocol

For The
DMD20/DMD50/DMD2050/OM20
Manual

TM117
Revision 2.0

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RADYNE

Warranty Policy

WP

Radyne Inc. (Seller) warrants the items manufactured and sold by Radyne Inc. to be free of defects in material and workmanship for a period of two (2) years from date of shipment Radyne Inc.'s obligation under its warranty is limited in accordance with the periods of time and all other conditions stated in all provisions of this warranty.

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Warranty Replacement and Adjustment

Radyne Inc. will not make warranty adjustments for failures of products or parts, which occur after the specified maximum adjustment period. Unless otherwise agreed, failure shall be deemed to have occurred no more than seven (7) working days before the first date on which Radyne Inc. receives a notice of failure. Under no circumstances shall any warranty exceed the period stated above unless expressly agreed to in writing by Radyne Inc.

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All obligations of Radyne Inc. under this warranty shall cease in the event its products or parts thereof have been subjected to accident, abuse, alteration, misuse or neglect, or which have not been operated and maintained in accordance with proper operating instructions.

In no event shall Radyne Inc. be liable for Incidental, consequential, special or resulting loss or damage of any kind howsoever caused. Radyne Inc.'s liability for damages shall not exceed the payment, if any, received by Radyne Inc. for the unit or product or service furnished or to be furnished, as the case may be, which is the subject of claim or dispute.

Statements made by any person, including representatives of Radyne Inc., which are inconsistent or in conflict with the terms of this warranty, shall not be binding upon Radyne Inc. unless reduced to writing and approved by an officer of Radyne Inc.

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Before a warranty repair can be accomplished, a Repair Authorization must be received. It is at this time that Radyne Inc. will authorize the product or part to be returned to the Radyne Inc. facility or if field repair will be accomplished. The Repair Authorization may be requested in writing or by calling:

Radyne Inc.
3138 E. Elwood St.
Phoenix, Arizona 85034 (USA)
ATTN: Customer Support
Phone: (602) 437-9620
Fax: (602) 437-4811

Any product returned to Radyne Inc. for examination must be sent prepaid via the means of transportation indicated as acceptable to Radyne Inc. Return Authorization Number must be clearly marked on the shipping label. Returned products or parts should be carefully packaged in the original container, if possible, and unless otherwise indicated, shipped to the above address.

Non-Warranty Repair

When a product is returned for any reason, Customer and its shipping agency shall be responsible for all damage resulting from improper packing and handling, and for loss in transit, not withstanding any defect or nonconformity in the product. By returning a product, the owner grants Radyne Inc. permission to open and disassemble the product as required for evaluation. In all cases, Radyne Inc. has sole responsibility for determining the cause and nature of failure, and Radyne Inc.'s determination with regard thereto shall be final.

Preface

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This manual provides remote protocols for the DMD20/DMD50/DMD2050 and OM20 Satellite modems. The protocols supported by this document are RLLP, SNMP (MIB), and Web Browser.

1.1 Conventions

Whenever the information within this manual instructs the operator to press a pushbutton switch or keypad key on the Front Panel, the pushbutton or key label will be shown enclosed in “less than” (<) and “greater than” (>) brackets. For example, the Reset Alarms Pushbutton will be shown as <RESET ALARMS>, while a command that calls for the entry of a ‘7’ followed by ‘ENTER’ Key will be represented as <7,ENTER>.

2.1 Cautions and Warnings

A caution icon 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.

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

A note icon identifies information for the proper operation of your equipment, including helpful hints, shortcuts, or important reminders.

3.1 Trademarks

Product names mentioned in this manual may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

4.1 Copyright

Disclaimer

This manual has been thoroughly reviewed for accuracy. All statements, technical information, and recommendations contained herein 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. Radyne Inc. assumes no responsibility for use of any circuitry other than the circuitry employed in Radyne Inc. systems and equipment. Furthermore, since Radyne Inc. is constantly improving its products, reserves the right to make changes in the specifications of products, or in this manual at any time without notice and without obligation to notify any person of such changes.

5.1 Record of Revisions

Revision Level	Date	Reason for Change
1.0	10-17-05	Initial Release
2.0	6-29-06	Add web browser & new terminal screens

6.1 Comments or Suggestions Concerning this Manual

Comments or suggestions regarding the content and design of this manual are appreciated. To submit comments, please contact the Radyne Inc. Customer Service Department.

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RADYNE

Remote Operations

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The Remote Protocols for the DMD20, DMD20LBST, DMD50, DMD2050 and OM20 are similar in design and utilize the same protocol platforms. This document should be used as the primary source for identifying the various protocol structures and control menus for products listed below. The most current Remote Protocols manual can be accessed from the Radyne web site at http://www.radynecomstream.com.

The Remote Protocol identified in TM117 are RLLP (Radyne Link Level Protocol), SNMP MIB file, Web Browser menus and Terminal Port menus. The TM117 document does not identify equipment setup processes. The Product manuals include instructions to set up the equipment but will not include the protocol structure. The Remote Protocol manual TM117 is applicable to the following products:

Equipment	**Manual**
DMD20	TM103
DMD20LBST	TM103
DMD50	TM118
DMD2050	TM110
OM20	TM116

1.1 Modem Remote Communications (RLLP)

The Remote Port allows for complete control and monitoring of all parameters and functions via an RS-232 Serial Interface, or RS-485 for RLLP Protocol. 'Equipment Remote Mode' can be entered from the GUI interface under the "System" menu by selecting "System" and then "Terminal" followed by "Terminal". The baud rate and evaluation type can be changed at the front panel by using the *System>Baud Rate* Menu.

Control and status messages are conveyed between the modem and all subsidiary modems and the host computer using packetized message blocks in accordance with a proprietary communications specification. This communication is handled by the Radyne Link Level Protocol (RLLP), which serves as a protocol 'wrapper' for the RM&C data. Complete information on monitor and control software is contained in the following sections.

This specification is applicable to the DMD20/20LBST, DMD50, DMD2050, and OM20 Modems. Any reference to the DMD20 in this document can be applicable to any one of these three modems.

For configuration setup, refer to the product manuals.

1.1.1.1 Protocol Structure

The Communications Specification (COMMSPEC) defines the interaction of computer resident Monitor and Control Software used in satellite earth station equipment such as modems, redundancy switches, multiplexers, and other ancillary support gear. Communication is bi-directional, and is normally established on one or more full-duplex 9600-baud multi-drop control buses that conform to EIA Standard RS-485.

Each piece of earth station equipment on a control bus has a unique physical address, which is assigned during station setup/configuration or prior to shipment. Valid decimal addresses on one control bus range from 032 through 255 for a total of up to 224 devices per bus. Address 255 of each control bus is usually reserved for the M&C computer.

1.1.1.2 Protocol Wrapper

The Radyne COMMSPEC is byte-oriented, with the Least Significant Bit (LSB) issued first. Each data byte is conveyed as mark/space information with two marks comprising the stop data. When the last byte of data is transmitted, a hold comprises one steady mark (the last stop bit). To begin or resume data transfer, a space (00h) substitutes this mark. This handling scheme is controlled by the hardware and is transparent to the user. A pictorial representation of the data and its surrounding overhead may be shown as follows:

S1	S2	B_0	B_1	B_2	B_3	B_4	B_5	B_6	B_7	S1	S2, etc.

The Stop Bits, S1 and S2, are each a mark. Data flow remains in a hold mode until S2 is replaced by a space. If S2 is followed by a space, it is considered a start bit for the data byte and not part of the actual data (B_0 - B_7). The COMMSPEC developed for use with the Radyne Link Level Protocol (RLLP) organizes the actual monitor and control data within a shell, or 'protocol wrapper', that surrounds the data. The format and structure of the COMMSPEC message exchanges are described herein. Decimal numbers have no suffix; hexadecimal numbers end with a lower case 'h' suffix and binary values have a lower case 'b' suffix. Thus, 22 = 16h = 0000101101. The principal elements of a data frame, in order of occurrence, are summarized as follows:

<SYNC>: The message format header character, or ASCII sync character, that defines the beginning of a message. The <SYNC> character value is always 16h.

<BYTE COUNT>: The Byte Count is the number of bytes in the <DATA> field (2 Bytes).

<SOURCE ID>: The Source Identifier defines the multi-drop address origin.

All nodes on a given control bus have a unique address that must be defined.

<DESTINATION ID>: The Destination Identifier serves as a pointer to the multi-drop destination device that indicates where the message is to be sent.

<FRAME SEQUENCE NUMBER>: The Frame Sequence Number (FSN) is a tag with a value from 0 through 255 that is sent with each message. It assures sequential information framing and correct equipment acknowledgment and data transfers.

<OPCODE>: The Operation Code field contains a number that identifies the message type associated with the data that follows it. Equipment under MCS control recognizes this byte via firmware identification and subsequently steers the DATA accordingly to perform a specific function or series of functions. Acknowledgment and error codes are returned in this field (2 Bytes).

<DATA>: The Data field contains the binary, bi-directional data bytes associated with the <OPCODE>. The number of data bytes in this field is indicated by the <BYTE COUNT> value.

<CHECKSUM>: The checksum is the modulo 256 sum of all preceding message bytes, excluding the <SYNC> character. The checksum determines the presence or absence of errors within the message. In a message block with the following parameters, the checksum is computed as shown in Table 1-1.

Table 1-1. Checksum Calculation Example

BYTE FIELD	DATA CONTENT	RUNNING CHECKSUM
<BYTE COUNT> (BYTE 1)	00h = 00000000b	00000000b
<BYTE COUNT> (BYTE 2)	04h = 00000100b	00000100b
<SOURCE ID>	FFh = 11111111b	00000011b
<DESTINATION ID>	20h = 00100000b	00100011b
<FSN>	09h = 00001001b	00101100b
<OPCODE> (BYTE 1)	2Ah = 00101010b	01010110b
<OPCODE> (BYTE 2)	01h = 00000001b	01010111b
<DATA> (Byte 1)	08h = 00001000b	01011111b
<DATA> (Byte 2)	58h = 01011000b	10110111b
<DATA> (Byte 3)	3Bh = 00111011b	11110010b
<DATA> (Byte 4)	00h = 00000000b	11110010b

Thus, the checksum is 11110010b; which is F2h or 242 decimal. Alternative methods of calculating the checksum for the same message frame are:

00h + 04h + FFh + 20h + 09h + 2Ah + 01h + 08h + 58h + 3Bh + 00h = 1F2h.

Since the only concern is the modulo 256 (modulo 1 00h) equivalent (values that can be represented by a single 8-bit byte), the checksum is F2h. For a decimal checksum calculation, the equivalent values for each information field are:

0 + 4 + 255 + 32 + 9 + 42 + 1 + 8 + 88 + 59 + 0 = 498;

498/256 = 1 with a remainder of 242.

This remainder is the checksum for the frame.

242 (decimal) = F2h = 11110010b = <CHECKSUM>

1.1.1.3 Frame Description and Bus Handshaking

In a Monitor and Control environment, every message frame on a control bus port executes as a packet in a loop beginning with a wait-for-SYNC-character mode. The remaining message format header information is then loaded, either by the M&C computer or by a subordinate piece of equipment (such as the DMD20) requesting access to the bus. Data is processed in accordance with the OPCODE, and the checksum for the frame is calculated. If the anticipated checksum does not match, then a checksum error response is returned to the message frame originator. The entire message frame is discarded and the wait-for-SYNC mode goes back into effect. If the OPCODE resides within a command message, it defines the class of action that denotes an instruction that is specific to the device type, and is a prefix to the DATA field if data is required. If the OPCODE resides within a query message packet, then it defines the query code, and can serve as a prefix to query code DATA.

The Frame Sequence Number (FSN) is included in every message packet, and increments sequentially. When the M&C computer or bus-linked equipment initiates a message, it assigns the FSN as a tag for error control and handshaking. A different FSN is produced for each new message from the FSN originator to a specific device on the control bus. If a command packet is sent and not received at its intended destination, then an appropriate response message is not received by the packet originator. The original command packet is then re-transmitted with the same FSN. If the repeated message is received correctly at this point, it is considered a new message and is executed and acknowledged as such.

If the command packet is received at its intended destination but the response message (acknowledgment) is lost, then the message originator (usually the M&C computer) re-transmits the original command packet with the same FSN. The destination device detects the same FSN and recognizes that the message is a duplicate, so the associated commands within the packet are not executed a second time. However, the response packet is again sent back to the source as an acknowledgment in order to preclude undesired multiple executions of the same command.

To reiterate, valid equipment responses to a message require the FSN tag in the command packet. This serves as part of the handshake/acknowledge routine. If a valid response message is absent, then the command is re-transmitted with the same FSN. For a repeat of the same command involving iterative processes (such as increasing or decreasing the transmit power level of a DMD20 modulator), the FSN is incremented after each message packet. When the FSN value reaches 255, it overflows and begins again at zero. The FSN tag is a powerful tool that assures sequential information framing, and is especially useful where commands require more than one message packet.

The full handshake/acknowledgment involves a reversal of source and destination ID codes in the next message frame, followed by a response code in the <OPCODE> field of the message packet from the equipment under control.

If a command packet is sent and not received at its intended destination, a timeout condition can occur because a response message is not received by the packet originator. On receiving devices slaved to an M&C computer, the timeout delay parameters may be programmed into the equipment in accordance with site requirements by Radyne Inc. prior to shipment, or altered by qualified personnel. The FSN handshake routines must account for timeout delays and be able to introduce them as well.

1.1.1.4 Global Response Operational Codes

In acknowledgment (response) packets, the operational code <OPCODE> field of the message packet is set to 0 by the receiving devices when the message intended for the device is evaluated as valid. The device that receives the valid message then exchanges the <SOURCE ID> with the <DESTINATION ID>, sets the <OPCODE> to zero in order to indicate that a good message was received, and returns the packet to the originator. This "GOOD MESSAGE" Opcode is one of nine global responses. Global response opcodes are common responses, issued to the M&C computer or to another device, that can originate from and are interpreted by all Radyne equipment in the same manner. These are summarized as follows (all opcode values are expressed in decimal form):

Table 1-2. Response OPCODES

Response OPCODE Description	OPCODE
Good Message	000d = 0000h
Bad Parameter	255d = 00FFh
Bad Opcode	254d = 00FEh
Incomplete Parameter	247d = 00F7h

The following response error codes are specific to the DMD20:

DMD20 Response Error Code Descriptions	OPCODE
MPARM_FREQUENCY_ERROR	0x0401
MPARM_STRAP_ERROR	0x0402
MPARM_FILTERMASK_ERROR	0x0403
MPARM_DATARATE_ERROR	0x0404
MPARM_EXTEXCCLOCK_ERROR	0x0405
MPARM_EXTREFERENCE_ERROR	0x0406
MPARM_EXTREFSOURCE_ERROR	0x0407
MPARM_MODULATIONTYPE_ERROR	0x0408
MPARM_CONVENCODER_ERROR	0x0409
MPARM_REEDSOLOMON_ERROR	0x040A
MPARM_SCRAMBLERCONTROL_ERROR	0x040B
MPARM_SCRAMBLERTYPE_ERROR	0x040C
MPARM_DIFFERENTIALENCODER_ERROR	0x040F
MPARM_XMITPOWERLEVEL_ERROR	0x0410
MPARM_CARRIERCONTROL_ERROR	0x0411
MPARM_CARRIERSELECTION_ERROR	0x0412
MPARM_SPECTRUM_ERROR	0x0413
MPARM_OPERATINGMODE_ERROR	0x0414
MPARM_TERRLOOPBACK_ERROR	0x0415
MPARM_BASELOOPBACK_ERROR	0x0416
MPARM_CLOCKCONTROL_ERROR	0x0417
MPARM_CLOCKPOLARITY_ERROR	0x0418
MPARM_FRAMING_ERROR	0x0419
MPARM_DROPMODE_ERROR	0x041A
MPARM_SCTSOURCE_ERROR	0x041B
MPARM_T1D4YELLOW_ERROR	0x041E
MPARM_MODE_ERROR	0x0422
MPARM_CIRCUITID_ERROR	0x0423
MPARM_ESCCHANNEL1VOLUME_ERROR	0x0424
MPARM_ESCCHANNEL2VOLUME_ERROR	0x0425
MPARM_INTERFACETYPE_ERROR	0x0429

MPARM_INTERFACENOTPRESENT_ERROR	0x042A
MPARM_INTERFACECOMMUNICATION_ERROR	0x042B
MPARM_SYMBOLRATE_ERROR	0x042C
MPARM_NOTIMPLEMENTED_ERROR	0x042D
MPARM_SUMMARYFAULT_ERROR	0x0430
MPARM_DATAINVERT_ERROR	0x0431
MPARM_ESCSOURCE_ERROR	0x0432
MPARM_AUPCLOCALENABLE_ERROR	0x0435
MPARM_AUPCREMOTEENABL_ERROR	0x0436
MPARM_AUPCLOCALCLACTION_ERROR	0x0437
MPARM_AUPCREMOTECLACTION_ERROR	0x0438
MPARM_AUPCTRACKINGRATE_ERROR	0x0439
MPARM_AUPCREMOTEBBLOOPACK_ERROR	0x043A
MPARM_AUPCREMOTE2047_ERROR	0x043B
MPARM_AUPCEBNO_ERROR	0x043C
MPARM_AUPCMINPOWER_ERROR	0x043D
MPARM_AUPCMAXPOWER_ERROR	0x043E
MPARM_AUPCNOMINAPOWER_ERROR	0x043F
MPARM_ASYNCBAUDRATE_ERROR	0x0452
MPARM_ASYNCDATABITS_ERROR	0x0453
MPARM_ASYNCMODE_ERROR	0x0454
MPARM_TPCINTERLEAVER_ERROR	0x0455
DPARM_MODE_ERROR	0x0600
DPARM_FREQUENCY_ERROR	0x0601
DPARM_SWEEPDELAY_ERROR	0x0602
DPARM_DATARATE_ERROR	0x0603
DPARM_SWEEPBOUNDARY_ERROR	0x0604
DPARM_LEVELLIMIT_ERROR	0x0605
DPARM_STRAP_ERROR	0x0606
DPARM_FILTERMASK_ERROR	0x0607
DPARM_DEMODULATIONTYPE_ERROR	0x0608
DPARM_CONVDECODER_ERROR	0x0609
DPARM_REEDSOLOMON_ERROR	0x060A
DPARM_DIFFERENTIALDECODER_ERROR	0x060B
DPARM_DESCRAMBLERCONTROL_ERROR	0x060C
DPARM_DESCRAMBLERTYPE_ERROR	0x060D
DPARM_SPECTRUM_ERROR	0x060E
DPARM_BUFFERSIZE_ERROR	0x060F
DPARM_BUFFERCLOCK_ERROR	0x0610
DPARM_BUFFERCLOCKPOL_ERROR	0x0611
DPARM_INSERTMODE_ERROR	0x0612
DPARM_T1E1FRAMESOURCE_ERROR	0x0614
DPARM_FRAMING_ERROR	0x0615
DPARM_OPERATINGMODE_ERROR	0x0616
DPARM_MAPSUMMARY_ERROR	0x0617
DPARM_BEREXPONENT_ERROR	0x0619
DPARM_CIRCUITID_ERROR	0x061A
DPARM_TERRLOOPBACK_ERROR	0x061B
DPARM_BASELOOPBACK_ERROR	0x061C
DPARM_IFLOOPBACK_ERROR	0x061D
DPARM_INTERFACETYPE_ERROR	0x061E
DPARM_INTERFACENOTPRESENT_ERROR	0x061F

DPARM_INTERFACECOMMUNICATION_ERROR	0x0620
DPARM_SYMBOLRATE_ERROR	0x0621
DPARM_NOTIMPLEMENTED_ERROR	0x0622
DPARM_DATAINVERT_ERROR	0x0623
DPARM_SUMMARYFAULT_ERROR	0x0624
DPARM_EXTERNALEXCSOURCE_ERROR	0x0625
DPARM_ASYNCMODE_ERROR	0x062C
DPARM_ASYNCBAUDRATE_ERROR	0x062D
DPARM_ASYNCTYPE_ERROR	0x062E
DPARM_ASYNCDATABITS_ERROR	0x062F
DPARM_REACQ_SWEEP_ERROR	0x0631
DPARM_ESCCHANNEL1VOLUME_ERROR	0x0632
DPARM_ESCCHANNEL2VOLUME_ERROR	0x0633
DPARM_ESCOVERHEADTYPE_ERROR	0x0634
DPARM_TPCINTERLEAVER_ERROR	0x0635
DPARM_FASTACQENABLE_ERROR	0x0636
MDPARM_MAPNUMBER_ERROR	0x0A00
MDPARM_TIME_ERROR	0x0A01
MDPARM_DATE_ERROR	0x0A02

1.1.1.5 Collision Avoidance

When properly implemented, the physical and logical devices and ID addressing scheme of the COMMSPEC normally precludes message packet contention on the control bus. The importance of designating unique IDs for each device during station configuration cannot be overemphasized. One pitfall, which is often overlooked, concerns multi-drop override IDs. All too often, multiple devices of the same type are assigned in a direct-linked ("single-thread") configuration accessible to the M&C computer directly.

For example, if two DMD20 Modems with different addresses (DESTINATION IDs) are linked to the same control bus at the same hierarchical level, both will attempt to respond to the M&C computer when the computer generates a multi-drop override ID of 22. If their actual setup parameters, status, or internal timing differs, they will both attempt to respond to the override simultaneously with different information or asynchronously in their respective message packets and response packets, causing a collision on the serial control bus.

To preclude control bus data contention, different IDs must always be assigned to the equipment. If two or more devices are configured for direct-linked operation, then the M&C computer and all other devices configured in the same manner must be programmed to inhibit broadcast of the corresponding multi-drop override ID.

The multi-drop override ID is always accepted by devices of the same type on a common control bus, independent of the actual DESTINATION ID. These override IDs with the exception of “BROADCAST” are responded to by all directly linked devices of the same type causing contention on the bus. The “BROADCAST” ID, on the other hand, is accepted by all equipment but none of then returns a response packet to the remote M&C.

The following multi-drop override IDs are device-type specific, with the exception of "BROADCAST". These are summarized below with ID values expressed in decimal notation:

Directly-Addressed Equipment	Multi-Drop Override ID
Broadcast (all directly-linked devices)	00
DMD20/20LBST/50/2050/OM20 Modulator	20
DMD20/20LBST/50/2050/OM20 Demodulator	21
DMD20//20LBST/50/2050/OM20 Modem	22

Multi-drop override IDs 01 or 02 can be used interchangeably to broadcast a message to a DMD-3000/4000 Modem, DMD-4500/5000, or a DMD20 Modem. Radyne , Inc. recommends that the multi-drop override IDs be issued only during system configuration as a bus test tool by experienced programmers, and that they not be included in run-time software. It is also advantageous to consider the use of multiple bus systems where warranted by a moderate to large equipment complement.

1.1.1.6 Software Compatibility

The COMMSPEC, operating in conjunction within the RLLP shell, provides for full forward and backward software compatibility independent of the software version in use. New features are appended to the end of the DATA field without OPCODE changes. Older software simply discards the data as extraneous information without functional impairment for backward compatibility.

If new device-resident or M&C software receives a message related to an old software version, new information and processes are not damaged or affected by the omission of data.

The implementation of forward and backward software compatibility often, but not always, requires the addition of new Opcodes. Each new function requires a new Opcode assignment if forward and backward compatibility cannot be attained by other means.

When Radyne , Inc. equipment is queried for bulk information (Query Mod All (2400) & Query Demod All (2401)) it responds by sending back two blocks of data; a Non-Volatile Section (parameters that can be modified by the user) and a Volatile Section (status information). It also returns a count value that indicates the size of the Non-Volatile Section. This count is used by M&C developers to index into the start of the Volatile Section.

When new features are added to Radyne, Inc. equipment, the control parameters are appended to the end of the Non-Volatile Section, and status of the features, if any, are added at the end of the Volatile Section. If a remote M&C queries two pieces of Radyne, Inc. equipment with different revision software, they may respond with two different sized packets.

The remote M&C must make use of the non-volatile count value to index to the start of the Volatile Section. If the remote M&C is not aware of the newly added features to the Radyne, Inc. product, it should disregard the parameters at the end of the Non-Volatile Section and index to the start of the Volatile Section.

If packets are handled in this fashion, there will also be backward-compatibility between Radyne , Inc. equipment and M&C systems. Remote M&C systems need not be modified every time a feature is added unless the user needs access to that feature.

1.1.1.7 Flow Control and Task Processing

The original packet sender (the M&C computer) relies on accurate timeout information with regard to each piece of equipment under its control. This provides for efficient bus communication without unnecessary handshake overhead timing. One critical value is designated the Inter-Frame Space (FS). The Inter-Frame Space provides a period of time in which the packet receiver and medium (control bus and M&C computer interface) fully recover from the packet transmission/reception process and the receiver is ready to accept a new message. The programmed value of the Inter-Frame Space should be greater than the sum of the "turnaround time" and the round-trip (sender/receiver/bus) propagation time, including handshake overhead. The term "turnaround time" refers to the amount of time required for a receiver to be re-enabled and ready to receive a packet after having just received a packet. In flow control programming, the Inter-Frame Space may be determined empirically in accord with the system configuration, or calculated based on established maximum equipment task processing times.

Each piece of supported equipment on the control bus executes a Radyne Link Level Task (RLLT) in accordance with its internal hardware and fixed program structure. In a flow control example, the RLLT issues an internal "message in" system call to invoke an I/0 wait condition that persists until the task receives a command from the M & C computer. The RLLT has the option of setting a timeout on the incoming message. Thus, if the equipment does not receive an information/command packet within a given time period, the associated RLLT exits the I/0 wait state and takes appropriate action.

Radyne equipment is logically linked to the control bus via an Internal I/O Processing Task (IOPT) to handle frame sequencing, error checking, and handshaking. The IOPT is essentially a link between the equipment RLLT and the control bus. Each time the M&C computer sends a message packet, the IOPT receives the message and performs error checking. If errors are absent, the IOPT passes the message to the equipment's RLLT. If the IOPT detects errors, it appends error messages to the packet. Whenever an error occurs, the IOPT notes it and discards the message; but it keeps track of the incoming packet. Once the packet is complete, the IOPT conveys the appropriate message to the RLLT and invokes an I/0 wait state (wait for next <SYNC> character).

If the RLLT receives the packetized message from the sender before it times out, it checks for any error messages appended by the IOPT. In the absence of errors, the RLLT processes the received command sent via the transmitted packet and issues a "message out" system call to ultimately acknowledge the received packet. This call generates the response packet conveyed to the sender. If the IOPT sensed errors in the received packet and an RLLT timeout has not occurred, the RLLT causes the equipment to issue the appropriate error message(s) in the pending equipment response frame.

To maintain frame synchronization, the IOPT keeps track of error-laden packets and packets intended for other equipment for the duration of each received packet. Once the packet is complete, the IOPT invokes an I/0 wait state and searches for the next <SYNC> character.

1.1.1.8 RLLP Summary

The RLLP is a simple send-and-wait protocol that automatically re-transmits a packet whenever an error is detected, or when an acknowledgment (response) packet is absent.

During transmission, the protocol wrapper surrounds the actual data to form information packets. Each transmitted packet is subject to time out and frame sequence control parameters, after which the packet sender waits for the receiver to convey its response. Once a receiver verifies that a packet sent to it is in the correct sequence relative to the previously received packet, it computes a local checksum on all information within the packet excluding the <SYNC> character and the <CHECKSUM> fields. If this checksum matches the packet <CHECKSUM>, the receiver

processes the packet and responds to the packet sender with a valid response (acknowledgment) packet. If the checksum values do not match, the receiver replies with a negative acknowledgment (NAK) in its response frame.

The response packet is therefore an acknowledgment either that the message was received correctly, or some form of a packetized NAK frame. If the sender receives a valid acknowledgment (response) packet from the receiver, the <FSN> increments and the next packet is transmitted as required by the sender. However, if a NAK response packet is returned the sender re-transmits the original information packet with the same embedded <FSN>.

If an acknowledgment (response) packet or a NAK packet is lost, corrupted, or not issued due to an error and is thereby not returned to the sender, the sender re-transmits the original information packet; but with the same <FSN>. When the intended receiver detects a duplicate packet, the packet is acknowledged with a response packet and internally discarded to preclude undesired repetitive executions. If the M&C computer sends a command packet and the corresponding response packet is lost due to a system or internal error, the computer times out and re-transmits the same command packet with the same <FSN> to the same receiver and waits once again for an acknowledgment or a NAK packet.

To reiterate, the format of the Link Level Protocol Message Block is shown below.

SYNC	COUNT	SRC ADDR	DEST ADDR	FSN	OP CODE	DATA BYTES	CHECKSUM

1.1.2 Remote Port Packet Structure:

The Modem protocol is an enhancement on the DMD20 protocol. It also uses a packet structure format. The structure is as follows:

<SYNC>: Message format header character that defines the beginning of a message. The <SYNC> character value is always 0x16 (1 byte).

<BYTE COUNT>: The number of bytes in the <DATA> field (2 bytes).

<SOURCE ID>: Identifies the address of the equipment from where the message originated (1 byte).

<DEST. ID>: Identifies the address of the equipment where the message is to be sent (1 byte).

<FSN>: Frame sequence number ensures correct packet acknowledgment and data transfers (1 byte).

<OPCODE>: This byte identifies the message type associated with the information data. The equipment processes the data according to the value in this field. Return error codes and acknowledgment are also included in this field (2 bytes).

<...DATA...>: Information data. The number of data bytes in this field is indicated by the <BYTE COUNT> value.

<CHECKSUM>: The modulo 256 sum of all preceding message bytes excluding the <SYNC> character (1 byte).

1.1.3 DMD20 Opcode Command Set

The DMD20/DMD20 LBST/DMD50/DMD2050/OM20 Opcode Command Set is listed below:

When new features are added to Radyne Inc. equipment, the control parameters are appended to the end of the Non-Volatile Section of the Remote Communications Specification, and status of the features, if any, are added at the end of the Volatile Section. If a remote M & C queries two pieces of Radyne Inc. equipment with different revision software, they could respond with two different sized packets. The remote M & C MUST make use of the non-volatile count value to index to the start of the Volatile Section. If the remote M & C is not aware of the newly added features to the product, it should disregard the parameters at the end of the Non-Volatile Section and index to the start of the Volatile Section.

Before creating any software based on the information contained in this document, contact the Radyne, Inc. Customer Service Department (602-437-9620) to find out if the software revision for that piece of equipment is current and that no new features have been added since the release of this document.

1.1.4 Modem Command Set

Command	Opcode
Query Modulator Configuration and Status	2400h
Query Demodulator Configuration and Status	2401h
Query Modem Drop & Insert Map	2402h
Query Modems Identification	2403h
Query Modem Control Mode	2404h
Query Modulator Latched Alarms	2405h
Query Demodulator Latched Alarms	2406h
Query Modem Latched Alarms	2407h
Query Modulator Current Alarms	2408h
Query Demodulator Current Alarms	2409h
Query Modem Current Alarms	240Ah
Query Modulator Status	240Bh
Query Demodulator Status	240Ch
Query Modem Eb/No, BER and Level	240Dh
Query Time	240Eh

Query Date	240Fh
Query Time and Date	2410h
Query Modem Summary Faults	2411h
Query Modem Event Buffer	2412h
Query Modulator Configuration	2448h
Query Demodulator Configuration	2449h
Query Modem Features	2450h
Query Modulator Async Configuration	2451h
Query Demodulator Async Configuration	2452h
Query Upconverter Configuration	2490h
Query Uplink RF	2491h
Query Downconverter Configuration	2492h
Query Downlink RF	2493h

Command	Opcode
Command Upconverter Configuration	2500h
Command Uplink RF	2501h
Command Downconverter Configuration	2502h
Command Downlink RF	2503h
Command Modem Control Mode	2600h
Command Modulator Configuration	2601h
Command Modulator Frequency	2602h
Command Modulator Strap Code	2603h
Command Modulator Data Rate	2604h
Command Modulator Filter Mask	2605h
Command Modulator Modulation Type	2606h
Command Modulator Convolutional Encoder	2607h
Command Modulator Differential Encoder	2608h
Command Modulator Carrier Control	2609h
Command Modulator Carrier Selection	260Ah
Command Modulator Clock Control	260Bh
Command Modulator Clock Polarity	260Ch
Command Modulator SCT Source	260Dh
Command Modulator Drop Mode	260Eh
Command Modulator Output Level	260Fh
Command Modulator Reed Solomon	2610h

Command Modulator Spectrum	2611h
Command Modulator Test Pattern	2612h
Command Modulator Scrambler Control	2613h
Command Modulator Scrambler Type	2614h
Command Modulator Framing	2615h
Command Modulator External Reference Source	2616h
Command Modulator Terrestrial Loopback	2617h
Command Modulator Baseband Loopback	2618h
Command Modulator Network Spec	2619h
Command Modulator External EXC Clock	261Ah
Command Modulator External Reference Frequency	261Bh
Command Modulator T1 D4 Yellow Alarm Selection	261Dh
Command Modulator Interface Type	261Eh
Command Modulator Circuit ID	261Fh
Command Force Modulator Alarm Test	2622h
Command Modulator Data Invert	2623h
Clear Modulator Latched Alarm 1	2625h
Command AUPC Local Enable	2629h
Command AUPC Remote Enable	262Ah
Command AUPC Local CL Action	262Bh
Command AUPC Remote CL Action	262Ch
Command AUPC Tracking Rate	262Dh
Command AUPC Remote BB Loopback	262Eh
Command AUPC Remote Test 2047	262Fh
Command AUPC Eb/No	2630h
Command AUPC Minimum Power	2631h
Command AUPC Maximum Power	2632h
Command AUPC Nominal Power	2633h
Command AUPC Local Configuration	2634h
Command AUPC Remote Configuration	2635h
Command Modulator Reed Solomon N & K Codes and Interleaver Depth	2636h
Command Modulator TPC Interleaver	2638h
Command Modulator Async Configuration	2640h
Command Demodulator Configuration	2A00h
Command Demodulator Frequency	2A01h

Command Demodulator Data Rate	2A02h
Command Demodulator Strap Code	2A03h
Command Demodulator Sweep Boundary	2A04h
Command Demodulator Sweep Delay	2A05h
Command Demodulator Demodulation Type	2A07h
Command Demodulator Convolutional Decoder	2A08h
Command Demodulator Differential Decoder	2A09h
Command Demodulator Reed Solomon	2A0Ah
Command Demodulator Network Spec	2A0Bh
Command Demodulator Filter Mask	2A0Ch
Command Demodulator Descrambler Control	2A0Dh
Command Demodulator Descrambler Type	2A0Eh
Command Demodulator Spectrum	2A0Fh
Command Demodulator Buffer Size	2A10h
Command Demodulator Buffer Clock	2A11h
Command Demodulator Buffer Clock Polarity	2A12h
Command Demodulator Insert Mode	2A13h
Command Demodulator T1 E1 Frame Source	2A15h
Command Demodulator Framing	2A16h
Command Demodulator Test Pattern	2A17h
Command Map Summary to Backward Alarm	2A18h
Command Demodulator BER Exponent	2A1Ah
Command Demodulator Circuit ID	2A1Bh
Command Demodulator Terrestrial Loopback	2A1Ch
Command Demodulator Baseband Loopback	2A1Dh
Command Demodulator IF Loopback	2A1Eh
Command Demodulator Interface Type	2A1Fh
Command Center Buffer	2A20h
Command Demodulator Data Invert	2A21h
Command Force Demodulator Alarm Test	2A22h
Command External EXC Source	2A23h
Clear Demodulator Latched Alarm 1	2A24h
Clear Demodulator Latched Alarm 2	2A25h
Clear Demodulator Latched Alarm 3	2A26h
Command Demodulator Reacquisition Boundary	2A2Fh

Command Demodulator Reed Solomon N & K Codes and Interleaver Depth	2A32h
Command Demodulator TPC Interleaver	2A34h
Command Demodulator Async Configuration	2A35h
Command Demodulator Fast Acquisition	2A36h
Command Drop and Insert Map Copy	2C00h
Command Drop and Insert Map	2C01h
Command Clear Latched Alarms	2C03h
Command Set Time	2C04h
Command Set Date	2C05h
Command Set Time and Date	2C06h
Clear Modem Common Latched Alarm 1	2C08h
Clear Modem Common Latched Alarm 2	2C09h
Command Delete Modem Event Buffer	2C0Ah

1.1.5 Detailed Command Descriptions

1.1.5.1 Modulator

Opcode: <2400h> Query a Modulator's Configuration and Status

Query Response		
<1>	Number of nonvol bytes	Number of Configuration Bytes
Configuration Bytes (Nonvol Bytes)		
<1>	Network Spec	0 = Closed Net, 1 = IDR, 2 = IBS, 3 = D & I, 5 = DVB SAT, 11 = MIL-188-165A
<4>	Frequency	Selects the IF Frequency in Hz, IF Range = 50 MHz to 180 MHz, L-Band Range = 950 MHz to 2050 MHz
<2>	Strap Code	Binary value
<1>	Filter Mask	0 = INTELSAT 0.35, 18 = MIL-188-165A, 20 = DVB 0.20, 25 = DVB 0.25, 35 = DVB 0.35
<4>	Data Rate	Binary value, 1 bps steps, 2.4 Kbps to 20 Mbps for DMD20
<4>	External Clock	Binary value, 1 Hz steps. 2.4 kHz to 20 MHz
<4>	External Reference	Binary value, 8 kHz steps. 256 kHz to 10 MHz
<1>	Freq. Reference Source	0 = Internal, 1 = External, 2 = High stability
<1>	Modulation Type	0 = QPSK, 1 = BPSK, 2 = 8PSK, 3 = 16QAM, 4 = OQPSK

<1>	Convolutional Encoder	0 = None, 1 = Viterbi ½, 2 = Viterbi 2/3 (DVB Only), 3 = Viterbi ¾, 4 = Viterbi 5/6 (DVB Only), 5 = Viterbi 7/8, 6 = (Reserved), 7 = Sequential ½, 8 = Reserved, 9 = Sequential ¾, 10 = Reserved, 11 = Sequential 7/8, 12 = Reserved, 13 = Reserved, 14 = Trellis 2/3, 15 = Trellis ¾ (DVB - 16QAM Only), 16 = Trellis 5/6 (DVB - 8PSK Only), 17 = Trellis 7/8 (DVB - 16QAM Only), 18 = Trellis 8/9 (DVB - 8PSK Only), 19 = 3/4 SEQ, 20 = TPC .793 2D, 21 = TPC .495 3D, 22 = Reserved, 23 = TPC ½, 24 = TPC ¾, 25 = TPC 7/8, 26 = TPC 21/44, 27 = TPC.750, 28 = TPC.875
<1>	Reed Solomon	0 = Disable, 1 = Enable
<1>	Scrambler Control	0 = Disable, 1 = Enable
<1>	Scrambler Type	0 = None, 1 = IBS, 2 = V35_IESS, 3 = V35_CCITT, 4 = V35_EFDATA, 5 = V35_FAIRCHILD, 6 = OM-73, 7 = RS, 8 = V35_EFRS, 9 = TPC, 10 = DVB, 11 = EDMAC, 12 = TPC and IBS, 13 = TPC and EDMAC, 14 = V35
<2>	Transmit Power Level	Signed value, 0 to -250 (0.0 to -25.0 dBm) (two's compliment)
<1>	Differential Encoder	0 = Disable, 1 = Enable
<1>	Carrier Control	0 = Off, 1 = On, 2 = Auto, 3 = VSAT, 4 = RTS (Refer To Appendix E)
<1>	Carrier Selection	0 = Normal, 1 = CW, 2 = Dual, 3 = Offset, 4 = Pos Fir, 5 = Neg Fir
<1>	Spectrum	0 = Normal, 1 = Inverted
<1>	Tx Test Pattern	0 = None, 1 = 2047 test, 2 = 2^15-1, 3 = 2^23-1
<1>	Clock Control	0 = SCTE, 1 = SCT
<1>	Clock Polarity	0 = Normal, 1 = Inverted, 2 = Auto
<1>	SCT Source	0 = Internal, 1 = SCR
<1>	Satellite Framing	0 = No Framing, 1 = 96K IDR 2 = 1/15 IBS, 3 = EF AUPC 1/15, 4 = DVB, 5 = EDMAC, 6 = SCC, 7 = 96K, 8 = Efficient D & I
<1>	Drop Mode	0 = Disabled, 1 = T1-D4, 2 = T1-ESF, 3 = PCM-30, 4 = PCM-30C, 5 = PCM-31, 6 = PCM-31C, 7 = SLC-96, 8 = T1 D4 S, 9 = T1 ESF S
<30>	Drop Map	Timeslots to drop organized by satellite channel (Mapping of Satellite Channels 1 thru 30 to dropped Terrestrial Timeslots (Terrestrial Timeslots = 1..31))
<1>	T1D4 Yellow Alarm Sel.	0 = Bit 2 equal 0 for all channels, 1 = Frame 12 s-bits equal 1

<1>	Forced Backward Alarms	Bit 0 = Backward Alarm 1 IDR Bit 1 = Backward Alarm 2 IDR Bit 2 = Backward Alarm 3 IDR Bit 3 = Backward Alarm 4 IDR Bits 4 & 5 = Reserved Bit 6 = IBS Prompt Bit 7 = IBS Service 0 = None, 1 = Force
<1>	Alarm 1 Mask	Bit 0 = Transmit FPGA/Processor Fault Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock Bit 3 = Reserved Bit 4 = IF/L-Band Synthesizer Lock Bits 5 - 7 = Reserved 0 = Mask, 1 = Allow
<1>	Alarm 2 Mask	Bit 0 = Terrestrial Clock Activity Detect Bit 1 = Internal Clock Activity Detect Bit 2 = Tx Sat Clock Activity Detect Bit 3 = Tx Data Activity Detect Bit 4 = Terrestrial AIS. Tx Data AIS Detect Bit 5 = Tx Clock Fallback Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	Common Alarm 1 Mask	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	Common Alarm 2 Mask	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Mask, 1 = Allow
<11>	Tx Circuit ID	11 ASCII characters, Null Terminated
<1>	Tx ESC Ch 1 Volume	-20 to +10 (+10 dBm to –20 dBm) (two's compliment)
<1>	Tx ESC Ch 2 Volume	-20 to +10 (+10 dBm to –20 dBm) (two's compliment)
<1>	Tx Interface Type	0 = G703-B-T1-AMI, 1 = G703-B-T1_B8ZS, 2 = G703-B-E1, 3 = G703-B-T2, 4 = G703-U-E1, 5 = G703-U-T2, 6 = G703-U-E2, 7 = RS-422, 8 = V.35, 9 = RS-232, 10 = HSSI, 11 = ASI, 12 = Advanced ASI, 13 = M2P, 14 = DVB, 24 = Ethernet Bridge, 25 = MIL-188-114A, 26 = RS423
<1>	Tx Terrestrial Loopback	0 = Disabled, 1 = Enabled
<1>	Tx Baseband Loopback	0 = Disabled, 1 = Enabled

<1>	Drop Status Mask	Bit 0 = Frame lock fault Bit 1 = Multiframe lock Fault. Valid in E1 PCM-30 and PCM-30C Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled Bits 3 – 7 = Reserved 0 = Mask, 1 = Allow
<1>	Tx RS N Code	2 – 255, Reed-Solomon code word length
<1>	Tx RS K Code	1 – 254, Reed-Solomon message length
<1>	Tx RS Depth	4, 8, or 12
<1>	Data Invert	0 = None, 1 = Terrestrial, 2 = Baseband, 3 = Terrestrial and Baseband
<1>	BPSK Symbol Pairing	0 = Normal Pairing, 1 = Swapped Pairing
<1>	IDR Overhead Type	0 = 32K Voice, 1 = 64K Data
<1>	Terminal Emulation	0 = Adds Viewpoint, 1 = VT100, 2 = WYSE50
<1>	Terminal Baud Rate	0 = 300, 1 = 600, 2 = 1200, 3 = 2400, 4 = 4800, 5 = 9600, 6 = 19200, 7 = 38400, 8 = 57600, 9 = 1152000, 10 = 150
<1>	FM Orderwire Mode	Reserved
<1>	FM Orderwire Test Tone	Reserved
<1>	AUPC Local Enable	0 = Off, 1 = EF AUPC, 2 = Radyne AUPC
<1>	AUPC Remote Enable	0 = Off, 1 = EF AUPC
<1>	AUPC Local CL Action	0 = Hold, 1 = Nominal, 2 = Maximum
<1>	AUPC Remote CL Action	0 = Hold, 1 = Nominal, 2 = Maximum
<1>	AUPC Tracking Rate	0 = 0.5 dB/Min, 1 = 1.0 dB/Min, 2 = 1.5 dB/Min, 3 = 2.0 dB/Min, 4 = 2.5 dB/Min, 5 = 3.0 dB/Min, 6 = 3.5 dB/Min, 7 = 4.0 dB/Min, 8 = 4.5 dB/Min, 9 = 5.0 dB/Min, 10 = 5.5 dB/Min, 11 = 6.0 dB/min
<1>	AUPC Remote BB Loopback	0 = Disable, 1 = Enable
<1>	AUPC Remote 2047	0 = Disable, 1 = Enable
<2>	AUPC Target Eb/No	Target Eb/No at Receiver, 400 to 2000 (4.00 db to 20.00 db)
<2>	AUPC Minimum Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two’s compliment)

<2>	AUPC Maximum Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)
<2>	AUPC Nominal Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)
<1>	TMT Pattern Enable	Reserved
<1>	TMT Pattern Length	Reserved
<1>	Terrestrial Framing	0 = DVB 188, 1 = DVB 204, 2 = NONE
<1>	Alarm 4 Mask	Bit 0 = LBST BUC DC Current Alarm Bit 1 = LBST BUC DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Mask, 1 = Allow
<1>	TPC Interleaver	0 = Disable, 1 = Enable
<1>	Ethernet Flow Control	0 = Disabled, 1 = Enabled
<1>	Ethernet Daisy Chain	0 = Disabled, 1 = Port 4
<1>	ES Mode	0 = Normal, 1 = Enhanced
<1>	ES Type	0 = RS232, 1 = RS485
<1>	ES Baud Rate	0 =150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5= 4800, 6 = 9600, 7 = 19200
<1>	ES Data Bits	0 = 7 bits, 1 = 8 bits
<1>	Carrier Enable Delay	0 – 255 in seconds
<1>	SCC Control Ratio	1 = 1/1, 2 = 1/2, 3 = 1/3, 4 = 1/4, 5 = 1/5, 6 = 1/6, 7 = 1/7
<4>	SCC In band Rate	300 to 200000 bps
<2>	LBST BUC DC Voltage Alarm Lower Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST BUC DC Voltage Alarm Upper Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST BUC DC Current Alarm Lower Threshold	Amps, Implied decimal point, 1000 = 1.000A
<2>	LBST BUC DC Current Alarm Upper Threshold	Amps, Implied decimal point, 1000 = 1.000A

<2>	Compensation	TX Power Level offset from 0 to 10 (0.0 dBm to 1.0 dBm), Implied decimal point
<1>	Forced Alarm Test	Bit 0 = Tx Major Alarm Bits 1 – 7 = Spares 0 = Not Forced, 1 = Forced
<1>	Asynchronous In Band Rate	0 =150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600, 7 = 19200
	Status Bytes	
<1>	Control Mode	0 = Front Panel, 1 = Terminal, 2 = Computer Note: DMD20 will always return 2 = Computer
<1>	Revision Number	Decimal point implied
<1>	Alarm 1	Bit 0 = Transmit FPGA/Processor Fault, 1 = Fail Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock, 1 = Lock Bit 3 = Reserved Bit 4 = IF/L-Band Synthesizer Lock, 1 = Lock Bits 5 & 6 = Reserved Bit 7 = Mod Summary Fault, 1 = Fail
<1>	Alarm 2	Bit 0 = Terrestrial Clock Activity Detect, 1 = Activity Bit 1 = Internal Clock Activity Detect, 1 = Activity Bit 2 = Tx Sat Clock Activity Detect, 1 = Activity Bit 3 = Tx Data Activity Detect, 1 = Activity Bit 4 = Terrestrial AIS. Tx Data AIS Detect, 1 = AIS Fail Bit 5 = Tx Clock Fallback, 1 = Clock Fallback Bit 6 = DVB Frame Lock Fault, 1 = Fail Bit 7 = Spare
<1>	Common Alarm 1	Bit 0 = -12V Alarm, 1 = Fail Bit 1 = +12V Alarm, 1 = Fail Bit 2 = +5V Alarm, 1 = Fail Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm, 1 = Fail Bit 7 = Spare
<1>	Common Alarm 2	Bits 0 -2 = Reserved Bits 3 – 7 Spares
<1>	Latched Alarm 1	Bit 0 = Transmit FPGA/Processor Fault Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock Bit 3 = Reserved Bit 4 = Transmit L-Band Synthesizer Lock Bits 5 -7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 1	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 - 5 = Reserved Bit 6 = IF SYNTH Alarm

		Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 2	Bits 0 - 2 = Reserved Bits 3 – 7 Spares 0 = Not Latched, 1 = Latched
<1>	Drop Status	Bit 0 = Frame lock fault. 1 = Fail Bit 1 = Multiframe lock Fault. Valid in E1 PCM-30 and PCM-30C, 1 = Fail Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled, 1 = Fail Bits 3 - 7 = Reserved
<1>	Online Flag	Online Switch Status: 0 = Offline, 1 = Online (DMD20 is always online)
<1>	+5V Voltage	+5V. Implied decimal point; 49 = +4.9 V
<1>	+12V Voltage	+12V. Implied decimal point; 121 = +12.1 V
<1>	-12V Voltage	-12V. Implied decimal point; 118 = -11.8 V (two's compliment)
<2>	Reserved	Ignore
<1>	ESC Source	0 = Internal, 1 = External
<1>	Alarm 3	Bit 0 = Backward Alarm 1 Transmitted Bit 1 = Backward Alarm 2 Transmitted Bit 2 = Backward Alarm 3 Transmitted Bit 3 = Backward Alarm 4 Transmitted Bits 4 - 7 = Spares 0 = No, 1 = Yes
<2>	AUPC Remote Test 2047 Mantissa	Binary value with implied decimal point; 795 = 7.95
<1>	AUPC Remote Test 2047 BER Exponent	Binary value with implied sign; 6 = -6
<1>	Reserved	Ignore
<4>	Symbol Rate	Binary value, 1 sps steps
<1>	Latched Alarm 2	Bit 0 = Terrestrial Clock Activity Detect Bit 1 = Internal Clock Activity Detect Bit 2 = Tx Sat Clock Activity Detect Bit 3 = Tx Data Activity Detect Bit 4 = Terrestrial AIS. Tx Data AIS Detect Bit 5 = Tx Clock Fallback Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Alarm 4	Bit 0 = LBST BUC DC Current Alarm, 1 = Fail Bit 1 = LBST BUC DC Voltage Alarm, 1 = Fail

		Bit 2 = Ethernet WAN Alarm, 1 = Fail Bits 3 – 7 = Spares
<1>	Latched Alarm 4	Bit 0 = LBST BUC DC Current Alarm Bit 1 = LBST BUC DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Not Latched, 1 = Latched
<1>	Reserved	Ignore
<2>	LBST BUC DC Current	Amps, Implied decimal point, 1000 = 1.000A
<2>	LBST BUC DC Voltage	Volts, Implied decimal point, 10 = 1.0V

Opcode: <2448h> Query a Modulator's Configuration

Query Response		
<1>	Network Spec	0 = Closed Net, 1 = IDR, 2 = IBS, 3 = D & I, 5 = DVB SAT, 11 = MIL-188-165A
<4>	Frequency	Selects the IF Frequency in Hz, IF Range = 50 MHz to 180 MHz, L-Band Range = 950 MHz to 2050 MHz.
<2>	Strap Code	Binary value
<1>	Filter Mask	0 = INTELSAT 0.35, 18 = MIL-188-165A, 20 = DVB 0.20, 25 = DVB 0.25, 35 = DVB 0.35
<4>	Data Rate	Binary value, 1 bps steps, 2.4 Kbps to 20 Mbps for DMD20
<4>	External Clock	Binary value, 1 Hz steps, 2.4 kHz to 20 MHz
<4>	External Reference	Binary value, 8 kHz steps, 256 kHz to 10 MHz
<1>	Freq. Reference Source	0 = Internal, 1 = External, 2 = High stability
<1>	Modulation Type	0 = QPSK, 1 = BPSK, 2 = 8PSK, 3 = 16QAM, 4 = OQPSK
<1>	Convolutional Encoder	0 = None, 1 = Viterbi ½, 2 = Viterbi 2/3 (DVB Only), 3 = Viterbi ¾, 4 = Viterbi 5/6 (DVB Only), 5 = Viterbi 7/8, 6 = (Reserved), 7 = Sequential ½, 8 = Reserved, 9 = Sequential ¾, 10 = Reserved, 11 = Sequential 7/8, 12 = Reserved, 13 = Reserved, 14 = Trellis 2/3, 15 = Trellis ¾ (DVB - 16QAM Only), 16 = Trellis 5/6 (DVB - 8PSK Only), 17 = Trellis 7/8 (DVB - 16QAM Only), 18 = Trellis 8/9 (DVB - 8PSK Only), 19 = ComStream 3/4 SEQ, 20 = TPC .793 2D, 21 = TPC .495 3D, 22 = Reserved, 23 = TPC ½, 24 = TPC ¾, 25 = TPC 7/8, 26 = TPC 21/44, 27 = TPC .750.28 = TPC.875
<1>	Reed Solomon	0 = Disable, 1 = Enable
<1>	Scrambler Control	0 = Disable, 1 = Enable

<1>	Scrambler Type	0 = None, 1 = IBS, 2 = V35_IESS, 3 = V35_CCITT, 4 = V35_EFDATA, 5 = V35_FAIRCHILD, 6 = OM-73, 7 = RS, 8 = V35_EFRS, 9 = TPC, 10 = DVB, 11 = EDMAC, 12 = TPC and IBS, 13 = TPC and EDMAC, 14 = V35_ComStream
<2>	Transmit Power Level	Signed value, 0 to -250 (0.0 to -25.0 dBm) (two's compliment)
<1>	Differential Encoder	0 = Disable, 1 = Enable
<1>	Carrier Control	0 = Off, 1 = On, 2 = Auto, 3 = VSAT, 4 = RTS (Refer To Appendix E)
<1>	Carrier Selection	0 = Normal, 1 = CW, 2 = Dual, 3 = Offset, 4 = Pos Fir, 5 = Neg Fir
<1>	Spectrum	0 = Normal, 1 = Inverted
<1>	Tx Text Pattern	0 = None, 1 = 2047 test, 2 = 2^15-1, 3 = 2^23-1
<1>	Clock Control	0 = SCTE, 1 = SCT
<1>	Clock Polarity	0 = Normal, 1 = Inverted, 2 = Auto
<1>	SCT Source	0 = Internal, 1 = SCR
<1>	Satellite Framing	0 = No Framing, 1 = 96K IDR, 2 = 1/15 IBS, 3 = EF AUPC 1/15, 4 = DVB, 5 = EDMAC, 6 = SCC, 7 = 96K, 8 = Efficient D&I
<1>	Drop Mode	0 = Disabled, 1 = T1-D4, 2 = T1-ESF, 3 = PCM-30, 4 = PCM-30C, 5 = PCM-31, 6 = PCM-31C, 7 = SLC-96, 8 = T1 D4 S, 9 = T1 ESF S
<30>	Drop Map	Timeslots to drop organized by satellite channel (Mapping of Satellite Channels 1 thru 30 to dropped Terrestrial Timeslots (Terrestrial Timeslots = 1..31))
<1>	T1D4 Yellow Alarm Sel.	0 = Bit 2 equal 0 for all channels, 1 = Frame 12 s-bits equal 1
<1>	Forced Backward Alarms	Bit 0 = Backward Alarm 1 IDR Bit 1 = Backward Alarm 2 IDR Bit 2 = Backward Alarm 3 IDR Bit 3 = Backward Alarm 4 IDR Bits 4 & 5 = Reserved Bit 6 = IBS Prompt Bit 7 = IBS Service 0 = None, 1 = Force
<1>	Alarm 1 Mask	Bit 0 = Transmit FPGA/Processor Fault Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock Bit 3 = Reserved Bit 4 = IF/L-Band Synthesizer Lock

		Bits 5 - 7 = Reserved 0 = Mask, 1 = Allow
<1>	Alarm 2 Mask	Bit 0 = Terrestrial Clock Activity Detect Bit 1 = Internal Clock Activity Detect Bit 2 = Tx Sat Clock Activity Detect Bit 3 = Tx Data Activity Detect Bit 4 = Terrestrial AIS. Tx Data AIS Detect Bit 5 = Tx Clock Fallback Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	Common Alarm 1 Mask	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	Common Alarm 2 Mask	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Mask, 1 = Allow
<11>	Tx Circuit ID	11 ASCII characters, Null terminated
<1>	Tx ESC Ch 1 Volume	-20 to +10 (+10 dBm to –20 dBm) (two's compliment)
<1>	Tx ESC Ch 2 Volume	-20 to +10 (+10 dBm to –20 dBm) (two's compliment)
<1>	Tx Interface Type	0 = G703-B-T1-AMI, 1 = G703-B-T1_B8ZS, 2 = G703-B-E1, 3 = G703-B-T2, 4 = G703-U-E1, 5 = G703-U-T2, 6 = G703-U-E2, 7 = RS-422, 8 = V.35, 9 = RS-232, 10 = HSSI, 11 = ASI, 12 = Advanced ASI, 13 = M2P, 14 = DVB, 24 = Ethernet Bridge, 25 = MIL-188-114A, 26 = RS423
<1>	Tx Terrestrial Loopback	0 = Disabled, 1 = Enabled
<1>	Tx Baseband Loopback	0 = Disabled, 1 = Enabled
<1>	Drop Status Mask	Bit 0 = Frame lock fault Bit 1 = Multiframe lock Fault. Valid in E1 PCM-30 and PCM-30C Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled Bits 3 – 7 = Reserved 0 = Mask, 1 = Allow
<1>	Tx RS N Code	2 – 255, Reed-Solomon code word length
<1>	Tx RS K Code	1 – 254, Reed-Solomon message length
<1>	Tx RS Depth	4, 8, or 12

<1>	Data Invert	0 = None, 1 = Terrestrial, 2 = Baseband, 3 = Terrestrial and Baseband
<1>	BPSK Symbol Pairing	0 = Normal Pairing, 1 = Swapped Pairing
<1>	IDR Overhead Type	0 = 32K Voice, 1 = 64K Data
<1>	Terminal Emulation	0 = Adds Viewpoint, 1 = VT100, 2 = WYSE50
<1>	Terminal Baud Rate	0 = 300, 1 = 600, 2 = 1200, 3 = 2400, 4 = 4800, 5 = 9600, 6 = 19200, 7 = 38400, 8 = 57600, 9 = 1152000, 10 = 150
<1>	FM Orderwire Mode	Reserved
<1>	FM Orderwire Test Tone	Reserved
<1>	AUPC Local Enable	0 = Off, 1 = EF AUPC, 2 = Radyne AUPC
<1>	AUPC Remote Enable	0 = Off, 1 = EF AUPC
<1>	AUPC Local CL Action	0 = Hold, 1 = Nominal, 2 = Maximum
<1>	AUPC Remote CL Action	0 = Hold, 1 = Nominal, 2 = Maximum
<1>	AUPC Tracking Rate	0 = 0.5 dB/Min, 1 = 1.0 dB/Min, 2 = 1.5 dB/Min, 3 = 2.0 dB/Min, 4 = 2.5 dB/Min, 5 = 3.0 dB/Min, 6 = 3.5 dB/Min, 7 = 4.0 dB/Min, 8 = 4.5 dB/Min, 9 = 5.0 dB/Min, 10 = 5.5 dB/Min, 11 = 6.0 dB/min
<1>	AUPC Remote BB Loopback	0 = Disable, 1 = Enable
<1>	AUPC Remote 2047	0 = Disable, 1 = Enable
<2>	AUPC Target Eb/No	Target Eb/No at Receiver, 400 to 2000 (4.00 db to 20.00 db)
<2>	AUPC Minimum Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two’s compliment)
<2>	AUPC Maximum Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two’s compliment)
<2>	AUPC Nominal Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two’s compliment)
<1>	TMT Pattern Enable	Reserved
<1>	TMT Pattern Length	Reserved
<1>	Terrestrial Framing	0 = DVB 188, 1 = DVB 204, 2 = NONE
<1>	Alarm 4 Mask	Bit 0 = LBST BUC DC Current Alarm

		Bit 1 = LBST BUC DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Mask, 1 = Allow
<1>	TPC Interleaver	0 = Disable, 1 = Enable
<1>	Ethernet Flow Control	0 = Disabled, 1 = Enabled
<1>	Ethernet Daisy Chain	0 = Disabled, 1 = Port 4
<1>	ES Mode	0 = Normal, 1 = Enhanced
<1>	ES Type	0 = RS232, 1 = RS485
<1>	ES Baud Rate	0 =150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5= 4800, 6 = 9600, 7 = 19200
<1>	ES Data Bits	0 = 7 bits, 1 = 8 bits
<1>	Carrier Enable Delay	0 – 255 in seconds
<1>	SCC Control Ratio	1 = 1/1, 2 = 1/2, 3 = 1/3, 4 = 1/4, 5 = 1/5, 6 = 1/6, 7 = 1/7
<4>	SCC In band Rate	300 to 200000 bps
<2>	LBST BUC DC Voltage Alarm Lower Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST BUC DC Voltage Alarm Upper Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST BUC DC Current Alarm Lower Threshold	Amps, Implied decimal point, 1000 = 1.000A
<2>	LBST BUC DC Current Alarm Upper Threshold	Amps, Implied decimal point, 1000 = 1.000A
<2>	Compensation	TX Power Level offset from 0 to 10 (0.0 dBm to 1.0 dBm), Implied decimal point
<1>	Forced Alarm Test	Bit 0 = Tx Major Alarm Bits 1 – 7 = Spares 0 = Not Forced, 1 = Forced
<1>	Asynchronous In Band Rate	0 = 150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600, 7 = 19200

Opcode: <240Bh> Query a Modulator's Status

Query Response		
<1>	Control Mode	0 = Front Panel, 1 = Terminal, 2 = Computer

		Note: DMD20 will always return 2 = Computer
<1>	Revision Number	Decimal point implied
<1>	Alarm 1	Bit 0 = Transmit FPGA/Processor Fault, 1 = Fail Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock, 1 = Lock Bit 3 = Reserved Bit 4 = IF/L-Band Synthesizer Lock, 1 = Lock Bits 5 & 6 = Reserved Bit 7 = Mod Summary Fault, 1 = Fail
<1>	Alarm 2	Bit 0 = Terrestrial Clock Activity Detect, 1 = Activity Bit 1 = Internal Clock Activity Detect, 1 = Activity Bit 2 = Tx Sat Clock Activity Detect, 1 = Activity Bit 3 = Tx Data Activity Detect, 1 = Activity Bit 4 = Terrestrial AIS. Tx Data AIS Detect, 1 = AIS Fail Bit 5 = Tx Clock Fallback, 1 = Clock Fallback Bit 6 = DVB Frame Lock Fault, 1 = Fail Bit 7 = Spare
<1>	Common Alarm 1	Bit 0 = -12V Alarm, 1 = Fail Bit 1 = +12V Alarm, 1 = Fail Bit 2 = +5V Alarm, 1 = Fail Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm , 1 = Fail Bit 7 = Spare
<1>	Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares
<1>	Latched Alarm 1	Bit 0 = Transmit FPGA/Processor Fault Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock Bit 3 = Reserved Bit 4 = Transmit L-Band Synthesizer Lock Bits 5 -7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 1	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Not Latched, 1 = Latched
<1>	Drop Status	Bit 0 = Frame lock fault. 1 = Fail Bit 1 = Multiframe lock Fault. Valid in E1 PCM-30 and PCM-30C, 1 = Fail Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled, 1 = Fail

		Bits 3 - 7 = Reserved
<1>	Online Flag	Online Switch Status: 0 = Offline, 1 = Online (DMD20 is always online)
<1>	+5V Voltage	+5V, Implied decimal point; 49 = +4.9 V
<1>	+12V Voltage	+12V, Implied decimal point; 121 = +12.1 V
<1>	-12V Voltage	-12V, Implied decimal point; 118 = -11.8 V (two's compliment)
<2>	Reserved	Ignore
<1>	ESC Source	0 = Internal, 1 = External
<1>	Alarm 3	Bit 0 = Backward Alarm 1 Transmitted Bit 1 = Backward Alarm 2 Transmitted Bit 2 = Backward Alarm 3 Transmitted Bit 3 = Backward Alarm 4 Transmitted Bits 4 - 7 = Spare 0 = No, 1 = Yes
<2>	AUPC Remote Test 2047 Mantissa	Binary value with implied decimal point; 795 = 7.95
<1>	AUPC Remote Test 2047 BER Exponent	Binary value with implied sign; 6 = -6
<1>	Reserved	Ignore
<4>	Symbol Rate	Binary value, 1 sps steps
<1>	Latched Alarm 2	Bit 0 = Terrestrial Clock Activity Detect Bit 1 = Internal Clock Activity Detect Bit 2 = Tx Sat Clock Activity Detect Bit 3 = Tx Data Activity Detect Bit 4 = Terrestrial AIS. Tx Data AIS Detect Bit 5 = Tx Clock Fallback Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Alarm 4	Bit 0 = LBST BUC DC Current Alarm, 1 = Fail Bit 1 = LBST BUC DC Voltage Alarm, 1 = Fail Bit 2 = Ethernet WAN Alarm, 1 = Fail Bits 3 – 7 = Spares
<1>	Latched Alarm 4	Bit 0 = LBST BUC DC Current Alarm Bit 1 = LBST BUC DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Not Latched, 1 = Latched
<1>	Reserved	Ignore
<2>	LBST BUC DC	Amps, Implied decimal point, 1000 = 1.000A

	Current	
<2>	LBST BUC DC Voltage	Volts, Implied decimal point, 10 = 1.0V

Opcode: <2405h> Query a Modulator's Latched Alarms

Query Response		
<1>	Latched Alarm 1	Bit 0 = Transmit FPGA/Processor Fault Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock Bit 3 = Reserved Bit 4 = Transmit L-Band Synthesizer Lock Bits 5 -7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 1	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 2	Bit 0 = Terrestrial Clock Activity Detect Bit 1 = Internal Clock Activity Detect Bit 2 = Tx Sat Clock Activity Detect Bit 3 = Tx Data Activity Detect Bit 4 = Terrestrial AIS. Tx Data AIS Detect Bit 5 = Tx Clock Fallback Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 4	Bit 0 = LBST BUC DC Current Alarm Bit 1 = LBST BUC DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Not Latched, 1 = Latched

Opcode: <2408h> Query a Modulator's Current Alarms

Query Response		
<1>	Alarm 1	Bit 0 = Transmit FPGA/Processor Fault, 1 = Fail Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock, 1 = Lock Bit 3 = Reserved Bit 4 = IF/L-Band Synthesizer Lock, 1 = Lock Bits 5 & 6 = Reserved Bit 7 = Mod Summary Fault, 1 = Fail
<1>	Alarm 2	Bit 0 = Terrestrial Clock Activity Detect, 1 = Activity

		Bit 1 = Internal Clock Activity Detect, 1 = Activity Bit 2 = Tx Sat Clock Activity Detect, 1 = Activity Bit 3 = Tx Data Activity Detect, 1 = Activity Bit 4 = Terrestrial AIS. Tx Data AIS Detect, 1 = AIS Fail Bit 5 = Tx Clock Fallback, 1 = Clock Fallback Bit 6 = DVB Frame Lock Fault, 1 = Fail Bit 7 = Spare
<1>	Drop Status	Bit 0 = Frame lock fault. 1 = Fail Bit 1 = Multiframe lock Fault. Valid in E1 PCM-30 and PCM-30C. 1 = Fail Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled. 1 = Fail Bits 3 – 7 = Reserved
<1>	Common Alarm 1	Bit 0 = -12V Alarm, 1 = Fail Bit 1 = +12V Alarm, 1 = Fail Bit 2 = +5V Alarm, 1 = Fail Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm, 1 = Fail Bit 7 = Spare
<1>	Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares
<1>	Alarm 3	Bit 0 = Backward Alarm 1 Transmitted Bit 1 = Backward Alarm 2 Transmitted Bit 2 = Backward Alarm 3 Transmitted Bit 3 = Backward Alarm 4 Transmitted Bits 4 - 7 = Spare 0 = No, 1 = Yes
<1>	Alarm 4	Bit 0 = LBST BUC DC Current Alarm, 1 = Fail Bit 1 = LBST BUC DC Voltage Alarm, 1 = Fail Bit 2 = Ethernet WAN Alarm, 1 = Fail Bits 3 – 7 = Spares

Opcode: <2451h> Query a Modulator's Async Configuration

Query Response		
<1>	ES Mode	0 = Normal, 1 = Enhanced
<1>	ES Type	0 = RS232, 1 = RS485
<1>	ES Baud Rate	0 =150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5= 4800, 6 = 9600, 7 = 19200
<1>	ES Data Bits	0 = 7 bits, 1 = 8 bits

Opcode: <2600h> Command a Modem's Control Mode (Deprecated, listed for backward compatibility only)

<1>	Modem control mode	0 = Front panel, 1 = Terminal, 2 = Computer

Opcode: <2601h> Command a Modulator's Configuration

<1>	Network Spec	0 = Closed Net, 1 = IDR, 2 = IBS, 3 = D & I, 5 = DVB SAT, 11

		= MIL-188-165A
<4>	Frequency	Selects the IF Frequency in Hz, IF Range = 50 MHz to 180 MHz, L-Band Range 950 Mhz to 2050 MHz
<2>	Strap Code	Binary value
<1>	Filter Mask	0 = INTELSAT 0.35, 18 = MIL-188-165A, 20 = DVB 0.20, 25 = DVB 0.25, 35 = DVB 0.35
<4>	Data Rate	Binary value, 1 bps steps, 2.4 Kbps to 20 Mbps for DMD20
<4>	External Clock	Binary value, 1 Hz steps, 2.4 kHz to 20 MHz
<4>	External Reference	Binary value, 8 kHz steps, 256 kHz to 10 MHz
<1>	Freq. Reference Source	0 = Internal, 1 = External, 2 = High stability
<1>	Modulation Type	0 = QPSK, 1 = BPSK, 2 = 8PSK, 3 = 16QAM, 4 = OQPSK
<1>	Convolutional Encoder	0 = None, 1 = Viterbi 1/2, 2 = Viterbi 2/3 (DVB Only), 3 = Viterbi 3/4, 4 = Viterbi 5/6 (DVB Only), 5 = Viterbi 7/8, 6 = Reserved, 7 = Sequential 1/2, 8 = Reserved, 9 = Sequential 3/4, 10 = Reserved, 11 = Sequential 7/8, 12 = Reserved, 13 = Reserved, 14 = Trellis 2/3, 15 = Trellis 3/4 (DVB - 16QAM Only), 16 = Trellis 5/6 (DVB - 8PSK Only), 17 = Trellis 7/8 (DVB - 16QAM Only), 18 = Trellis 8/9 (DVB - 8PSK Only), 19 = ComStream 3/4 SEQ, 20 = TPC .793 2D, 21 = TPC .495 3D, 22 = Reserved, 23 = TPC 1/2, 24 = TPC 3/4, 25 = TPC 7/8, 26 = TPC 21/44, 27 = TPC.750, 28 = TPC.875
<1>	Reed Solomon	0 = Disable, 1 = Enable
<1>	Scrambler Control	0 = Disable, 1 = Enable
<1>	Scrambler Type	0 = None, 1 = IBS, 2 = V35_IESS, 3 = V35_CCITT, 4 = V35_EFDATA, 5 = V35_FAIRCHILD, 6 = OM-73, 7 = RS, 8 = V35_EFRS, 9 = TPC, 10 = DVB, 11 = EDMAC, 12 = TPC and IBS, 13 = TPC and EDMAC, 14 = V35_ComStream
<2>	Transmit Power Level	Signed value, 0 to -250 (0.0 to -25.0 dBm) (two’s compliment)
<1>	Differential Encoder	0 = Disable, 1 = Enable
<1>	Carrier Control	0 = Off, 1 = On, 2 = Auto, 3 = VSAT, 4 = RTS (Refer To Appendix E)
<1>	Carrier Selection	0 = Normal, 1 = CW, 2 = Dual, 3 = Offset, 4 = Pos Fir, 5 = Neg Fir
<1>	Spectrum	0 = Normal, 1 = Inverted
<1>	Tx Test Pattern	0 = None, 1 = 2047 test, 2 = 2^15-1, 3 = 2^23-1

<1>	Clock Control	0 = SCTE, 1 = SCT
<1>	Clock Polarity	0 = Normal, 1 = Inverted, 2 = Auto
<1>	SCT Source	0 = Internal, 1 = SCR
<1>	Satellite Framing	0 = No Framing, 1 = 96K IDR, 2 = 1/15 IBS, 3 = EF AUPC 1/15, 4 = DVB, 5 = EDMAC, 6 = SCC, 7 = 96K, 8 = Efficient D & I
<1>	Drop Mode	0 = Disabled, 1 = T1-D4, 2 = T1-ESF, 3 = PCM-30, 4 = PCM-30C, 5 = PCM-31, 6 = PCM-31C, 7 = SLC-96, 8 = T1 D4 S, 9 = T1 ESF S
<30>	Drop Map	Timeslots to drop organized by satellite channel (Mapping of Satellite Channels 1 thru 30 to dropped Terrestrial Timeslots (Terrestrial Timeslots = 1..31))
<1>	T1D4 Yellow Alarm Select	0 = Bit 2 equal 0 for all channels, 1 = Frame 12 s-bits equal 1
<1>	Forced Backward Alarms	Bit 0 = Backward Alarm 1 IDR Bit 1 = Backward Alarm 2 IDR Bit 2 = Backward Alarm 3 IDR Bit 3 = Backward Alarm 4 IDR Bits 4 & 5 = Reserved Bit 6 = IBS Prompt Bit 7 = IBS Service 0 = None, 1 = Force
<1>	Alarm 1 Mask	Bit 0 = Transmit FPGA/Processor Fault Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock Bit 3 = Reserved Bit 4 = IF/L-Band Synthesizer Lock Bits 5 - 7 = Reserved 0 = Mask, 1 = Allow
<1>	Alarm 2 Mask	Bit 0 = Terrestrial Clock Activity Detect Bit 1 = Internal Clock Activity Detect Bit 2 = Tx Sat Clock Activity Detect Bit 3 = Tx Data Activity Detect Bit 4 = Terrestrial AIS. Tx Data AIS Detect Bit 5 = Tx Clock Fallback Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	Common Alarm 1 Mask	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Mask, 1 = Allow

<1>	Common Alarm 2 Mask	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Mask, 1 = Allow
<11>	Tx Circuit ID	11 ASCII characters, Null Terminated
<1>	Tx ESC Ch 1 Volume	-20 to +10 (+10 dBm to –20 dBm) (two's compliment)
<1>	Tx ESC Ch 2 Volume	-20 to +10 (+10 dBm to –20 dBm) (two's compliment)
<1>	Tx Interface Type	0 = G703-B-T1-AMI, 1 = G703-B-T1_B8ZS, 2 = G703-B-E1, 3 = G703-B-T2, 4 = G703-U-E1, 5 = G703-U-T2, 6 = G703-U-E2, 7 = RS-422, 8 = V.35, 9 = RS-232, 10 = HSSI, 11 = ASI, 12 = Advanced ASI, 13 = M2P, 14 = DVB, 24 = Ethernet Bridge, 25 = MIL-188-114A, 26 = RS423
<1>	Tx Terrestrial Loopback	0 = Disabled, 1 = Enabled
<1>	Tx Baseband Loopback	0 = Disabled, 1 = Enabled
<1>	Drop Status Mask	Bit 0 = Frame lock fault Bit 1 = Multiframe lock Fault. Valid in E1 PCM-30 and PCM-30C Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled Bits 3 – 7 = Reserved 0 = Mask, 1 = Allow
<1>	Tx RS N Code	2 – 255, Reed-Solomon code word length
<1>	Tx RS K Code	1 – 254, Reed-Solomon message length
<1>	Tx RS Depth	4, 8, or 12
<1>	Data Invert	0 = None, 1 = Terrestrial, 2 = Baseband, 3 = Terrestrial and Baseband
<1>	BPSK Symbol Pairing	0 = Normal Pairing, 1 = Swapped Pairing
<1>	IDR Overhead Type	0 = 32K Voice, 1 = 64K Data
<1>	Terminal Emulation	0 = Adds Viewpoint, 1 = VT100, 2 = WYSE50
<1>	Terminal Baud Rate	0 = 300, 1 = 600, 2 = 1200, 3 = 2400, 4 = 4800, 5 = 9600, 6 = 19200, 7 = 38400, 8 = 57600, 9 = 1152000, 10 = 150
<1>	FM Orderwire Mode	Reserved
<1>	FM Orderwire Test Tone	Reserved
<1>	AUPC Local Enable	0 = Off, 1 = EF AUPC, 2 = Radyne AUPC
<1>	AUPC Remote	0 = Off, 1 = EF AUPC

	Enable	
<1>	AUPC Local CL Action	0 = Hold, 1 = Nominal, 2 = Maximum
<1>	AUPC Remote CL Action	0 = Hold, 1 = Nominal, 2 = Maximum
<1>	AUPC Tracking Rate	0 = 0.5 dB/Min, 1 = 1.0 dB/Min, 2 = 1.5 dB/Min, 3 = 2.0 dB/Min, 4 = 2.5 dB/Min, 5 = 3.0 dB/Min, 6 = 3.5 dB/Min, 7 = 4.0 dB/Min, 8 = 4.5 dB/Min, 9 = 5.0 dB/Min, 10 = 5.5 dB/Min, 11 = 6.0 dB/min
<1>	AUPC Remote BB Loopback	0 = Disable, 1 = Enable
<1>	AUPC Remote 2047	0 = Disable, 1 = Enable
<2>	AUPC Target Eb/No	Target Eb/No at Receiver, 400 to 2000 (4.00 db to 20.00 db)
<2>	AUPC Minimum Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)
<2>	AUPC Maximum Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)
<2>	AUPC Nominal Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)
<1>	TMT Pattern Enable	Reserved
<1>	TMT Pattern Length	Reserved
<1>	Terrestrial Framing	0 = DVB 188, 1 = DVB 204, 2 = NONE
<1>	Alarm 4 Mask	Bit 0 = LBST BUC DC Current Alarm Bit 1 = LBST BUC DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Mask, 1 = Allow
<1>	TPC Interleaver	0 = Disable, 1 = Enable
<1>	Ethernet Flow Control	0 = Disabled 1 = Enabled
<1>	Ethernet Daisy Chain	0 = Disabled 1 = Port 4
<1>	ES Mode	0 = Normal, 1 = Enhanced
<1>	ES Type	0 = RS232, 1 = RS485
<1>	ES Baud Rate	0 =150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5= 4800, 6 = 9600, 7 = 19200
<1>	ES Data Bits	0 = 7 bits, 1 = 8 bits

<1>	Carrier Enable Delay	0 – 255 in seconds
<1>	SCC Control Ratio	1 = 1/1, 2 = 1/2, 3 = 1/3, 4 = 1/4, 5 = 1/5, 6 = 1/6, 7 = 1/7
<4>	SCC In band Rate	300 to 200000 bps
<2>	LBST BUC DC Voltage Alarm Lower Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST BUC DC Voltage Alarm Upper Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST BUC DC Current Alarm Lower Threshold	Amps, Implied decimal point, 1000 = 1.000A
<2>	LBST BUC DC Current Alarm Upper Threshold	Amps, Implied decimal point, 1000 = 1.000A
<2>	Compensation	TX Power Level offset from 0 to 10 (0.0 dBm to 1.0 dBm), Implied decimal point
<1>	Forced Alarm Test	Bit 0 = Tx Major Alarm Bits 1 – 7 = Spares 0 = Not Forced, 1 = Forced
<17>	Asynchronous In Band Rate	0 = 150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600, 7 = 19200

Opcode: <2602h> Command a Modulator's Frequency

<4>	Frequency	Binary value, 1 Hz steps, Selects the IF Frequency in Hz, IF Range = 50 MHz to 180 MHz, L-Band Range = 950 MHz to 2050 MHz  ***This command also turns the carrier off to protect the satellite.***

Opcode: <2603h> Command a Modulator's Strap Code

<2>	Strap code	Binary value  ***This command also turns the carrier off to protect the satellite.***

Opcode: <2604h> Command a Modulator's Data Rate

<4>	Data rate	Binary value, 1 bps steps, 2.4 Kbps to 20 Mbps for DMD20  ***This command also turns the carrier off to protect the satellite.***

Opcode: <2605h> Command a Modulator's Filter Mask

<1>	Filter Mask	0 = INTELSAT 0.35, 18 = MIL-188-165A, 20 = DVB 0.20, 25 = DVB 0.25, 35 = DVB 0.35

Opcode: <2606h> Command a Modulator's Modulation Type

<1>	Modulation Type	0 = QPSK, 1 = BPSK, 2 = 8PSK, 3 = 16QAM, 4 = OQPSK  ***This command also turns the carrier off to protect the satellite.***

Opcode: <2607h> Command a Modulator's Convolutional Encoder

<1>	Convolutional Encoder	0 = None, 1 = Viterbi 1/2, 2 = Viterbi 2/3 (DVB Only), 3 = Viterbi 3/4, 4 = Viterbi 5/6 (DVB Only), 5 = Viterbi 7/8, 6 = Reserved, 7 = Sequential 1/2, 8 = Reserved, 9 = Sequential 3/4, 10 = Reserved, 11 = Sequential 7/8, 12 = Reserved, 13 = Reserved, 14 = Trellis 2/3, 15 = Trellis 3/4 (DVB - 16QAM Only), 16 = Trellis 5/6 (DVB - 8PSK Only), 17 = Trellis 7/8 (DVB - 16QAM Only), 18 = Trellis 8/9 (DVB - 8PSK Only), 19 = ComStream SEQ 3/4, 20 = TPC .793 2D, 21 = TPC .495 3D, 22 = Reserved, 23 = TPC 1/2, 24 = TPC 3/4, 25 = TPC 7/8, 26 = TPC 21/44, 27 = TPC.750, 28 = TPC.875  ***This command also turns the carrier off to protect the satellite.***

Opcode: <2608h> Command a Modulator's Differential Encoder

<1>	Differential Encoder	0 = Disable, 1 = Enable

Opcode: <2609h> Command a Modulator's Carrier Control

<1>	Carrier Control	0 = Off, 1 = On, 2 = Auto, 3 = VSAT, 4 = RTS (Refer To Appendix E)

Opcode: <260Ah> Command a Modulator's Carrier Selection

<1>	Carrier Selection	0 = Normal, 1 = CW, 2 = Dual, 3 = Offset, 4 = Pos Fir, 5 = Neg Fir

Opcode: <260Bh> Command a Modulator's Clock Control

<1>	Clock Control	0 = SCTE, 1 = SCT

Opcode: <260Ch> Command a Modulator's Clock Polarity

<1>	Clock Polarity	0 = Normal, 1 = Inverted, 2 = Auto

Opcode: <260Dh> Command a Modulator's SCT Source

<1>	SCT source	0 = Internal, 1 = SCR

Opcode: <260Eh> Command a Modulator's Drop Mode

<1>	Drop Mode	0 = Disabled, 1 = T1-D4, 2 = T1-ESF, 3 = PCM-30, 4 = PCM-30C, 5 = PCM-31, 6 = PCM-31C, 7 = SLC-96, 8 = T1 D4 S, 9 = T1 ESF S

Opcode: <260Fh> Command a Modulator's Output Level

<2>	Transmit Power Level	Signed value, 0 to -250 (0.0 to -25.0 dBm) (two's compliment)

Opcode: <2610h> Command a Modulator's Reed-Solomon

<1>	Reed Solomon	0 = Disable, 1 = Enable  ***This command also turns the Carrier off.***

Opcode: <2611h> Command a Modulator's Spectrum

<1>	Spectrum	0 = Normal, 1 = Inverted

Opcode: <2612h> Command a Modulator's Tx Test Pattern

<1>	Tx Test Pattern	0 = None, 1 = 2047 test, 2 = 2^15-1, 3 = 2^23-1

Opcode: <2613h> Command a Modulator's Scrambler Control

<1>	Scrambler Control	0 = Disable, 1 = Enable

Opcode: <2614h> Command a Modulator's Scrambler Type

<1>	Scrambler Type	0 = None, 1 = IBS, 2 = V35_IESS, 3 = V35_CCITT, 4 = V35_EFDATA, 5 = V35_FAIRCHILD, 6 = OM-73, 7 = RS, 8 = V35_EFRS, 9 = TPC, 10 = DVB, 11 = EDMAC, 12 = TPC and IBS, 13 = TPC and EDMAC, 14 = V35_ComStream

Opcode: <2615h> Command a Modulator's Framing

<1>	Framing	0 = No Framing, 1 = 96K IDR, 2 = 1/15 IBS, 3 = EF AUPC 1/15, 4 = DVB, 5 = EDMAC, 6 = SCC, 7 = 96K, 8 = Efficient D & I 

		This command also turns the carrier off to protect the satellite.

Opcode: <2616h> Command a Modem's External Reference Source

<1>	External Ref. Source	0 = Internal, 1 = External, 2 = High Stability

Opcode: <2617h> Command a Modulator's Terrestrial Loopback

<1>	Terrestrial Loopback	0 = Disable, 1 = Enable

Opcode: <2618h> Command a Modulator's Baseband Loopback

<1>	Baseband Loopback	0 = Disable, 1 = Enable

Opcode: <2619h> Command a Modulator's Network Specification

<1>	Network Spec	0 = Closed Net, 1 = IDR, 2 = IBS, 3 = D & I, 5 = DVB SAT, 11 = MIL-188-165A

Opcode: <261Ah> Command a Modem's External Clock Frequency

<4>	External Clock	Binary value, 1 Hz steps, 2.4 kHz to 20 MHz

Opcode: <261Bh> Command a Modem's External Reference Frequency

<4>	External Ref. Freq.	Binary value, 8 kHz steps, 256 kHz to 10 MHz

Opcode: <261Dh> Command a Modulator's T1D4 Yellow Alarm Selection

<1>	T1D4 Yellow Alarm Sel.	0 = Bit 2 equals 0 for all channels, 1 = Frame 12 s-bits equals 1

Opcode: <261Eh> Command a Modulator's Interface Type

<1>	Tx Interface Type	0 = G703-B-T1 AMI, 1 = G703-B-T1 B8ZS, 2 = G703-B-E1, 3 = G703-B-T2, 4 = G703-U-E1, 5 = G703-U-T2, 6 = G703-U-E2, 7 = RS-422, 8 = V.35, 9 = RS-232, 10 = HSSI, 11 = ASI, 12 = Advanced ASI, 13 = M2P, 14 = DVB, 24 = Ethernet Bridge, 25 = MIL-188-114A, 26 = RS423

Opcode: <261Fh> Command a Modulator's Circuit ID

<11>	Circuit ID	11 ASCII characters, Null Terminated

Opcode: <2622h> Command Force Modulator Alarm Test

<1>	Force Alarm Test	Bit 0 = Tx Major Alarm Bits 1 – 7 = Spares 0 = Do not force, 1 = Force

Opcode: <2623h> Command Modulator Data Invert

<1>	Data Invert	0 = None, 1 = Terrestrial, 2 = Baseband, 3 = Terrestrial and Baseband

Opcode: <2625h> Clear a Modulator's Latched Alarm 1 (No Data)

Opcode: <2629h> Command AUPC Local Enable

<1>	AUPC Local Enable	0 = Off, 1 = EF AUPC, 2 = Radyne AUPC

Opcode: <262Ah> Command AUPC Remote Enable

<1>	AUPC Remote	0 = Off, 1 = EF AUPC

	Enable	

Opcode: <262Bh> Command AUPC Local CL Action

<1>	AUPC Local CL Action	0 = Hold, 1 = Nominal, 2 = Maximum

Opcode: <262Ch> Command AUPC Remote CL Action

<1>	AUPC Remote CL Action	0 = Hold, 1 = Nominal, 2 = Maximum

Opcode: <262Dh> Command AUPC Tracking Rate

<1>	AUPC Tracking Rate	0 = 0.5 dB/min., 1 = 1.0 dB/min., 2 = 1.5 dB/min., 3 = 2.0 dB/min., 4 = 2.5 dB/min., 5 = 3.0 dB/min., 6 = 3.5 dB/min., 7 = 4.0 dB/min., 8 = 4.5 dB/min., 9 = 5.0 dB/min., 10 = 5.5 dB/min., 11 = 6.0 dB/min.

Opcode: <262Eh> Command AUPC Remote Baseband Loopback

<1>	AUPC Remote Baseband Loopback	0 = Disable, 1 = Enable

Opcode: <262Fh> Command AUPC Remote Test 2047

<1>	AUPC Remote 2047	0 = Disable, 1 = Enable

Opcode: <2630h> Command AUPC Eb/No

<2>	AUPC Eb/No	Target Eb/No at the receiver, 400 to 2000 (4.00 db to 20.00 db)

Opcode: <2631h> Command AUPC Minimum Power

<2>	AUPC Min. Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)

Opcode: <2632h> Command AUPC Maximum Power

<2>	AUPC Maximum Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)

Opcode: <2633h> Command AUPC Nominal Power

<2>	AUPC Nominal Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)

Opcode: <2634h> Command AUPC Local Configuration

<1>	AUPC Local Enable	0 = Off, 1 = EF AUPC, 2 = Radyne AUPC
<1>	AUPC Local CL Action	0 = Hold, 1 = Nominal, 2 = Maximum
<1>	AUPC Tracking Rate	0 = 0.5 dB/min., 1 = 1.0 dB/min., 2 = 1.5 dB/min., 3 = 2.0 dB/min., 4 = 2.5 dB/min., 5 = 3.0 dB/min., 6 = 3.5 dB/min., 7 = 4.0 dB/min., 8 = 4.5 dB/min., 9 = 5.0 dB/min., 10 = 5.5 dB/min., 11 = 6.0 dB/min.
<1>	AUPC Remote CL Action	0 = Hold, 1 = Nominal, 2 = Maximum

<2>	AUPC Eb/No	Binary value, Target Eb/No at the receiver, 400 to 2000 (4.00 db to 20.00 db)
<2>	AUPC Min Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)
<2>	AUPC Maximum Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)
<2>	AUPC Nominal Power	Signed value 0 to –2500 with implied decimal point; (0.00 to –25.00 dBm) (two's compliment)

Opcode: <2635h> Command AUPC Remote Configuration

<1>	AUPC Remote Enable	0 = Off, 1 = EF AUPC
<1>	AUPC Remote Baseband Loopback	0 = Disable, 1 = Enable
<1>	AUPC Remote 2047	0 = Disable, 1 = Enable

Opcode: <2636h> Command Modulator Reed Solomon N & K Codes and Interleaver Depth

<1>	Tx RS N Code	2 – 255, Reed-Solomon code word length
<1>	Tx RS K Code	1 – 254, Reed-Solomon message length
<1>	Tx RS Depth	4. 8 or 12 Reed Solomon Interleaver Depth

Opcode: <2638h> Command Modulator TPC Interleaver

<1>	TPC Interleaver	0 = Disable, 1 = Enable

Opcode: <2640h> Command Modulator Async Configuration

<1>	ES Mode	0 = Normal, 1 = Enhanced
<1>	ES Type	0 = RS232, 1 = RS485
<1>	ES Baud Rate	0 =150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5= 4800, 6 = 9600, 7 = 19200
<1>	ES Data Bits	0 = 7 bits, 1 = 8 bits

1.1.5.2 Demodulator

Opcode: <2401h> Query a Demodulator's Configuration and Status

Query Response		
<1>	Number of nonvol bytes	Number of Configuration Bytes
Configuration Bytes (Nonvol Bytes)		
<1>	Network Spec.	0 = Closed Net, 1 = IDR, 2 = IBS, 3 = D & I, 5 = DVB SAT, 11 = MIL-188-165A

<4>	Frequency	Selects the IF Frequency in Hz, IF Range 50 MHz to 180 MHz, L-Band Range = 950 MHz to 2050 MHz
<2>	Sweep Delay	Binary value, 0.1 second steps, Implied decimal point, 0 to 65535 (0.0 sec to 6553.5 sec)
<4>	Data Rate	Binary value, 1 bps steps, 2.4 Kbps to 20 Mbps for DMD20
<1>	Sweep Boundary	Sweep limits. Max of ± 255 kHz in kHz steps 0 - 255
<1>	Input Level Limit	Lower level limit, binary value, 1 dB steps, and Implied sign. 30 to 90 (-30 to –90 dBm)
<2>	Strap Code	Binary value
<1>	Filter Mask	0 = INTELSAT 0.35, 18 = MIL-188-165a, 20 = DVB 0.20, 25 = DVB 0.25, 35 = DVB 0.35
<1>	Demodulation Type	0 = QPSK, 1 = BPSK, 2 = 8PSK, 3 = 16QAM, 4 = OQPSK
<1>	Convolutional Decoder	0 = None, 1 = Viterbi 1/2, 2 = Viterbi 2/3 (DVB Only), 3 = Viterbi 3/4, 4 = Viterbi 5/6 (DVB Only), 5 = Viterbi 7/8, 6 = Reserved , 7 = Sequential 1/2, 8 = Reserved, 9 = Sequential 3/4, 10 = Reserved, 11 = Sequential 7/8, 12 = Reserved, 13 = Reserved, 14 = Trellis 2/3, 15 = Trellis 3/4 (DVB - 16QAM Only), 16 = Trellis 5/6 (DVB - 8PSK Only), 17 = Trellis 7/8 (DVB - 16QAM Only), 18 = Trellis 8/9 (DVB - 8PSK Only), 19 = ComStream 3/4 SEQ, 20 = TPC .793 2D, 21 = TPC .495 3D, 22 = Reserved, 23 = TPC 1/2, 24 = TPC 3/4, 25 = TPC 7/8, 26 = TPC 21/44, 27 = TPC.750, 28 = TPC.875
<1>	Reed Solomon	0 = Disable, 1 = Enable
<1>	Differential Decoder	0 = Disable, 1 = Enable
<1>	Descrambler Control	0 = Disable, 1 = Enable
<1>	Descrambler Type	0 = None, 1 = IBS, 2 = V35_IESS, 3 = V35_CCITT, 4 = V35_EFDATA, 5 = V35_FAIRCHILD, 6 = OM-73, 7 = RS, 8 = V35_EFRS, 9 = TPC, 10 = DVB, 11 = EDMAC, 12 = TPC and IBS, 13 = TPC and EDMAC, 14 = V35_ComStream
<1>	Spectrum	0 = Normal, 1 = Inverted
<1>	Buffer Size Msec	Indicates buffer size in msecs, 0 through 64
<1>	Active Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI
<1>	Buffer Clock Polarity	0 = Normal, 1 = Inverted
<1>	Insert Mode	0 = Disabled, 1 = T1-D4, 2 = T1-ESF, 3 = PCM-30, 4 = PCM-30C, 5 = PCM-31, 6 = PCM-31C, 7 = SLC-96, 8 = T1 D4 S, 9 = T1 ESF S
<1>	T1E1 Frame Source	0 = Internal, 1 = External

<30>	Insert Map	Timeslots to insert organized by satellite channel (Mapping of Satellite channels 1 thru 30 to inserted Terrestrial Timeslots (Terrestrial Timeslots = 1..31) (0 = Insert None))
<1>	Satellite Framing	0 = No Framing, 1 = 96K IDR, 2 = 1/15 IBS, 3 = EF AUPC 1/15, 4 = DVB, 5 = EDMAC, 6 = SCC, 7 = 96K, 8 = Efficient D & I
<1>	Rx Test Pattern	0 = None, 1 = 2047 test, 2 = 2^15-1, 3 = 2^23-1
<1>	Map Summary To Backward Alarm	0 = None, 1 = BK1, 2 = BK2, 3 = BK1 & 2, 4 = BK3, 5 = BK1 & 3, 6 = BK2 & 3, 7 = BK1, 2 & 3, 8 = BK4, 9 = BK1 & 4, 10 = BK2 & 4, 11 = BK1, 2 & 4, 12 = BK3 & 4, 13 = BK1, 3 & 4, 14 = BK2, 3 & 4, 15 = BK1, 2, 3 & 4
<1>	Force Alarm Test	0 = None, 1 = Send the Alarm Bit 0 = Rx Major Alarm Bits 1 - 7 = Spares
<1>	Alarm 1 Mask	Bit 0 = Receive FPGA/Processor Fault Bit 1 = Carrier Loss Bit 2 = Multiframe Sync Loss Bit 3 = Frame Sync Loss Bit 4 = IBS BER Alarm Bit 5 = Satellite AIS Bit 6 = Rx Data Activity Bit 7 = Rx Level 0 = Mask, 1 = Allow
<1>	Alarm 2 Mask	Bit 0 = Buffer Underflow Bit 1 = Buffer Overflow Bit 2 = Buffer Under 10% Bit 3 = Buffer Over 90% Bit 4 = RS Decoder Lock Fault Bit 5 = RS De-Interleaver Fault Bit 6 = RS Decoder Uncorrectable Word Bit 7 = Reserved 0 = Mask, 1 = Allow
<1>	Alarm 3 Mask	Bit 0 = Rx L-Band Synthesizer Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect Bit 3 = Viterbi Decoder Lock Bit 4 = Sequential Decoder Lock Bit 5 = Rx Test Pattern Lock Bit 6 = External Reference PLL Lock Bit 7 = Reserved 0 = Mask, 1 = Allow
<1>	Alarm 4 Mask	Bit 0 = Buffer Clock Activity Detect Bit 1 = External BNC Activity Detect Bit 2 = Rx Satellite Clock Activity Detect Bit 3 = Insert Clock Activity Detect Bit 4 = External Reference Activity Detect

		Bit 5 = High Stability Reference PLL Activity Bit 6 = Reserved Bit 7 = Low EbNo 0 = Mask, 1 = Allow
<1>	Common Alarm 1 Mask	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	Common Alarm 2 Mask	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Mask, 1 = Allow
<1>	ESC Channel 1 Volume	Binary value, valid in IDR only, +10 dBm to –20 dBm (two's compliment)
<1>	ESC Channel 2 Volume	Binary value, valid in IDR only, +10 dBm to –20 dBm (two's compliment)
<1>	BER Exponent	6 through 9 for Viterbi, 5 through 7 for Sequential
<11>	Rx Circuit ID	11 ASCII characters, Null Terminated
<1>	Rx Terrestrial Loopback	0 = Disabled, 1 = Enabled
<1>	Rx Baseband Loopback	0 = Disabled, 1 = Enabled
<1>	Rx IF Loopback	0 = Disabled, 1 = Enabled
<1>	Rx Interface Type	0 = G703-B-T1 AMI, 1 = G703-B-T1_B8ZS, 2 = G703-B-E1, 3 = G703-B-T2, 4 = G703-U-E1, 5 = G703-U-T2, 6 = G703-U-E2, 7 = RS-422, 8 = V.35, 9 = RS-232, 10 = HSSI, 11 = ASI, 12 = Advanced ASI, 13 = M2P, 14 = DVB, 24 = Ethernet Bridge, 25 = MIL-188-114A, 26 = RS423
<1>	Insert Status Mask	Bit 0 = Frame lock Bit 1 = Multiframe lock. Valid in E1 PCM-30 and PCM-30C Bit 2 = CRC lock. Valid in T1ESF, and E1 CRC enabled Bits 3 – 7 = Reserved 0 = Mask, 1 = Allow
<1>	Rx RS N Code	2 - 255 Reed-Solomon code word length
<1>	Rx RS K Code	1 - 254 Reed-Solomon message length
<1>	Rx RS Depth	4, 8, or 12
<1>	External Clock Source	Reserved

<1>	Data Invert	0 = None, 1 = Terrestrial, 2 = Baseband, 3 = Terrestrial and Baseband
<1>	Alarm 5 Mask	Bit 0 = Trellis Decoder Lock Bit 1 = Reserved Bit 2 = T1/E1 Signaling Bit 3 = Turbo Decoder Fault Bit 4 – 5 = Spares Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	BPSK Symbol Pairing	0 = Normal, 1 = Swapped
<1>	ES Mode	0 = Normal, 1 = Enhanced
<1>	ES Type	0 = RS-232, 1 = RS-485
<1>	ES Baud	0 = 150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600, 7 = 19200
<1>	ES Data Bits	0 = 7 Bits, 1 = 8 Bits
<1>	IDR Overhead Type	0 = 32K Voice, 1 = 64K Data
<1>	FM Orderwire Mode	Reserved
<1>	TMT Pattern Length	Reserved
<1>	EbNo Threshold	Unsigned Binary Value, 0-99, Implied Decimal Point (0.0 through 9.9 dB)
<2>	Reacquisition Sweep Limit	Binary value, 1 Hz steps, 0 - 65535
<1>	Terrestrial Streaming	0 = Continuous, 1 = Burst
<1>	Terrestrial Framing	0 = DVB 188, 1 = DVB 204, 2 = NONE
<1>	Alarm 6 Mask	Bit 0 = LBST LNB DC Current Alarm Bit 1 = LBST LNB DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Mask, 1 = Allow
<1>	TPC De-Interleaver	0 = Disable, 1 = Enable
<1>	SCC Control Ratio	1 = 1/1, 2 = 1/2, 3 = 1/3, 4 = 1/4, 5 = 1/5, 6 = 1/6, 7 = 1/7
<4>	SCC In band Rate	300 to 200000 bps
<1>	Fast Acquisition	0 = Disabled, 1 = Enabled
<1>	Adjacent Carrier Type	0 = Normal, 1 = High Power

<2>	LBST LNB DC Voltage Alarm Lower Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST LNB DC Voltage Alarm Upper Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST LNB DC Current Alarm Lower Threshold	Amps, Implied decimal point, 1000 = 1.000A
<2>	LBST LNB DC Current Alarm Upper Threshold	Amps, Implied decimal point, 1000 = 1.000A
<1>	Number of Buffer Clock Sources	1 - 5
<1>	First Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Second Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Third Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Forth Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Fifth Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Asynchronous In Band Rate	0 = 150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800 6 = 9600, 7 = 19200
	Status Bytes	
<1>	Control Mode	0 = Front Panel, 1 = Terminal, 2 = Computer Note: DMD20 will always return 2 = Computer
<1>	Revision Number	Decimal point implied
<1>	Alarm 1	Bit 0 = Receive FPGA/Processor Fault, 1 = Fail Bit 1 = Carrier Loss, 1 = Fail Bit 2 = Multiframe Sync Loss, 1 = Fail Bit 3 = Frame Sync Loss, 1 = Fail Bit 4 = IBS BER Alarm, 1 = Fail Bit 5 = Satellite AIS, 1 = Fail Bit 6 = Rx Data Activity, 1 = Activity Bit 7 = Rx Level, 1 = Fail
<1>	Alarm 2	Bit 0 = Buffer Underflow, 1 = Underflow Bit 1 = Buffer Overflow, 1 = Overflow Bit 2 = Buffer Under 10%, 1 = Fail Bit 3 = Buffer Over 90%, 1 = Fail

		Bit 4 = RS Decoder Lock Fault, 1 = Fail Bit 5 = RS De-Interleaver Fault, 1 = Fail Bit 6 = RS Decoder Uncorrectable Word, 1 = Fail Bit 7 = Demod Summary Fault, 1 = Fail
<1>	Alarm 3	Bit 0 = Rx L-Band Synthesizer Lock, 1 = Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect, 1 = Lock Bit 3 = Viterbi Decoder Lock, 1 = Lock Bit 4 = Sequential Decoder Lock, 1 = Lock Bit 5 = Rx Test Pattern Lock, 1 = Lock Bit 6 = External Reference PLL Lock, 1 = Lock Bit 7 = Reserved
<1>	Alarm 4	Bit 0 = Buffer Clock Activity Detect, 1 = Activity Bit 1 = External BNC Activity Detect, 1 = Activity Bit 2 = Rx Satellite Clock Activity Detect, 1 = Activity Bit 3 = Insert Clock Activity Detect, 1 = Activity Bit 4 = External Reference Activity Detect, 1 = Activity Bit 5 = High Stability Reference PLL Activity, 1 = Activity Bit 6 = Reserved Bit 7 = Low EbNo, 1 = Fail
<1>	Common Alarm 1	Bit 0 = -12V Alarm, 1 = Fail Bit 1 = +12V Alarm, 1 = Fail Bit 2 = +5V Alarm, 1 = Fail Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm, 1 = Fail Bit 7 = Spare
<1>	Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares
<1>	Latched Alarm 1	Bit 0 = Receive FPGA/Processor Fault Bit 1 = Carrier Loss Bit 2 = Multiframe Sync Loss Bit 3 = Frame Sync Loss Bit 4 = IBS BER Alarm Bit 5 = Satellite AIS Bit 6 = Rx Data Activity Bit 7 = Rx Level 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 2	Bit 0 = Buffer Underflow Bit 1 = Buffer Overflow Bit 2 = Buffer Under 10% Bit 3 = Buffer Over 90% Bit 4 = RS Decoder Lock Fault Bit 5 = RS De-Interleaver Fault Bit 6 = RS Decoder Uncorrectable Word Bit 7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 3	Bit 0 = Rx L-Band Synthesizer Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect

		Bit 3 = Viterbi Decoder Lock Bit 4 = Sequential Decoder Lock Bit 5 = Rx Test Pattern Lock Bit 6 = External Reference PLL Lock Bit 7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 1	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Not Latched, 1 = Latched
<1>	Backward	Bit 0 = Backward Alarm 1 IDR Bit 1 = Backward Alarm 2 IDR Bit 2 = Backward Alarm 3 IDR Bit 3 = Backward Alarm 4 IDR Bits 4 - 5 = Reserved Bit 6 = IBS Prompt Bit 7 = IBS Service 0 = No, 1 = Yes
<4>	Error Counter	Binary value
<4>	Test Error Counter	Binary value
<2>	Raw BER Mantissa	Bytes 1 - 2 = Binary value Raw BER; 896 = 8.96
<2>	Corrected BER Mantissa	Bytes 1 - 2 = Binary value corrected BER
<2>	EbNo	Binary value, 1 decimal point implied; 700 = 7.00
<4>	Offset Frequency	Binary value, 1 Hz steps
<2>	Test BER Mantissa	Bytes 1 - 2 = Binary value test BER
<1>	Raw BER Exponent	Byte 3 = Binary value exponent
<1>	Corrected BER Exponent	Byte 3 = Binary value exponent
<1>	Test BER Exponent	Byte 3 = Binary value exponent
<1>	Offset Frequency Sign	If <> 0, '-' offset
<1>	BER/EbNo Status	Bit 0 = Raw BER and corrected BER status. 1 = Valid Bit 1 = Test BER status. 1 = Valid Bits 2 - 3 = EbNo status, 0 = EbNo is invalid

		1 = EbNo is valid, 2 = EbNo is smaller than indicated value, 3 = EbNo is greater than indicated value Bit 4 = BER Counter Overflow. 1 = Overflow Condition Bit 5 = Test BER Counter Overflow 1 = Overflow Condition Bits 6 – 7 = Reserved
<1>	Buffer Percent Full	Binary value representing % buffer full, 0 - 100 in 1% steps
<1>	Input Level	Binary value in 1 dB steps, implied sign
<1>	Insert Status Fault	Bit 0 = Frame lock fault. 1 = Fail Bit 1 = Multiframe lock fault. Valid in E1 PCM-30 and PCM-30C. 1 = Fail Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled. 1 = Fail Bits 3 – 7 = Reserved
<1>	Online Flag	Online Switch Status: 0 = Offline, 1 = Online (DMD20 is always online)
<1>	Loss Flag	1 = Loss of Signal, DMD20
<1>	Alarm 5	Bit 0 = Trellis Decoder Lock, 1 = Lock Bit 1 = Reserved Bit 2 = T1/E1 Signaling, 1 = Fail Bit 3 = Turbo Decoder Fault, 1 = Fail Bit 4 – 5 = Spares Bit 6 = DVB Frame Lock Fault, 1 = Fail Bit 7 = Spare
<1>	Latched Alarm 4	Bits 0 – 6 = Reserved Bit 7 = Low EbNo 0 = Not Latched, 1 = Latched
<4>	Symbol Rate	Binary value, 1 sps steps
<1>	Latched Alarm 5	Bits 0 & 1 = Reserved Bit 2 = T1/E1 Signaling Bits 3 – 5 = Reserved Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Alarm 6	Bit 0 = LBST LNB DC Current Alarm, 1 = Fail Bit 1 = LBST LNB DC Voltage Alarm, 1 = Fail Bit 2 = Ethernet WAN Alarm, 1 = Fail Bits 3 – 7 = Spares
<1>	Latched Alarm 6	Bit 0 = LBST LNB DC Current Alarm Bit 1 = LBST LNB DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Not Latched, 1 = Latched

<2>	LBST LNB DC Current	Amps, Implied decimal point, 1000 = 1.000A
<2>	LBST LNB DC Voltage	Volts, Implied decimal point, 10 = 1.0V
<2>	Ethernet Bridge PER Mantissa	Bytes 1 - 2 = Binary value of Packet Error Rate
<1>	Ethernet Bridge PER Exponent	Byte 3 = Binary exponent of Packet Error Rate
<4>	Ethernet Bridge Packet Error Count	Binary value
<4>	Ethernet Bridge Packet Total Count	Binary Value
<1>	Ethernet Bridge Port 1 Status	0 = Down, 1 = Unresolved, 2 = 10 Mbps Half, 3 = 100 Mbps Half, 4 = 10 Mbps Full, 5 = 100 Mbps Full
<1>	Ethernet Bridge Port 2 Status	0 = Down, 1 = Unresolved, 2 = 10 Mbps Half, 3 = 100 Mbps Half, 4 = 10 Mbps Full, 5 = 100 Mbps Full
<1>	Ethernet Bridge Port 3 Status	0 = Down, 1 = Unresolved, 2 = 10 Mbps Half, 3 = 100 Mbps Half, 4 = 10 Mbps Full, 5 = 100 Mbps Full
<1>	Ethernet Bridge Port 4 Status	0 = Down, 1 = Unresolved, 2 = 10 Mbps Half, 3 = 100 Mbps Half, 4 = 10 Mbps Full, 5 = 100 Mbps Full
<1>	Ethernet Bridge WAN Status	0 = Down, 1 = Unresolved, 2 = 10 Mbps Half, 3 = 100 Mbps Half, 4 = 10 Mbps Full, 5 = 100 Mbps Full

Opcode: <2449h> Query a Demodulator's Configuration

Query Response		
<1>	Network Spec.	0 = Closed Net, 1 = IDR, 2 = IBS, 3 = D & I, 5 = DVB SAT, 11 = MIL-188-165A
<4>	Frequency	Selects the IF Frequency in Hz, IF Range = 50 MHz to 180 MHz, L-Band Range = 950 MHz to 2050 MHz
<2>	Sweep Delay	Binary value, 0.1 second steps, Implied decimal point, 0 to 65535 (0.0 sec to 6553.5 sec)
<4>	Data Rate	Binary value, 1 bps steps, 2.4 Kbps to 20 Mbps for DMD20
<1>	Sweep Boundary	Sweep limits. Max of ± 255 kHz in kHz steps 0 - 255
<1>	Input Level Limit	Lower level limit, binary value, 1 dB steps, and Implied sign. 30 to 90 (-30 to –90 dBm)
<2>	Strap Code	Binary value
<1>	Filter Mask	0 = INTELSAT 0.35, 18 = MIL-188-165a 20 = DVB 0.20, 25 = DVB 0.25, 35 = DVB 0.35

<1>	Demodulation Type	0 = QPSK, 1 = BPSK, 2 = 8PSK, 3 = 16QAM, 4 = OQPSK
<1>	Convolutional Decoder	0 = None, 1 = Viterbi 1/2, 2 = Viterbi 2/3 (DVB Only), 3 = Viterbi 3/4, 4 = Viterbi 5/6 (DVB Only), 5 = Viterbi 7/8, 6 = Reserved, 7 = Sequential 1/2, 8 = Reserved, 9 = Sequential 3/4, 10 = Reserved, 11 = Sequential 7/8, 12 = Reserved, 13 = Reserved, 14 = Trellis 2/3, 15 = Trellis 3/4 (DVB - 16QAM Only), 16 = Trellis 5/6 (DVB - 8PSK Only), 17 = Trellis 7/8 (DVB - 16QAM Only), 18 = Trellis 8/9 (DVB - 8PSK Only), 19 = ComStream 3/4 SEQ, 20 = TPC .793 2D, 21 = TPC .495 3D, 22 = Reserved, 23 = TPC 1/2, 24 = TPC 3/4, 25 = TPC 7/8, 26 = TPC 21/44, 27 = TPC.750, 28 = TPC.875
<1>	Reed Solomon	0 = Disable, 1 = Enable
<1>	Differential Decoder	0 = Off, 1 = On 0 = Disable, 1 = Enable
<1>	Descrambler Control	0 = Disable, 1 = Enable
<1>	Descrambler Type	0 = None, 1 = IBS, 2 = V35_IESS, 3 = V35_CCITT, 4 = V35_EFDATA, 5 = V35_FAIRCHILD, 6 = OM-73, 7 = RS, 8 = V35_EFRS, 9 = TPC, 10 = DVB, 11 = EDMAC, 12 = TPC and IBS, 13 = TPC and EDMAC, 14 = V35_ComStream
<1>	Spectrum	0 = Normal, 1 = Inverted
<1>	Buffer Size Msec	Indicates buffer size in msecs, 0 through 64
<1>	Active Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI
<1>	Buffer Clock Polarity	0 = Normal, 1 = Inverted
<1>	Insert Mode	0 = Disabled, 1 = T1-D4, 2 = T1-ESF, 3 = PCM-30, 4 = PCM-30C, 5 = PCM-31, 6 = PCM-31C, 7 = SLC-96, 8 = T1 D4 S, 9 = T1 ESF S
<1>	T1E1 Frame Source	0 = Internal, 1 = External
<30>	Insert Map	Timeslots to insert organized by satellite channel (Mapping of Satellite channels 1 thru 30 to inserted Terrestrial Timeslots (Terrestrial Timeslots = 1..31) (0 = Insert None))
<1>	Satellite Framing	0 = No Framing, 1 = 96K IDR, 2 = 1/15 IBS, 3 = EF AUPC 1/15, 4 = DVB, 5 = EDMAC, 6 = SCC, 7 = 96K, 8 = Efficient D & I
<1>	Rx Test Pattern Operating Mode	0 = None, 1 = 2047 test, 2 = 2^15-1, 3 = 2^23-1
<1>	Map Summary To Backward Alarm	0 = None, 1 = BK1, 2 = BK2, 3 = BK1 & 2, 4 = BK3, 5 = BK1 & 3, 6 = BK2 & 3, 7 = BK1, 2 & 3, 8 = BK4, 9 = BK1 & 4, 10 = BK2 & 4, 11 = BK1, 2 & 4, 12 = BK3 & 4, 13 = BK1, 3 & 4, 14 = BK2, 3 & 4, 15 = BK1, 2, 3 & 4 0 = None, 1 = Send the Alarm

<1>	Force Alarm Test	Bit 0 = Rx Major Alarm Bits 1 - 7 = Spares
<1>	Alarm 1 Mask	Bit 0 = Receive FPGA/Processor Fault Bit 1 = Carrier Loss Bit 2 = Multiframe Sync Loss Bit 3 = Frame Sync Loss Bit 4 = IBS BER Alarm Bit 5 = Satellite AIS Bit 6 = Rx Data Activity Bit 7 = Rx Level 0 = Mask, 1 = Allow
<1>	Alarm 2 Mask	Bit 0 = Buffer Underflow Bit 1 = Buffer Overflow Bit 2 = Buffer Under 10% Bit 3 = Buffer Over 90% Bit 4 = RS Decoder Lock Fault Bit 5 = RS De-Interleaver Fault Bit 6 = RS Decoder Uncorrectable Word Bit 7 = Reserved 0 = Mask, 1 = Allow
<1>	Alarm 3 Mask	Bit 0 = Rx L-Band Synthesizer Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect Bit 3 = Viterbi Decoder Lock Bit 4 = Sequential Decoder Lock Bit 5 = Rx Test Pattern Lock Bit 6 = External Reference PLL Lock Bit 7 = Reserved 0 = Mask, 1 = Allow
<1>	Alarm 4 Mask	Bit 0 = Buffer Clock Activity Detect Bit 1 = External BNC Activity Detect Bit 2 = Rx Satellite Clock Activity Detect Bit 3 = Insert Clock Activity Detect Bit 4 = External Reference Activity Detect Bit 5 = High Stability Reference PLL Activity Bit 6 = Reserved Bit 7 = Low EbNo 0 = Mask, 1 = Allow
<1>	Common Alarm 1 Mask	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	Common Alarm 2 Mask	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Mask, 1 = Allow

<1>	ESC Channel 1 Volume	Binary value, valid in IDR only, +10 dBm to –20 dBm (two's compliment)
<1>	ESC Channel 2 Volume	Binary value, valid in IDR only, +10 dBm to –20 dBm (two's compliment)
<1>	BER Exponent	6 through 9 for Viterbi, 5 through 7 for Sequential
<11>	Rx Circuit ID	11 ASCII characters, Null Terminated
<1>	Rx Terrestrial Loopback	0 = Disabled, 1 = Enabled
<1>	Rx Baseband Loopback	0 = Disabled, 1 = Enabled
<1>	Rx IF Loopback	0 = Disabled, 1 = Enabled
<1>	Rx Interface Type	0 = G703-B-T1 AMI, 1 = G703-B-T1_B8ZS, 2 = G703-B-E1, 3 = G703-B-T2, 4 = G703-U-E1, 5 = G703-U-T2, 6 = G703-U-E2, 7 = RS-422, 8 = V.35, 9 = RS-232, 10 = HSSI, 11 = ASI, 12 = Advanced ASI, 13 = M2P, 14 = DVB, 24 = Ethernet Bridge, 25 = MIL-188-114A, 26 = RS423
<1>	Insert Status Mask	Bit 0 = Frame lock Bit 1 = Multiframe lock. Valid in E1 PCM-30 and PCM-30C Bit 2 = CRC lock. Valid in T1ESF, and E1 CRC enabled Bits 3 – 7 = Reserved 0 = Mask, 1 = Allow
<1>	Rx RS N Code	2 - 255 Reed-Solomon code word length
<1>	Rx RS K Code	1 - 254 Reed-Solomon message length
<1>	Rx RS Depth	4, 8, or 12
<1>	External Clock Source	Reserved
<1>	Data Invert	0 = None, 1 = Terrestrial, 2 = Baseband, 3 = Terrestrial and Baseband
<1>	Alarm 5 Mask	Bit 0 = Trellis Decoder Lock Bit 1 = Reserved Bit 2 = T1/E1 Signaling Bit 3 = Turbo Decoder Fault Bit 4 – 5 = Spares Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	BPSK Symbol Pairing	0 = Normal, 1 = Swapped
<1>	ES Mode	0 = Normal, 1 = Enhanced
<1>	ES Type	0 = RS-232, 1 = RS-485

<1>	ES Baud	0 = 150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600, 7 = 19200
<1>	ES Data Bits	0 = 7 Bits, 1 = 8 Bits
<1>	IDR Overhead Type	0 = 32K Voice, 1 = 64K Data
<1>	FM Orderwire Mode	Reserved
<1>	TMT Pattern Length	Reserved
<1>	EbNo Threshold	Unsigned Binary Value, 0-99, Implied Decimal Point (0.0 through 9.9 dB)
<2>	Reacquisition Sweep Limit	Binary value, 1 Hz steps, 0 - 65535
<1>	Terrestrial Streaming	0 = Continuous, 1 = Burst
<1>	Terrestrial Framing	0 = DVB 188, 1 = DVB 204, 2 = NONE
<1>	Alarm 6 Mask	Bit 0 = LBST LNB DC Current Alarm Bit 1 = LBST LNB DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Mask, 1 = Allow
<1>	TPC De-Interleaver	0 = Disable, 1 = Enable
<1>	SCC Control Ratio	1 = 1/1, 2 = 1/2, 3 = 1/3, 4 = 1/4, 5 = 1/5, 6 = 1/6, 7 = 1/7
<4>	SCC In band Rate	300 to 200000 bps
<1>	Fast Acquisition	0 = Disabled, 1 = Enabled
<1>	Adjacent Carrier Type	0 = Normal, 1 = High Power
<2>	LBST LNB DC Voltage Alarm Lower Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST LNB DC Voltage Alarm Upper Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST LNB DC Current Alarm Lower Threshold	Amps, Implied decimal point, 1000 = 1.000A
<2>	LBST LNB DC Current Alarm Upper Threshold	Amps, Implied decimal point, 1000 = 1.000A
<1>	Number of Buffer	1 - 5

	Clock Sources	
<1>	First Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Second Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Third Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Forth Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Fifth Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Asynchronous In Band Rate	0 = 150, 1 =300, 2 = 600, 3 = 1200, 4 =2400, 5 = 4800 6 = 9600, 7 = 19200

Opcode: <240Ch> Query a Demodulator's Status

Query Response		
<1>	Control Mode	0 = Front Panel, 1 = Terminal, 2 = Computer Note: DMD20 will always return 2 = Computer
<1>	Revision Number	Decimal point implied
<1>	Alarm 1	Bit 0 = Receive FPGA/Processor Fault, 1 = Fail Bit 1 = Carrier Loss, 1 = Fail Bit 2 = Multiframe Sync Loss, 1 = Fail Bit 3 = Frame Sync Loss, 1 = Fail Bit 4 = IBS BER Alarm, 1 = Fail Bit 5 = Satellite AIS, 1 = Fail Bit 6 = Rx Data Activity, 1 = Activity Bit 7 = Rx Level, 1 = Fail
<1>	Alarm 2	Bit 0 = Buffer Underflow, 1 = Underflow Bit 1 = Buffer Overflow, 1 = Overflow Bit 2 = Buffer Under 10%, 1 = Fail Bit 3 = Buffer Over 90%, 1 = Fail Bit 4 = RS Decoder Lock Fault, 1 = Fail Bit 5 = RS De-Interleaver Fault, 1 = Fail Bit 6 = RS Decoder Uncorrectable Word, 1 = Fail Bit 7 = Demod Summary Fault, 1 = Fail
<1>	Alarm 3	Bit 0 = Rx L-Band Synthesizer Lock, 1 = Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect, 1 = Lock Bit 3 = Viterbi Decoder Lock, 1 = Lock Bit 4 = Sequential Decoder Lock, 1 = Lock Bit 5 = Rx Test Pattern Lock, 1 = Lock Bit 6 = External Reference PLL Lock, 1 = Lock Bit 7 = Reserved
<1>	Alarm 4	Bit 0 = Buffer Clock Activity Detect, 1 = Activity

		Bit 1 = External BNC Activity Detect, 1 = Activity Bit 2 = Rx Satellite Clock Activity Detect, 1 = Activity Bit 3 = Insert Clock Activity Detect, 1 = Activity Bit 4 = External Reference Activity Detect, 1 = Activity Bit 5 = High Stability Reference PLL Activity, 1 = Activity Bit 6 = Reserved Bit 7 = Low EbNo, 1 = Fail
<1>	Common Alarm 1	Bit 0 = -12V Alarm, 1 = Fail Bit 1 = +12V Alarm, 1 = Fail Bit 2 = +5V Alarm, 1 = Fail Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm, 1 = Fail Bit 7 = Spare
<1>	Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares
<1>	Latched Alarm 1	Bit 0 = Receive FPGA/Processor Fault Bit 1 = Carrier Loss Bit 2 = Multiframe Sync Loss Bit 3 = Frame Sync Loss Bit 4 = IBS BER Alarm Bit 5 = Satellite AIS Bit 6 = Rx Data Activity Bit 7 = Rx Level 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 2	Bit 0 = Buffer Underflow Bit 1 = Buffer Overflow Bit 2 = Buffer Under 10% Bit 3 = Buffer Over 90% Bit 4 = RS Decoder Lock Fault Bit 5 = RS De-Interleaver Fault Bit 6 = RS Decoder Uncorrectable Word Bit 7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 3	Bit 0 = Rx L-Band Synthesizer Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect Bit 3 = Viterbi Decoder Lock Bit 4 = Sequential Decoder Lock Bit 5 = Rx Test Pattern Lock Bit 6 = External Reference PLL Lock Bit 7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 1	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Not Latched, 1 = Latched

<1>	Latched Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Not Latched, 1 = Latched
<1>	Backward	Bit 0 = Backward Alarm 1 IDR Bit 1 = Backward Alarm 2 IDR Bit 2 = Backward Alarm 3 IDR Bit 3 = Backward Alarm 4 IDR Bits 4 - 5 = Reserved Bit 6 = IBS Prompt Bit 7 = IBS Service 0 = No, 1 = Yes
<4>	Error Counter	Binary value
<4>	Test Error Counter	Binary value
<2>	Raw BER Mantissa	Bytes 1 - 2 = Binary value Raw BER; 896 = 8.96
<2>	Corrected BER Mantissa	Bytes 1 - 2 = Binary value corrected BER
<2>	EbNo	Binary value, 1 decimal point implied; 700 = 7.00
<4>	Offset Frequency	Binary value, 1 Hz steps
<2>	Test BER Mantissa	Bytes 1 - 2 = Binary value test BER
<1>	Raw BER Exponent	Byte 3 = Binary value exponent
<1>	Corrected BER Exponent	Byte 3 = Binary value exponent
<1>	Test BER Exponent	Byte 3 = Binary value exponent
<1>	Offset Frequency Sign	If <> 0, '-' offset
<1>	BER/EbNo Status	Bit 0 = Raw BER and corrected BER status. 1 = Valid Bit 1 = Test BER status. 1 = Valid Bits 2 - 3 = EbNo status, 0 = EbNo is invalid 1 = EbNo is valid, 2 = EbNo is smaller than indicated value, 3 = EbNo is greater than indicated value Bit 4 = BER Counter Overflow. 1 = Overflow Condition Bit 5 = Test BER Counter Overflow 1 = Overflow Condition Bits 6 – 7 = Reserved
<1>	Buffer Percent Full	Binary value representing % buffer full, 0 - 100 in 1% steps
<1>	Input Level	Binary value in 1 dB steps, implied sign (negative)
<1>	Insert Status Fault	Bit 0 = Frame lock fault. 1 = Fail Bit 1 = Multiframe lock fault. Valid in E1 PCM-30 and PCM-30C. 1 = Fail

		Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled. 1 = Fail Bits 3 – 7 = Reserved
<1>	Online Flag	Online Switch Status: 0 = Offline, 1 = Online (DMD20 is always online)
<1>	Loss Flag	1 = Loss of Signal, DMD20
<1>	Alarm 5	Bit 0 = Trellis Decoder Lock, 1 = Lock Bit 1 = Reserved Bit 2 = T1/E1 Signaling, 1 = Fail Bit 3 = Turbo Decoder Fault, 1 = Fail Bit 4 – 5 = Spares Bit 6 = DVB Frame Lock Fault, 1 = Fail Bit 7 = Spare
<1>	Latched Alarm 4	Bits 0 – 6 = Reserved Bit 7 = Low EbNo 0 = Not Latched, 1 = Latched
<4>	Symbol Rate	Binary value, 1 sps steps
<1>	Latched Alarm 5	Bits 0 & 1 = Reserved Bit 2 = T1/E1 Signaling Bits 3 – 5 = Reserved Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Alarm 6	Bit 0 = LBST LNB DC Current Alarm, 1 = Fail Bit 1 = LBST LNB DC Voltage Alarm, 1 = Fail Bit 2 = Ethernet WAN Alarm, 1 = Fail Bits 3 – 7 = Spares
<1>	Latched Alarm 6	Bit 0 = LBST LNB DC Current Alarm Bit 1 = LBST LNB DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Not Latched, 1 = Latched
<2>	LBST LNB DC Current	Amps, Implied decimal point, 1000 = 1.000A
<2>	LBST LNB DC Voltage	Volts, Implied decimal point, 10 = 1.0V
<2>	Ethernet Bridge PER Mantissa	Bytes 1 - 2 = Binary value of Packet Error Rate
<1>	Ethernet Bridge PER Exponent	Byte 3 = Binary exponent of Packet Error Rate
<4>	Ethernet Bridge Packet Error Count	Binary value

<4>	Ethernet Bridge Packet Total Count	Binary Value
<1>	Ethernet Bridge Port 1 Status	0 = Down, 1 = Unresolved, 2 = 10 Mbps Half, 3 = 100 Mbps Half, 4 = 10 Mbps Full, 5 = 100 Mbps Full
<1>	Ethernet Bridge Port 2 Status	0 = Down, 1 = Unresolved, 2 = 10 Mbps Half, 3 = 100 Mbps Half, 4 = 10 Mbps Full, 5 = 100 Mbps Full
<1>	Ethernet Bridge Port 3 Status	0 = Down, 1 = Unresolved, 2 = 10 Mbps Half, 3 = 100 Mbps Half, 4 = 10 Mbps Full, 5 = 100 Mbps Full
<1>	Ethernet Bridge Port 4 Status	0 = Down, 1 = Unresolved, 2 = 10 Mbps Half, 3 = 100 Mbps Half, 4 = 10 Mbps Full, 5 = 100 Mbps Full
<1>	Ethernet Bridge WAN Status	0 = Down, 1 = Unresolved, 2 = 10 Mbps Half, 3 = 100 Mbps Half, 4 = 10 Mbps Full, 5 = 100 Mbps Full

Opcode: <2406h> Query a Demodulator's Latched Alarms

Query Response		
<1>	Latched Alarm 1	Bit 0 = Receive FPGA/Processor Fault Bit 1 = Carrier Loss Bit 2 = Multiframe Sync Loss Bit 3 = Frame Sync Loss Bit 4 = IBS BER Alarm Bit 5 = Satellite AIS Bit 6 = Rx Data Activity Bit 7 = Rx Level 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 2	Bit 0 = Buffer Underflow Bit 1 = Buffer Overflow Bit 2 = Buffer Under 10% Bit 3 = Buffer Over 90% Bit 4 = RS Decoder Lock Fault Bit 5 = RS De-Interleaver Fault Bit 6 = RS Decoder Uncorrectable Word Bit 7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 3	Bit 0 = Rx L-Band Synthesizer Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect Bit 3 = Viterbi Decoder Lock Bit 4 = Sequential Decoder Lock Bit 5 = Rx Test Pattern Lock Bit 6 = External Reference PLL Lock Bit 7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 1	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm

		Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 4	Bits 0 – 6 = Reserved Bit 7 = Low EbNo 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 5	Bits 0 & 1 = Reserved Bit 2 = T1/E1 Signaling Bits 3 – 5 = Reserved Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Latched Alarm 6	Bit 0 = LBST LNB DC Current Alarm Bit 1 = LBST LNB DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Not Latched, 1 = Latched

Opcode: <2409h> Query a Demodulator's Current Alarms

Query Response		
<1>	Alarm 1	Bit 0 = Receive FPGA/Processor Fault, 1 = Fail Bit 1 = Carrier Loss, 1 = Fail Bit 2 = Multiframe Sync Loss, 1 = Fail Bit 3 = Frame Sync Loss, 1 = Fail Bit 4 = IBS BER Alarm, 1 = Fail Bit 5 = Satellite AIS, 1 = Fail Bit 6 = Rx Data Activity, 1 = Activity Bit 7 = Rx Level, 1 = Fail
<1>	Alarm 2	Bit 0 = Buffer Underflow, 1 = Underflow Bit 1 = Buffer Overflow, 1 = Overflow Bit 2 = Buffer Under 10%, 1 = Fail Bit 3 = Buffer Over 90%, 1 = Fail Bit 4 = RS Decoder Lock Fault, 1 = Fail Bit 5 = RS De-Interleaver Fault, 1 = Fail Bit 6 = RS Decoder Uncorrectable Word, 1 = Fail Bit 7 = Demod Summary Fault, 1 = Fail
<1>	Alarm 3	Bit 0 = Rx L-Band Synthesizer Lock, 1 = Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect, 1 = Lock Bit 3 = Viterbi Decoder Lock, 1 = Lock Bit 4 = Sequential Decoder Lock, 1 = Lock Bit 5 = Rx Test Pattern Lock, 1 = Lock Bit 6 = External Reference PLL Lock, 1 = Lock Bit 7 = Reserved
<1>	Alarm 4	Bit 0 = Buffer Clock Activity Detect, 1 = Activity Bit 1 = External BNC Activity Detect, 1 = Activity

		Bit 2 = Rx Satellite Clock Activity Detect, 1 = Activity Bit 3 = Insert Clock Activity Detect, 1 = Activity Bit 4 = External Reference Activity Detect, 1 = Activity Bit 5 = High Stability Reference PLL Activity, 1 = Activity Bit 6 = Reserved Bit 7 = Low EbNo, 1 = Fail
<1>	Insert Status Fault	Bit 0 = Frame lock fault. 1 = Fail Bit 1 = Multiframe lock fault. Valid in E1 PCM-30 and PCM-30C. 1 = Fail Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled. 1 = Fail Bits 3 – 7 = Reserved
<1>	Common Alarm 1	Bit 0 = -12V Alarm, 1 = Fail Bit 1 = +12V Alarm, 1 = Fail Bit 2 = +5V Alarm, 1 = Fail Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm, 1 Fail Bit 7 = Spare
<1>	Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares
<1>	Alarm 5	Bit 0 = Trellis Decoder Lock, 1 = Lock Bit 1 = Reserved Bit 2 = T1/E1 Signaling, 1 = Fail Bit 3 = Turbo Decoder Fault, 1 = Fail Bit 4 – 5 = Spares Bit 6 = DVB Frame Lock Fault, 1 = Fail Bit 7 = Spare
<1>	Alarm 6	Bit 0 = LBST LNB DC Current Alarm, 1 = Fail Bit 1 = LBST LNB DC Voltage Alarm, 1 = Fail Bit 2 = Ethernet WAN Alarm, 1 = Fail Bits 3 – 7 = Spares

Opcode: <2452h> Query a Demodulator's Async Configuration

Query Response		
<1>	ES Mode	0 = Normal, 1 = Enhanced
<1>	ES Type	0 = RS232, 1 = RS485
<1>	ES Baud Rate	0 =150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5= 4800, 6 = 9600, 7 = 19200
<1>	ES Data Bits	0 = 7 bits, 1 = 8 bits

Opcode: <2A00h> Command a Demodulator's Configuration

<1>	Network Spec.	0 = Closed Net, 1 = IDR, 2 = IBS, 3 = D & I, 5 = DVB SAT, 11 = MIL-188-165A
<4>	Frequency	Selects the IF Frequency in Hz, IF Range = 50 MHz to 180 MHz, L-Band Range = 950 MHz to 2050 MHz

<2>	Sweep Delay	Binary value, 0.1 second steps, Implied decimal point, 0 – 65535 (0.0 sec to 6553.5 sec)
<4>	Data Rate	Binary value, 1 bps steps, 2.4 Kbps to 20 Mbps for DMD20
<1>	Sweep Boundary	Sweep limits. Max of ± 255 kHz in kHz steps 0 - 255
<1>	Input Level Limit	Lower level limit, binary value, 1 dB steps, and Implied sign. 30 to 90 (-30 to –90 dBm)
<2>	Strap Code	Binary value
<1>	Filter Mask	0 = INTELSAT 0.35, 18 = MIL-188-165A, 20 = DVB 0.20, 25 = DVB 0.25, 35 = DVB 0.35
<1>	Demodulation Type	0 = QPSK, 1 = BPSK, 2 = 8PSK, 3 = 16QAM, 4 = OQPSK
<1>	Convolutional Decoder	0 = None, 1 = Viterbi 1/2, 2 = Viterbi 2/3 (DVB Only), 3 = Viterbi 3/4, 4 = Viterbi 5/6 (DVB Only), 5 = Viterbi 7/8, 6 = Reserved, 7 = Sequential 1/2, 8 = Reserved, 9 = Sequential 3/4, 10 = Reserved, 11 = Sequential 7/8, 12 = Reserved, 13 = Reserved, 14 = Trellis 2/3, 15 = Trellis ¾ (DVB - 16QAM Only), 16 = Trellis 5/6 (DVB - 8PSK Only), 17 = Trellis 7/8 (DVB - 16QAM Only), 18 = Trellis 8/9 (DVB - 8PSK Only), 19 = ComStream SEQ 3/4, 20 = TPC .793 2D, 21 = TPC .495 3D, 22 = Reserved, 23 = TPC 1/2, 24 = TPC 3/4, 25 = TPC 7/8, 26 = TPC 21/44, 27 = TPC.750, 28 = TPC.875
<1>	Reed Solomon	0 = Disable, 1 = Enable
<1>	Differential Decoder	0 = Disable, 1 = Enable
<1>	Descrambler Control	0 = Disable, 1 = Enable 0 = Disable, 1 = Enable
<1>	Descrambler Type	0 = None, 1 = IBS, 2 = V35_IESS, 3 = V35_CCITT, 4 = V35_EFDATA, 5 = V35_FAIRCHILD, 6 = OM-73, 7 = RS, 8 = V35_EFRS, 9 = TPC, 10 = DVB, 11 = EDMAC, 12 = TPC and IBS, 13 = TPC and EDMAC, 14 = V35_ComStream
<1>	Spectrum	0 = Normal, 1 = Inverted
<1>	Buffer Size Msec	Indicates buffer size in msecs, 0 through 64
<1>	Primary Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI
<1>	Buffer Clock Polarity	0 = Normal, 1 = Inverted
<1>	Insert Mode	0 = Disabled, 1 = T1-D4, 2 = T1-ESF, 3 = PCM-30, 4 = PCM-30C, 5 = PCM-31, 6 = PCM-31C, 7 = SLC-96, 8 = T1 D4 S, 9 = T1 ESF S
<1>	T1E1 Frame Source	0 = Internal, 1 = External
<30>	Insert Map	Timeslots to insert organized by satellite channel (Mapping of Satellite channels 1 thru 30 to inserted Terrestrial Timeslots

		(Terrestrial Timeslots = 1..31) (0 = Insert None))
<1>	Satellite Framing	0 = No Framing, 1 = 96K IDR, 2 = 1/15 IBS, 3 = EF AUPC 1/15, 4 = DVB, 5 = EDMAC, 6 = SCC, 7 = 96K, 8 = Efficient D & I
<1>	Rx Test Pattern Operating Mode	0 = None, 1 = 2047 test, 2 = 2^15-1, 3 = 2^23-1
<1>	Map Summary To Backward Alarm	0 = None, 1 = BK1, 2 = BK2, 3 = BK1 & 2, 4 = BK3, 5 = BK1 & 3, 6 = BK2 & 3, 7 = BK1, 2 & 3, 8 = BK4, 9 = BK1 & 4, 10 = BK2 & 4, 11 = BK1, 2 & 4, 12 = BK3 & 4, 13 = BK1, 3 & 4, 14 = BK2, 3 & 4, 15 = BK1, 2, 3 & 4
<1>	Force Alarm Test	0 = None, 1 = Send the Alarm Bit 0 = Rx Major Alarm Bits 1 - 7 = Spares
<1>	Alarm 1 Mask	Bit 0 = Receive FPGA/Processor Fault Bit 1 = Carrier Loss Bit 2 = Multiframe Sync Loss Bit 3 = Frame Sync Loss Bit 4 = IBS BER Alarm Bit 5 = Satellite AIS Bit 6 = Rx Data Activity Bit 7 = Rx Level 0 = Mask, 1 = Allow
<1>	Alarm 2 Mask	Bit 0 = Buffer Underflow Bit 1 = Buffer Overflow Bit 2 = Buffer Under 10% Bit 3 = Buffer Over 90% Bit 4 = RS Decoder Lock Fault Bit 5 = RS De-Interleaver Fault Bit 6 = RS Decoder Uncorrectable Word Bit 7 = Reserved 0 = Mask, 1 = Allow
<1>	Alarm 3 Mask	Bit 0 = Rx L-Band Synthesizer Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect Bit 3 = Viterbi Decoder Lock Bit 4 = Sequential Decoder Lock Bit 5 = Rx Test Pattern Lock Bit 6 = External Reference PLL Lock Bit 7 = Reserved 0 = Mask, 1 = Allow
<1>	Alarm 4 Mask	Bit 0 = Buffer Clock Activity Detect Bit 1 = External BNC Activity Detect Bit 2 = Rx Satellite Clock Activity Detect Bit 3 = Insert Clock Activity Detect Bit 4 = External Reference Activity Detect Bit 5 = High Stability Reference PLL Activity Bit 6 = Reserved Bit 7 = Low EbNo

		0 = Mask, 1 = Allow
<1>	Common Alarm 1 Mask	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	Common Alarm 2 Mask	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Mask, 1 = Allow
<1>	ESC Channel 1 Volume	Binary value, valid in IDR only, +10 dBm to –20 dBm (two's compliment)
<1>	ESC Channel 2 Volume	Binary value, valid in IDR only, +10 dBm to –20 dBm (two's compliment)
<1>	BER Exponent	6 through 9 for Viterbi, 5 through 7 for Sequential
<11>	Rx Circuit ID	11 ASCII characters, Null Terminated
<1>	Rx Terrestrial Loopback	0 = Disabled, 1 = Enabled
<1>	Rx Baseband Loopback	0 = Disabled, 1 = Enabled
<1>	Rx IF Loopback	0 = Disabled, 1 = Enabled
<1>	Rx Interface Type	0 = G703-B-T1 AMI, 1 = G703-B-T1_B8ZS, 2 = G703-B-E1, 3 = G703-B-T2, 4 = G703-U-E1, 5 = G703-U-T2, 6 = G703-U-E2, 7 = RS-422, 8 = V.35, 9 = RS-232, 10 = HSSI, 11 = ASI, 12 = Advanced ASI, 13 = M2P, 14 = DVB, 24 = Ethernet Bridge, 25 = MIL-188-114A, 26 = RS423
<1>	Insert Status Mask	Bit 0 = Frame lock Bit 1 = Multiframe lock. Valid in E1 PCM-30 and PCM-30C Bit 2 = CRC lock. Valid in T1ESF, and E1 CRC enabled Bits 3 – 7 = Reserved 0 = Mask, 1 = Allow
<1>	Rx RS N Code	2 - 255 Reed-Solomon code word length
<1>	Rx RS K Code	1 - 254 Reed-Solomon message length
<1>	Rx RS Depth	4, 8, or 12
<1>	External Clock Source	Reserved
<1>	Data Invert	0 = None, 1 = Terrestrial, 2 = Baseband, 3 = Terrestrial and Baseband

<1>	Alarm 5 Mask	Bit 0 = Trellis Decoder Lock Bit 1 = Reserved Bit 2 = T1/E1 Signaling Bit 3 = Turbo Decoder Fault Bit 4 – 5 = Spares Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Mask, 1 = Allow
<1>	BPSK Symbol Pairing	0 = Normal, 1 = Swapped
<1>	ES Mode	0 = Normal, 1 = Enhanced
<1>	ES Type	0 = RS-232, 1 = RS-485
<1>	ES Baud	0 = 150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5 = 4800, 6 = 9600, 7 = 19200
<1>	ES Data Bits	0 = 7 Bits, 1 = 8 Bits
<1>	IDR Overhead Type	0 = 32K Voice, 1 = 64K Data
<1>	FM Orderwire Mode	Reserved
<1>	TMT Pattern Length	Reserved
<1>	EbNo Threshold	Unsigned Binary Value, 0-99, Implied Decimal Point (0.0 through 9.9 dB)
<2>	Reacquisition Sweep Limit	Binary value, 1 Hz steps, 0 - 65535
<1>	Terrestrial Streaming	0 = Continuous, 1 = Burst
<1>	Terrestrial Framing	0 = DVB 188, 1 = DVB 204, 2 = NONE
<1>	Alarm 6 Mask	Bit 0 = LBST LNB DC Current Alarm Bit 1 = LBST LNB DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Mask, 1 = Allow
<1>	TPC De-Interleaver	0 = Disable, 1 = Enable
<1>	SCC Control Ratio	1 = 1/1, 2 = 1/2, 3 = 1/3, 4 = 1/4, 5 = 1/5, 6 = 1/6, 7 = 1/7
<4>	SCC In band Rate	300 to 200000 bps
<1>	Fast Acquisition	0 = Disabled, 1 = Enabled
<1>	Adjacent Carrier Type	0 = Normal, 1 = High Power
<2>	LBST LNB DC Voltage Alarm Lower Threshold	Volts, Implied decimal point, 10 = 1.0V

<2>	LBST LNB DC Voltage Alarm Upper Threshold	Volts, Implied decimal point, 10 = 1.0V
<2>	LBST LNB DC Current Alarm Lower Threshold	Amps, Implied decimal point, 1000 = 1.000A
<2>	LBST LNB DC Current Alarm Upper Threshold	Amps, Implied decimal point, 1000 = 1.000A
<1>	Number of Buffer Clock Sources	1 - 5
<1>	First Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Second Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Third Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Forth Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Fifth Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Asynchronous In Band Rate	0 = 150, 1 = 300, 2 = 600, 3 = 1200, 4 – 2400, 5 = 4800 6 = 9600, 7 = 19200

Opcode: <2A01h> Command a Demodulator's Frequency

<4>	Frequency	Binary value, 1 Hz steps, (Selects the IF Frequency in Hz), IF Range = 50 MHz to 180 MHz, L-Band = 950 MHz to 2050 MHz

Opcode: <2A02h> Command a Demodulator's Data Rate

<4>	Data Rate	Binary value, 1 bps steps, 2.4 Kbps to 20 Mbps for DMD20

Opcode: <2A03h> Command a Demodulator's Strap Code

<2>	Strap Code	Binary value

Opcode: <2A04h> Command a Demodulator's Sweep Boundary

<1>	Sweep Boundary	Set in 1 kHz steps, max of 255 kHz. Sweep Limits. Max of ± `255 KHz in KHz steps 0-255

Opcode: <2A05h> Command a Demodulator's Sweep Delay

<2>	Sweep Delay	Binary value, 0.1 second steps, Implied decimal point, 0 to 65535 (0.0 sec to 6553.5 sec)

Opcode: <2A07h> Command a Demodulator's Demodulation Type

<1>	Demodulation Type	0 = QPSK, 1 = BPSK, 2 = 8PSK, 3 = 16QAM, 4 = OQPSK

Opcode: <2A08h> Command a Demodulator's Convolutional Decoder

<1>	Convolutional Decoder	0 = None, 1 = Viterbi 1/2, 2 = Viterbi 2/3 (DVB Only), 3 = Viterbi 3/4, 4 = Viterbi 5/6 (DVB Only), 5 = Viterbi 7/8, 6 = Reserved, 7 = Sequential 1/2, 8 = Reserved, 9 = Sequential 3/4, 10 = Reserved, 11 = Sequential 7/8, 12 = Reserved, 13 = Reserved, 14 = Trellis 2/3, 15 = Trellis 3/4 (DVB - 16QAM Only), 16 = Trellis 5/6 (DVB - 8PSK Only), 17 = Trellis 7/8 (DVB - 16QAM Only), 18 = Trellis 8/9 (DVB - 8PSK Only), 19 = ComStream SEQ 3/4, 20 = TPC .793 2D, 21 = TPC .495 3D, 22 = Reserved, 23 = TPC 1/2, 24 = TPC 3/4, 25 = TPC 7/8, 26 = TPC 21/44, 27 = TPC.750, 28 = TPC.875

Opcode: <2A09h> Command a Demodulator's Differential Decoder

<1>	Differential Decoder	0 = Off, 1 = On 0 = Disable, 1 = Enable

Opcode: <2A0Ah> Command a Demodulator's Reed-Solomon

<1>	Reed Solomon	0 = Disable, 1 = Enable

Opcode: <2A0Bh> Command a Demodulator's Network Specification

<1>	Network Spec	0 = Closed Net., 1 = IDR, 2 = IBS, 3 = D & I, 5 = DVB SAT, 11 = MIL-188-165A

Opcode: <2A0Ch> Command a Demodulator's Filter Mask

<1>	Filter Mask	0 = INTELSAT 0.35, 18 = MIL-188-165A, 20 = DVB 0.20, 25 = DVB 0.25, 35 = DVB 0.35

Opcode: <2A0Dh> Command a Demodulator's Descrambler Control

<1>	Descrambler Control	0 = Disable, 1 = Enable

Opcode: <2A0Eh> Command a Demodulator's Descrambler Type

<1>	Descrambler Type	0 = None, 1 = IBS, 2 = V35_IESS, 3 = V35_CCITT, 4 = V35_EFDATA, 5 = V35_FAIRCHILD, 6 = OM-73, 7 = RS, 8 = V35_EFRS, 9 = TPC, 10 = DVB, 11 = EDMAC, 12 = TPC and IBS, 13 = TPC and EDMAC, 14 = V35_ComStream

Opcode: <2A0Fh> Command a Demodulator's Spectrum

<1>	Spectrum	0 = Normal, 1 = Inverted

Opcode: <2A10h> Command a Demodulator's Buffer Size

<1>	Buffer Size Msec	Indicates buffer size in msecs, 0 through 64

Opcode: <2A11h> Command a Demodulator's Buffer Clock

<1>	Active Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI
<1>	Number of Buffer Clock Sources	1 - 5
<1>	First Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique

<1>	Second Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Third Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Forth Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique
<1>	Fifth Buffer Clock Source	0 = SCTE, 1 = SCT, 2 = EXT BNC, 3 = RX SAT, 4 = EXT IDI Each buffer clock source must be unique

Opcode: <2A12h> Command a Demodulator's Buffer Clock Polarity

<1>	Buffer Clock Polarity	0 = Normal, 1 = Inverted

Opcode: <2A13h> Command a Demodulator's Insert Mode

<1>	Insert Mode	0 = Disabled, 1 = T1-D4, 2 = T1-ESF, 3 = PCM-30, 4 = PCM-30C, 5 = PCM-31, 6 = PCM-31C, 7 = SLC-96, 8 = T1 D4 S, 9 = T1 ESF S

Opcode: <2A15h> Command a Demodulator's T1E1 Frame Source

<1>	T1E1 Frame Source	0 = Internal, 1 = External

Opcode: <2A16h> Command a Demodulator's Satellite Framing

<1>	Satellite Framing	0 = No Framing, 1 = 96K IDR, 2 = 1/15 IBS, 3 = EF AUPC 1/15, 4 = DVB, 5 = EDMAC, 6 = SCC, 7 = 96K, 8 = Efficient D & I

Opcode: <2A17h> Command a Demodulator's Rx Test Pattern Operating Mode

<1>	Rx Test Pattern	0 = None, 1 = 2047 test, 2 = 2^15-1, 3 = 2^23-1

Opcode: <2A18h> Command Map Summary to Backward Alarm

<1>	Map Summary To Backward Alarm	0 = None, 1 = BK1, 2 = BK2, 3 = BK1 & 2, 4 = BK3, 5 = BK1 & 3, 6 = BK2 & 3, 7 = BK1, 2 & 3, 8 = BK4, 9 = BK1 & 4, 10 = BK2 & 4, 11 = BK1, 2 & 4, 12 = BK3 & 4, 13 = BK1, 3 & 4, 14 = BK2, 3 & 4, 15 = BK1, 2, 3 & 4

Opcode: <2A1Ah> Command a Demodulator's BER Exponent

<1>	BER Exponent	6 - 9 for Viterbi, 5 - 7 for Sequential

Opcode: <2A1Bh> Command a Demodulator's Circuit ID

<11>	Rx Circuit ID	11 ASCII characters, Null Terminated

Opcode: <2A1Ch> Command a Demodulator's Terrestrial Loopback

<1>	Rx Terrestrial Loopback	0 = Disabled, 1 = Enabled

Opcode: <2A1Dh> Command a Demodulator's Baseband Loopback

<1>	Rx Baseband Loopback	0 = Disabled, 1 = Enabled

Opcode: <2A1Eh> Command a Demodulator's IF Loopback

<1>	Rx IF Loopback	0 = Disabled, 1 = Enabled

Opcode: <2A1Fh> Command a Demodulator's Interface Type

<1>	Rx Interface Type	0 = G703-B-T1 AMI, 1 = G703-B-T1_B8ZS, 2 = G703-B-E1, 3 = G703-B-T2, 4 = G703-U-E1, 5 = G703-U-T2, 6 = G703-U-E2, 7 = RS-422, 8 = V.35, 9 = RS-232, 10 = HSSI, 11 = ASI, 12 = Advanced ASI, 13 = M2P, 14 = DVB, 24 = Ethernet Bridge, 25 = MIL-188-114A, 26 = RS423

Opcode: <2A20h> Command Center Buffer (No Parameters)

Opcode: <2A21h> Command a Demodulator's Data Invert

<1>	Data Invert	0 = None, 1 = Terrestrial, 2 = Baseband, 3 = Terrestrial and Baseband

Opcode: <2A22h> Command Force Demodulator Alarm Test

<1>	Force Alarm Test	Bit 0 = Rx Major Alarm Bits 1 – 7 = Spares 0 = Do not force, 1 = Force

Opcode: <2A23h> Command External EXC Source

<1>	External EXC Source	Reserved

Opcode: <2A24h> Clear Demodulator Latched Alarm 1 (No Data)

Opcode: <2A25h> Clear Demodulator Latched Alarm 2 (No Data)

Opcode: <2A26h> Clear Demodulator Latched Alarm 3 (No Data)

Opcode: <2A2Fh> Command Demodulator Reacquisition Boundary

<2>	Reacquisition Sweep Limit	Binary value, 1 Hz steps, 0 - 65535

Opcode: <2A32h> Command a demodulator's Reed Solomon N & K Codes and Interleaver Depth

<1>	Rx RS N Code	2 - 255 Reed-Solomon code word length
<1>	Rx RS K Code	1 - 254 Reed-Solomon message length
<1>	Rx RS Depth	4, 8 or 12 Reed Solomon Interleaver Depth

Opcode: <2A34h> Command Demodulator TPC Interleaver

<1>	TPC Interleaver	0 = Disable, 1 = Enable

Opcode: <2A35h> Command Demodulator Async Configuration

<1>	ES Mode	0 = Normal, 1 = Enhanced
<1>	ES Type	0 = RS232, 1 = RS485
<1>	ES Baud Rate	0 =150, 1 = 300, 2 = 600, 3 = 1200, 4 = 2400, 5= 4800, 6 = 9600, 7 = 19200
<1>	ES Data Bits	0 = 7 bits, 1 = 8 bits

Opcode: <2A36h> Command a Demodulator's Fast Acquisition

<1>	Fast Acquisition	0 = Disabled, 1 = Enabled

2.1 1.1.5.3 Modem Queries & Commands

Opcode: <2403h> Query a Modem's Identification

Query Response		
<1>	Modem ID	DMD20 Modulator = 20, DMD20 Demodulator = 21, DMD20 Modem = 22

Opcode: <2404h> Query a Modem's Control Mode

Query Response		
<1>	Modem control mode	0 = Front Panel, 1 = Terminal, 2 = Computer Note: DMD20 will always return 2 = Computer

Opcode: <2407h> Query a Modem's Latched Alarms

Query Response		
<1>	Mod Latched Alarm 1	Bit 0 = Transmit FPGA/Processor Fault Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock Bit 3 = Reserved Bit 4 = Transmit L-Band Synthesizer Lock Bits 5 -7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Demod Latched Alarm 1	Bit 0 = Receive FPGA/Processor Fault Bit 1 = Carrier Loss Bit 2 = Multiframe Sync Loss Bit 3 = Frame Sync Loss Bit 4 = IBS BER Alarm Bit 5 = Satellite AIS Bit 6 = Rx Data Activity Bit 7 = Rx Level 0 = Not Latched, 1 = Latched
<1>	Demod Latched Alarm 2	Bit 0 = Buffer Underflow Bit 1 = Buffer Overflow Bit 2 = Buffer Under 10% Bit 3 = Buffer Over 90% Bit 4 = RS Decoder Lock Fault Bit 5 = RS De-Interleaver Fault Bit 6 = RS Decoder Uncorrectable Word Bit 7 = Reserved 0 = Not Latched, 1 = Latched
<1>	Demod Latched Alarm 3	Bit 0 = Rx L-Band Synthesizer Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect Bit 3 = Viterbi Decoder Lock Bit 4 = Sequential Decoder Lock Bit 5 = Rx Test Pattern Lock Bit 6 = External Reference PLL Lock Bit 7 = Reserved

		0 = Not Latched, 1 = Latched
<1> '	Latched Common Alarm 1	Bit 0 = -12V Alarm Bit 1 = +12V Alarm Bit 2 = +5V Alarm Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Latched Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares 0 = Not Latched, 1 = Latched
<1>	Mod Latched Alarm 2	Bit 0 = Terrestrial Clock Activity Detect Bit 1 = Internal Clock Activity Detect Bit 2 = Tx Sat Clock Activity Detect Bit 3 = Tx Data Activity Detect Bit 4 = Terrestrial AIS. Tx Data AIS Detect Bit 5 = Tx Clock Fallback Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Mod Latched Alarm 4	Bit 0 = LBST BUC DC Current Alarm Bit 1 = LBST BUC DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 - 7 = Spares 0 = Not Latched, 1 = Latched
<1>	Demod Latched Alarm 4	Bits 0 – 6 = Reserved Bit 7 = Low EbNo 0 = Not Latched, 1 = Latched
<1>	Demod Latched Alarm 5	Bits 0 & 1 = Reserved Bit 2 = T1/E1 Signaling Bits 3 – 5 = Reserved Bit 6 = DVB Frame Lock Fault Bit 7 = Spare 0 = Not Latched, 1 = Latched
<1>	Demod Latched Alarm 6	Bit 0 = LBST LNB DC Current Alarm Bit 1 = LBST LNB DC Voltage Alarm Bit 2 = Ethernet WAN Alarm Bits 3 – 7 = Spares 0 = Not Latched, 1 = Latched

Opcode: <240Ah> Query a Modem's Current Alarms

Query Response		
<1>	Mod Alarm 1	Bit 0 = Transmit FPGA/Processor Fault, 1 = Fail Bit 1 = Reserved Bit 2 = Transmit Symbol Clock PLL Lock, 1 = Lock Bit 3 = Reserved Bit 4 = IF/L-Band Synthesizer Lock, 1 = Lock Bits 5 & 6 = Reserved

		Bit 7 = Mod Summary Fault, 1 = Fail
<1>	Mod Alarm 2	Bit 0 = Terrestrial Clock Activity Detect, 1 = Activity Bit 1 = Internal Clock Activity Detect, 1 = Activity Bit 2 = Tx Sat Clock Activity Detect, 1 = Activity Bit 3 = Tx Data Activity Detect, 1 = Activity Bit 4 = Terrestrial AIS. Tx Data AIS Detect, 1 = AIS Fail Bit 5 = Tx Clock Fallback, 1 = Clock Fallback Bit 6 = DVB Frame Lock Fault, 1 = Fail Bit 7 = Spare
<1>	Drop Status Fault	Bit 0 = Frame lock fault, 1 = Fail Bit 1 = Multiframe lock Fault. Valid in E1 PCM-30 and PCM-30C, 1 = Fail Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled, 1 = Fail Bits 3 – 7 = Reserved
<1>	Demod Alarm 1	Bit 0 = Receive FPGA/Processor Fault, 1 = Fail Bit 1 = Carrier Loss, 1 = Fail Bit 2 = Multiframe Sync Loss, 1 = Fail Bit 3 = Frame Sync Loss, 1 = Fail Bit 4 = IBS BER Alarm, 1 = Fail Bit 5 = Satellite AIS, 1 = Fail Bit 6 = Rx Data Activity, 1 = Activity Bit 7 = Rx Level, 1 = Fail
<1>	Demod Alarm 2	Bit 0 = Buffer Underflow, 1 = Underflow Bit 1 = Buffer Overflow, 1 = Overflow Bit 2 = Buffer Under 10%, 1 = Fail Bit 3 = Buffer Over 90%, 1 = Fail Bit 4 = RS Decoder Lock Fault, 1 = Fail Bit 5 = RS De-Interleaver Fault, 1 = Fail Bit 6 = RS Decoder Uncorrectable Word, 1 = Fail Bit 7 = Demod Summary Fault, 1 = Fail
<1>	Demod Alarm 3	Bit 0 = Rx L-Band Synthesizer Lock, 1 = Lock Bit 1 = Reserved Bit 2 = Buffer Clock PLL Lock Detect, 1 = Lock Bit 3 = Viterbi Decoder Lock, 1 = Lock Bit 4 = Sequential Decoder Lock, 1 = Lock Bit 5 = Rx Test Pattern Lock, 1 = Lock Bit 6 = External Reference PLL Lock, 1 = Lock Bit 7 = Reserved
<1>	Demod Alarm 4	Bit 0 = Buffer Clock Activity Detect, 1 = Activity Bit 1 = External BNC Activity Detect, 1 = Activity Bit 2 = Rx Satellite Clock Activity Detect, 1 = Activity Bit 3 = Insert Clock Activity Detect, 1 = Activity Bit 4 = External Reference Activity Detect, 1 = Activity Bit 5 = High Stability Reference PLL Activity, 1 = Activity Bit 6 = Reserved Bit 7 = Low EbNo, 1 = Fail
<1>	Insert Status Fault	Bit 0 = Frame lock fault. 1 = Fail Bit 1 = Multiframe lock fault. Valid in E1 PCM-30 and PCM-

		30C, 1 = Fail Bit 2 = CRC lock fault. Valid in T1ESF, and E1 CRC enabled. 1 = Fail Bits 3 – 7 = Reserved
<1>	Common Alarm 1	Bit 0 = -12V Alarm, 1 = Fail Bit 1 = +12V Alarm, 1 = Fail Bit 2 = +5V Alarm, 1 = Fail Bits 3 – 5 = Reserved Bit 6 = IF SYNTH Alarm, 1 = Fail Bit 7 = Spare
<1>	Common Alarm 2	Bits 0 – 2 = Reserved Bits 3 – 7 Spares
<1>	Mod Alarm 3	Bit 0 = Backward Alarm 1 Transmitted Bit 1 = Backward Alarm 2 Transmitted Bit 2 = Backward Alarm 3 Transmitted Bit 3 = Backward Alarm 4 Transmitted Bits 4 - 7 = Spare 0 = No, 1 = Yes
<1>	Mod Alarm 4	Bit 0 = LBST BUC DC Current Alarm, 1 = Fail Bit 1 = LBST BUC DC Voltage Alarm, 1 = Fail Bit 2 = Ethernet WAN Alarm, 1 = Fail Bits 3 – 7 = Spares
<1>	Demod Alarm 5	Bit 0 = Trellis Decoder Lock, 1 = Lock Bit 1 = Reserved Bit 2 = T1/E1 Signaling, 1 = Fail Bit 3 = Turbo Decoder Fault, 1 = Fail Bit 4 – 5 = Spares Bit 6 = DVB Frame Lock Fault, 1 = Fail Bit 7 = Spare
<1>	Demod Alarm 6	Bit 0 = LBST LNB DC Current Alarm, 1 = Fail Bit 1 = LBST LNB DC Voltage Alarm, 1 = Fail Bit 2 = Ethernet WAN Alarm, 1 = Fail Bits 3 – 7 = Spares

Opcode: <240Dh> Query a Modem's Eb/No, BER, and Level

Query Response		
<2>	Raw BER Mantissa	Bytes 1 - 2 = Binary value Raw BER
<2>	Corrected BER Mantissa	Bytes 1 - 2 = Binary value corrected BER
<2>	EbNo	Binary value, 1 decimal point implied
<1>	Raw BER Exponent	Byte 3 = Binary value exponent
<1>	Corrected BER Exponent	Byte 3 = Binary value exponent
<1>	BER/EbNo Status	Bit 0 = Raw BER and corrected BER status. 1 = Valid

		Bit 1 = Test BER status. 1 = Valid Bits 2 – 3 = EbNo status, 0 = EbNo is invalid 1 = EbNo is valid, 2 = EbNo is smaller than indicated value, 3 = EbNo is greater than indicated value Bit 4 = BER Counter Overflow. 1 = Overflow Condition Bit 5 = Test BER Counter Overflow 1 = Overflow Condition Bits 6 – 7 = Reserved
<1>	Input Level	Binary value in 1 dB steps

Opcode: <240Eh> Query Time

Query Response		
<1>	Hour	0 - 23
<1>	Minute	0 - 59
<1>	Second	0 – 59

Opcode: <240Fh> Query Date

Query Response		
<1>	Year	0 - 99
<1>	Month	0 - 11
<1>	Day	0 – 30

Opcode: <2410h> Query Time and Date

Query Response		
<1>	Year	0 - 99
<1>	Month	0 - 11
<1>	Day	0 - 30
<1>	Hour	0 - 23
<1>	Minute	0 - 59
<1>	Second	0 – 59

Opcode: <2411h> Query Modem Summary Faults

Query Response		
<1>	Mod Summary Fault	0 = Pass, 1 = Fail
<1>	Demod Summary Fault	0 = Pass, 1 = Fail

Opcode: <2412h> Query a Modem's Event Buffer

<1>	Starting Point	(0..99) Stored event number to start query at 1 through 100

<1>	Number Of Events	Number of events to query, maximum events that can be queried is 3
Query Response		
<1>	Number Of Events	Number of events in response 0 = no events, there is no additional response data 1 = 1 event, see event data for additional response data 2 = 2 events, see event data for additional response data, event data will repeat once 3 = 3 events, see event data for additional response data, event data will repeat twice
Event Data		
<4>	Event Number	Actual event number since events were cleared Note: Events are cleared on a power cycle, via the front panel when the “CLEAR” key is pressed using “ERASE EVENTS” under the “MONITOR” menu or via the remote port by using opcode 2C0Ah and selecting 2 delete all events Note: The event numbers listed hear is the actual event number since events were cleared. The event buffer stores up to 100 events, once the 101st event occurs the first event stored in the event buffer is event number 2 and the last is event number is 101. As new events occur they are appended to the end of the event buffer and events at the beginning of the buffer are dropped.
<2>	Reserved	Ignored
<1>	Hour	0 - 23
<1>	Minute	0 - 59
<1>	Second	0 - 59
<1>	Reserved	Ignored
<1>	Year	0 - 99
<1>	Month	0 - 11
<1>	Day	0 - 30
<3>	Reserved	Ignored
<58>	Event	ASCII character string, end of string is filled with 00h
<2>	Reserved	Ignored

Opcode: <2402h> Query a Modem's Drop & Insert Map

<1>	Requested map	0 = Drop active map, 1 = Insert active map, 2 = Drop edit map, 3 = Insert edit map, 4 - 11 = User map #1 through #8, 12 - 19 = ROM maps #1 - #8
Query Response		

<1>	Requested map number	0 = Drop active map, 1 = Insert active map, 2 = Drop edit map, 3 = Insert edit map, 4 - 11 = User map #1 through #8, 12 - 19 = ROM maps #1 - #8
<30>	Requested map	(Mapping of Satellite channels 1 thru 30 to dropped or inserted Terrestrial Timeslots (Terrestrial Timeslots = 1..31) (0 = Insert None))

Opcode: <2C00h> Command Drop & Insert Map Copy

<1>	From Map	0 = Drop active map, 1 = Insert active map, 2 = Drop edit map, 3 = Insert edit map, 4 - 11 = User map #1 through #8, 12 - 19 = ROM maps #1..#8
<1>	To Map	0 = Drop active map, 1 = Insert active map, 2 = Drop edit map, 3 = Insert edit map, 4 – 11 = User map #1 through #8

Opcode: <2C01h> Command Drop & Insert Map

<1>	Map to Change	0 = Drop active map, 1 = Insert active map, 2 = Drop edit map, 3 = Insert edit map, 4 – 11 = User map #1 through #8
<30>	New map	(Mapping of Satellite channels 1 thru 30 to dropped or inserted Terrestrial Timeslots (Terrestrial Timeslots = 1..31) (0 = Insert None))

Opcode: <2C03h> Command Clear Latched Alarms (No Parameters)

Opcode: <2C04h> Command Set Time

<1>	Hour	0 – 23
<1>	Minute	0 - 59
<1>	Second	0 – 59

Opcode: <2C05h> Command Set Date

<1>	Year	0 – 99
<1>	Month	0 - 11
<1>	Day	0 – 30

Opcode: <2C06h> Command Set Time and Date

<1>	Year	0 – 99
<1>	Month	0 - 11
<1>	Day	0 - 30
<1>	Hour	0 - 23
<1>	Minute	0 - 59
<1>	Second	0 – 59

Opcode: <2C08h> Clear Modem Common Latched Alarm 1 (No Data)

Opcode: <2C09h> Clear Modem Common Latched Alarm 2 (No Data)

Opcode: <2C0Ah> Command Delete a Modem's Event Buffer

<1>	Events to Delete	1 = delete one event (deletes first event in buffer) , 2 = delete all events

Opcode: <2490h> Query Upconverter Configuration

Query Response		
<8>	LO Frequency	Hz
<1>	Mix Select	0 = High side, 1 = Low side
<1>	Reference Enable	0 = Disable, 1 = Enable
<1>	Supply Voltage Enable	0 = Disable, 1 = Enable

Opcode: <2491h> Query Uplink RF

Query Response		
<8>	RF	Hz

Opcode: <2492h> Query Downconverter Configuration

Query Response		
<8>	LO Frequency	Hz
<1>	Mix Select	0 = High side, 1 = Low side
<1>	Reference Enable	0 = Disable, 1 = Enable
<1>	Supply Voltage Enable	0 = Disable, 1 = Enable
<1>	Supply Voltage Sel.	13, 16, 18, 24, 48

Opcode: <2493h> Query Downlink RF

Query Response		
<8>	RF	Hz

Opcode: <2500h> Command Upconverter Configuration

<8>	LO Frequency	Hz
<1>	Mix Select	0 = High side, 1 = Low side
<1>	Reference Enable	0 = Disable, 1 = Enable
<1>	Supply Voltage Enable	0 = Disable, 1 = Enable

Opcode: <2501h> Command Uplink RF

<8>	RF	Hz

Opcode: <2502h> Command Downconverter Configuration

<8>	LO Frequency	Hz
<1>	Mix Select	0 = High side, 1 = Low side
<1>	Reference Enable	0 = Disable, 1 = Enable
<1>	Supply Voltage Enable	0 = Disable, 1 = Enable
<1>	Supply Voltage Sel.	13, 16, 18, 24, 48

Opcode: <2503h> Command Downlink RF

<8>	RF	Hz

The following opcode is for customer purchased and installed features only.

Opcode: <2450h> Query for Installed Features (Customer Purchased)

Query Response		
<1>	Installed Features 1	Bit 0 = 1 Mbps data rate Bit 1 = 5 Mbps data rate Bit 2 = 10 Mbps data rate Bit 3 = 20 Mbps data rate Bit 4 = Rx IF Band Bit 5 = Rx L Band Bit 6 = Tx IF Band Bit 7 = Tx L Band 0 = Feature Not Installed, 1 = Feature Installed
<1>	Installed Features 2	Bit 0 = Enhanced ASYNC Feature Bit 1 = IDR Feature Bit 2 = Sequential Feature Bit 3 = Reed Solomon Bit 4 = Custom Reed Solomon Feature Bit 5 = IBS Feature Bit 6 = Drop & Insert Feature Bit 7 = AUPC Feature 0 = Feature Not Installed, 1 = Feature Installed
<1>	Installed Features 3	Bit 0 = 8PSK Feature Bit 1 = 16QAM Feature Bit 2 = 5 MHz Turbo Codec Feature Bit 3 = 20 MHz Turbo Codec Feature Bit 4 = OM73 Feature Bit 5 = DVB Feature

		Bit 6 = EDMAC Feature Bit 7 = 512 Kbps Data Rate 0 = Feature Not Installed, 1 = Feature Installed
<1>	Installed Features 4	Bits 0 - 7 = Spares 0 = Feature Not Installed, 1 = Feature Installed
<1>	Installed Features 5	Bits 0 - 7 Spares 0 = Feature Not Installed, 1 = Feature Installed
<1>	Installed Features 6	Bits 0 - 7 = Spares 0 = Feature Not Installed, 1 = Feature Installed  ***The features that are set refer to options purchased by the customer. These could be a subset of the overall physical capabilities of the product.*** ***The highest data rate feature that is set indicates the highest data rate the product can attain. This is also true for the Turbo Codec rates.***


RADYNE

SNMP (MIB)

2

```
DMD20-MIB DEFINITIONS ::= BEGIN

IMPORTS
   enterprises
      FROM SNMPv2-SMI
   MODULE-IDENTITY, OBJECT-TYPE, Unsigned32, NOTIFICATION-TYPE,
Counter32, Counter64
      FROM SNMPv2-SMI
   TEXTUAL-CONVENTION
      FROM SNMPv2-TC
   OBJECT-GROUP, NOTIFICATION-GROUP
      FROM SNMPv2-CONF;

   radyne                  OBJECT IDENTIFIER ::= { enterprises 2591 }

dmd20 MODULE-IDENTITY
   LAST-UPDATED "200509081600Z"
   ORGANIZATION "Radyne Corp"
   CONTACT-INFO
         "Customer Service
         Postal: Radyne Corporation
         3138 E. Elwood Street
         Phoenix, AZ 85034
         USA
         Tel: (602) 437-9620
         Fax: (602) 437-4811
         Website: www.radn.com"

   DESCRIPTION
         "Radyne MIB module."

   REVISION      "200509081600Z"
   DESCRIPTION   "DMD20 MIB
                 Object Identifiers description. This documents
contents
                 are subject to change without prior notice. The
private enterprise
                 number 2591 is a unique identifier assigned to Radyne
                 by the Internet Assigned Numbers Authority (IANA).
                 This number is used to uniquely define vendor specific
                 information such as private MIBs."

   ::= { radyne 15 }



-- groups in Radyne specific MIB
-- radyne                     OBJECT IDENTIFIER ::= { enterprises 2591
}
```

```
   dmd20MibObjects            OBJECT IDENTIFIER ::= { dmd20 1 }

   radDmd20ModNVStatus        OBJECT IDENTIFIER ::= { dmd20MibObjects 1
}
   radDmd20ModStatus          OBJECT IDENTIFIER ::= { dmd20MibObjects 2
}

   radDmd20DemodNVStatus      OBJECT IDENTIFIER ::= { dmd20MibObjects 3
}
   radDmd20DemodStatus        OBJECT IDENTIFIER ::= { dmd20MibObjects 4
}

   radDmd20CommonNVStatus     OBJECT IDENTIFIER ::= { dmd20MibObjects 5
}
   radDmd20CommonStatus       OBJECT IDENTIFIER ::= { dmd20MibObjects 6
}

   radDmd20Traps              OBJECT IDENTIFIER ::= { dmd20MibObjects 7
}

   radDmd20Lbst               OBJECT IDENTIFIER ::= { dmd20MibObjects 8
}
   radDmd20ModLbstNVStatus    OBJECT IDENTIFIER ::= { radDmd20Lbst 1 }
   radDmd20ModLbstStatus      OBJECT IDENTIFIER ::= { radDmd20Lbst 2 }
   radDmd20DemodLbstNVStatus  OBJECT IDENTIFIER ::= { radDmd20Lbst 3 }
   radDmd20DemodLbstStatus    OBJECT IDENTIFIER ::= { radDmd20Lbst 4 }

   radDmd20MibConformance     OBJECT IDENTIFIER ::= { dmd20 2 }
   radDmd20Groups             OBJECT IDENTIFIER ::= {
radDmd20MibConformance 1 }
   radDmd20AgentCapabilities  OBJECT IDENTIFIER ::= {
radDmd20MibConformance 2 }

-- ------------------------------------------------------------------
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-- ------------------------------------------------------------------
--------------------------------
-- Textual Conventions

RadTransmitCompensation ::= TEXTUAL-CONVENTION
   DISPLAY-HINT   "d-1"
   STATUS         current
   DESCRIPTION    "Power level in tenths of a dBm."
   SYNTAX         INTEGER (0..10)

RadTransmitPowerLevel ::= TEXTUAL-CONVENTION
   DISPLAY-HINT   "d-1"
   STATUS         current
   DESCRIPTION    "Power level in tenths of a dBm."
   SYNTAX         INTEGER (-250..0)

RadAupcTransmitPowerLevel ::= TEXTUAL-CONVENTION
   DISPLAY-HINT   "d-2"
   STATUS         current
   DESCRIPTION    "Power level in hundreds of a dBm."
   SYNTAX         INTEGER (-2500..0)
```

```
RadReceivePowerLevel ::= TEXTUAL-CONVENTION
   STATUS         current
   DESCRIPTION    "Receive power level in dBm."
   SYNTAX         INTEGER (-100..0)

RadESCGain ::= TEXTUAL-CONVENTION
   STATUS         current
   DESCRIPTION    "Sets the ESC channel volume in dB."
   SYNTAX         INTEGER (-20..10)

RadVoltageLevel ::= TEXTUAL-CONVENTION
   DISPLAY-HINT   "d-1"
   STATUS         current
   DESCRIPTION    "Voltage level in tenths of a volt."
   SYNTAX         INTEGER (0..550)

RadCurrentLevel ::= TEXTUAL-CONVENTION
   DISPLAY-HINT   "d-3"
   STATUS         current
   DESCRIPTION    "Current level in milliamps."
   SYNTAX         INTEGER (0..8000)

ControlType ::= TEXTUAL-CONVENTION
   STATUS         current
   DESCRIPTION    "Represents a boolean control value."
   SYNTAX         INTEGER { disable(1), enable(2) }

OffOnType ::= TEXTUAL-CONVENTION
   STATUS         current
   DESCRIPTION    "Represents a boolean Off/ON control value."
   SYNTAX         INTEGER { off(1), on(2) }

InversionType ::= TEXTUAL-CONVENTION
   STATUS         current
   DESCRIPTION    "Represents a boolean inversion value."
   SYNTAX         INTEGER { normal(1), inverted(2) }

BerStatusStringType ::= TEXTUAL-CONVENTION
   DISPLAY-HINT  "8a"
   STATUS        current
   DESCRIPTION   "Raw BER status"
   SYNTAX        OCTET STRING (SIZE (10))

CarrierSweepDelayType ::= TEXTUAL-CONVENTION
   DISPLAY-HINT  "d-1"
   STATUS        current
   DESCRIPTION   "Sets the carrier sweep delay in secs. There is one
implied decimal point.
                 A value of 215 corresponds to a 21.5 sec sweep delay."
   SYNTAX        INTEGER (0..65535)

EbnoType ::= TEXTUAL-CONVENTION
   DISPLAY-HINT  "d-2"
   STATUS        current
   DESCRIPTION   "EbNo in db. There is an implied decimal point."
   SYNTAX        INTEGER (0..2500)
```

```
EbnoAlarmThresholdType ::= TEXTUAL-CONVENTION
   DISPLAY-HINT  "d-2"
   STATUS        current
   DESCRIPTION   "EbNo alarm threshold. There is an implied decimal
point."
   SYNTAX        INTEGER (0..990)

FirmwareNameType ::= TEXTUAL-CONVENTION
   DISPLAY-HINT  "15a"
   STATUS        current
   DESCRIPTION   "This is the modem firmware name."
   SYNTAX        OCTET STRING (SIZE (16))

BufferClockSourceType ::= TEXTUAL-CONVENTION
   STATUS         current
   DESCRIPTION    "A clock source for the Rx Buffer"
   SYNTAX         INTEGER {
                  externalScte(1),
                  internalSct(2),
                  externalBnc(3),
                  rxSat(4),
                  externalIdi(5)
                  }

-- ------------------------------------------------------------------
--------------------------------
-- Dmd20 modem non-volatile status information.

radDmd20TxCarrierControl OBJECT-TYPE
   SYNTAX      INTEGER {
               off(1),
               on(2),
               auto(3),
               vsat(4),
               rts(5)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the carrier control mode."
   ::= { radDmd20ModNVStatus 1 }

radDmd20TxNetworkSpec OBJECT-TYPE
   SYNTAX      INTEGER {
               closedNet(1),
               idr(2),
               ibs(3),
               dropInsert(4),
               dvbSat(5),
               milStd188pt165A(6)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the modulator's mode of operation. The mode
sets a
```

```
                number of parameters within the modulator to meet a set
of
                specifications. The purpose is to eliminate additional
                commands and compatibility problems."
   ::= { radDmd20ModNVStatus 2 }

radDmd20TxCarrierLeveldBmX100 OBJECT-TYPE
   SYNTAX      RadTransmitPowerLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects the Tx power level in dBm. There is an implied
decimal point.
                For example, a value of -100 represents a transmit power
level
                of -10.0 dBm."
   ::= { radDmd20ModNVStatus 3 }

radDmd20TxCarrierFrequencyHz OBJECT-TYPE
   SYNTAX      Unsigned32 (50000000..180000000|950000000..2050000000)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects IF frequency in Hz steps. The range is 50 MHz
to 180 MHz
                for the 70/140 MHz modems and 950 MHz to 2050 MHz for
the LBand
                modems. It is based on whatever options are installed."
   ::= { radDmd20ModNVStatus 4 }

radDmd20TxTerrDataRateHz OBJECT-TYPE
   SYNTAX      Unsigned32 (4800..10000000)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects the data rate in BPS. The data rate minimum is
4800 bps.
                It varies based on modulation and code rate.
                Please refer to the Dmd20 modem technical specifications
manual
                for maximum Data Rate Limits."
   ::= { radDmd20ModNVStatus 5 }

radDmd20TxStrapCode OBJECT-TYPE
   SYNTAX      INTEGER (0..1000)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects the modulator strap code. This is a quick set
key that
                configures many of the modem parameters. When a strap
code is
                entered, the modulator is automatically configured for
the
                corresponding data rate, overhead, code rate, framing,
scrambler
                type, and modulation."
```

```
   ::= { radDmd20ModNVStatus 6 }

radDmd20TxInnerFecRate OBJECT-TYPE
   SYNTAX      INTEGER {
               none(1),              viterbi1x2(2),    viterbi2x3(3),
               viterbi3x4(4),        viterbi5x6(5),    viterbi7x8(6),
               reserved3(7),         sequential1x2(8), reserved4(9),
               sequential3x4(10),    reserved5(11),
sequential7x8(12),
               reserved6(13),        reserved7(14),    trellis2x3(15),
               trellis3x4(16),       trellis5x6(17),   trellis7x8(18),
               trellis8x9(19),       comstream3x4(20), tpc793x2d(21),
               tpc495x3d(22),        tpc1x2(23),       tpc3x4(24),
               tpc7x8(25),           tpc21x44(26),
               tpc750(27),           tpc875(28)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects Tx code rate and type. The reserved selections
are
               unimplemented types reserved for future use."
   ::= { radDmd20ModNVStatus 7 }

radDmd20TxModulationType OBJECT-TYPE
   SYNTAX      INTEGER {
               qpsk(1),
               bpsk(2),
               psk8(3),
               qam16(4),
               oqpsk(5)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the modulation type."
   ::= { radDmd20ModNVStatus 8 }

radDmd20TxSatFraming OBJECT-TYPE
   SYNTAX      INTEGER {
               framingNone(1),
               framing96kIdr(2),
               framingIbs(3),
               framingEfAupc(4),
               framingDvb(5),
               framingEdmac(6),
               framingScc(7),
               framing96k(8),
               framingEfficientDnI(9)
               }
   MAX-ACCESS  read-write
   STATUS      current
    DESCRIPTION
               "Selects framing type."
   ::= { radDmd20ModNVStatus 9 }

radDmd20TxOuterFecEnable OBJECT-TYPE
```

```
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Disables/enables the ReedSolomon encoder"
   ::= { radDmd20ModNVStatus 10 }

radDmd20TxOuterFecRate OBJECT-TYPE
   SYNTAX      INTEGER {
               rsN126K112(1),
               rsN194K178(2),
               rsN219K201(3),
               rsN225K205(4),
               rsN204K188(5),
               rsCustomNK(6)
               }
   MAX-ACCESS  read-write
   STATUS      obsolete
   DESCRIPTION
               "ReedSolomon N code is the codeword length or block
length.
               It is the sum of message and check symbols. N = K + R.
               ReedSolomon K code is the message length or user data.
It is
               the number of user data symbols in one message block.
Message
               length is K = N - R.

               This object is obsolete, N and K values are no longer
limited
               to the five selections listed above.
               see radDmd20TxRsOfecRate"
   ::= { radDmd20ModNVStatus 11 }

radDmd20TxInterleaverDepth OBJECT-TYPE
   SYNTAX      INTEGER {
               interleaverDepth4(1),
               interleaverDepth8(2),
               interleaverDepth12(3)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "ReedSolomon interleaver depth. It can either be a value
of 4
               or 8."
   ::= { radDmd20ModNVStatus 12 }

radDmd20TxDropMode OBJECT-TYPE
   SYNTAX      INTEGER {
               disable(1),
               t1d4(2),
               t1esf(3),
               pcm30(4),
               pcm30c(5),
               pcm31(6),
               pcm31c(7),
```

```
                slc96(8),
                t1d4s(9),
                t1esfs(10)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the modulator drop mode. SLC-96 is not yet
implemented
                and is reserved for future use."
   ::= { radDmd20ModNVStatus 13 }

radDmd20TxDropMap OBJECT-TYPE
   SYNTAX       OCTET STRING (SIZE (32))
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the modulator drop map. Current mapping of
satellite channels to
                dropped terrestrial time slots. Valid drop channels are
1 through 31. If the
                drop mode is either PCM-30 or PCM-30C, then the channel
number 16 is reserved
                for signaling."
   ::= { radDmd20ModNVStatus 14 }

radDmd20TxClockSource OBJECT-TYPE
   SYNTAX       INTEGER {
                externalScte(1),
                internalSct(2)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects Tx clock source. 1 selects the terrestrial
clock (Scte),
                2 selects the internal clock (Sct), and 3 the external
Bnc clock."
   ::= { radDmd20ModNVStatus 15 }

radDmd20TxClockPolarity OBJECT-TYPE
   SYNTAX       INTEGER {
                normal(1),
                inverted(2),
                auto(3)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects clock polarity for Tx terrestrial clock
relative to
                Tx data."
   ::= { radDmd20ModNVStatus 16 }

radDmd20TxSctClockSource OBJECT-TYPE
   SYNTAX       INTEGER {
                internal(1),
```

```
                scr(2)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the Sct clock source to be internal or Scr.
The Scr selection
                is used for loop timing. When internal is selected the
Sct oscillator or the Rx
                satellite clock will be used"
   ::= { radDmd20ModNVStatus 17 }

radDmd20TxDataPolarity OBJECT-TYPE
   SYNTAX       INTEGER {
                none(1),
                terrestrial(2),
                baseband(3),
                terrestrialAndBaseband(4)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects data polarity"
   ::= { radDmd20ModNVStatus 18 }

radDmd20TxSpectrum OBJECT-TYPE
   SYNTAX       INTEGER {
                normal(1),
                inverted(2)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Inverts the direction of rotation for PSK modulation."
   ::= { radDmd20ModNVStatus 19 }

radDmd20TxScramblingEnable OBJECT-TYPE
   SYNTAX       ControlType
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Enables scrambler operation"
   ::= { radDmd20ModNVStatus 20 }

radDmd20TxScramblingType OBJECT-TYPE
   SYNTAX       INTEGER {
                none(1),
                ibsScrambler(2),
                v35Iess(3),
                v35CCITT(4),
                v35EfData(5),
                v35FC(6),
                om73(7),
                rsScrambler(8),
                v35EfRs(9),
                tpcScrambler(10),
                dvbScrambler(11),
```

```
                edmac(12),
                tpcIbs(13),
                tpcEdmac(14),
                v35Comstream(15)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Selects scrambler type. The reserved settings are
unimplemented and
                are set aside for future use."
    ::= { radDmd20ModNVStatus 21 }

radDmd20TxDifferentialEncoder OBJECT-TYPE
    SYNTAX      ControlType
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Turns the differential encoder off and on."
    ::= { radDmd20ModNVStatus 22 }

radDmd20TxBpskSymbolPairingSwap OBJECT-TYPE
    SYNTAX      INTEGER {
                normal(1),
                swapped(2)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Selects symbol pairing."
    ::= { radDmd20ModNVStatus 23 }

radDmd20TxEscOverheadType OBJECT-TYPE
    SYNTAX      INTEGER {
                voice(1),
                data(2)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Selects IDR overhead type."
    ::= { radDmd20ModNVStatus 24 }

radDmd20TxEsc1GaindBX100 OBJECT-TYPE
    SYNTAX      RadESCGain
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Sets the ESC transmit channel #1 volume in dB."
    ::= { radDmd20ModNVStatus 25 }

radDmd20TxEsc2GaindBX100 OBJECT-TYPE
    SYNTAX      RadESCGain
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
              "Sets the ESC transmit channel #2 volume in dB."
```

```
   ::= { radDmd20ModNVStatus 26 }

radDmd20TxTerrInterfaceType OBJECT-TYPE
   SYNTAX      INTEGER {
               g703BT1Ami(1),
               g703BT1B8zs(2),
               g703BE1(3),
               g703BT2(4),
               g703UE1(5),
               g703UT2(6),
               g703UE2(7),
               rs422(8),
               v35(9),
               rs232(10),
               hssi(11),
               asi(12),
               aasi(13),
               m2p(14),
               dvb(15),
               ethernetBridge(25),
               milStd188pt114A(26),
               rs423(27)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the various interface types."
   ::= { radDmd20ModNVStatus 27 }

radDmd20TxAupcLocalMode OBJECT-TYPE
   SYNTAX      INTEGER {
               disabled(1),
               efAupc(2),
               radyne(3)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Turns the AUPC local off and on. This applies only if
EF_AUPC framing is used,
               and the AUPC option is installed."
   ::= { radDmd20ModNVStatus 28 }

radDmd20TxAupcRemoteMode OBJECT-TYPE
   SYNTAX      INTEGER {
               disabled(1),
               efAupc(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Turns the AUPC remote off and on. This applies only if
EF_AUPC framing is used,
               and the AUPC option is installed."
   ::= { radDmd20ModNVStatus 29 }

radDmd20TxAupcLocalCarrierLossAction OBJECT-TYPE
```

```
   SYNTAX      INTEGER {
               hold(1),
               nominal(2),
               maximum(3)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects what action to take at the local site if the
carrier is lost while
               using AUPC. This applies only if AUPC option is
enabled."
   ::= { radDmd20ModNVStatus 30 }

radDmd20TxAupcRemoteCarrierLossAction OBJECT-TYPE
   SYNTAX      INTEGER {
               hold(1),
               nominal(2),
               maximum(3)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects what action to take at the remote site if the
carrier is lost while
               using AUPC. This applies only if AUPC option is
enabled."
   ::= { radDmd20ModNVStatus 31 }

radDmd20TxAupcTrackingRate OBJECT-TYPE
   SYNTAX      INTEGER {
               zeroPointFivedbPerMin(1),
               onedbPerMin(2),
               onePointFivedbPerMin(3),
               twodbPerMin(4),
               twoPointFivedbPerMin(5),
               threeonedbPerMin(6),
               threePointFivedbPerMin(7),
               fourbPerMin(8),
               fourPointFivedbPerMin(9),
               fivedbPerMin(10),
               fivePointFivedbPerMin(11),
               sixdbPerMin(12)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the AUPC tracking rate in dB/min. This applies
only if AUPC option
               is enabled."
   ::= { radDmd20ModNVStatus 32 }

radDmd20TxAupcRemoteBasebandLoopback OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
```

```
                "Disables/Enables the remote site baseband loopback.
This applies only if AUPC
                option is enabled."
   ::= { radDmd20ModNVStatus 33 }

radDmd20TxAupcRemoteTestPattern OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Disables/Enables the remote site test pattern. This
applies only if AUPC
                option is enabled."
   ::= { radDmd20ModNVStatus 34 }

radDmd20TxAupcTargetEbnoDbX100 OBJECT-TYPE
   SYNTAX      INTEGER (400..2000)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects the AUPC EbNo. There is an implied decimal
point. This applies
                only if the AUPC option is enabled."
   ::= { radDmd20ModNVStatus 35 }

radDmd20TxAupcMinCarrierLeveldBmX100 OBJECT-TYPE
   SYNTAX      RadAupcTransmitPowerLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects the AUPC minimum power limit. There is an
implied decimal point.
                This applies only if AUPC option is enabled."
   ::= { radDmd20ModNVStatus 36 }

radDmd20TxAupcMaxCarrierLeveldBmX100 OBJECT-TYPE
   SYNTAX      RadAupcTransmitPowerLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects the AUPC maximum power limit. There is an
implied decimal point.
                This applies only if AUPC option is enabled."
   ::= { radDmd20ModNVStatus 37 }

radDmd20TxAupcNomCarrierLeveldBmX100 OBJECT-TYPE
   SYNTAX      RadAupcTransmitPowerLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects the AUPC default power level. There is an
implied decimal point.
                The default level must be between the minimum and the
                maximum power limits. This applies only if AUPC option
is enabled."
   ::= { radDmd20ModNVStatus 38 }
```

```
radDmd20TxTestPattern OBJECT-TYPE
   SYNTAX      INTEGER {
               normal(1),
               test2047(2),
               testPattern2To15Minus1(3),
               testPattern2To23Minus1(4)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Enables test pattern operation."
   ::= { radDmd20ModNVStatus 39 }

radDmd20TxCircuitName OBJECT-TYPE
   SYNTAX      OCTET STRING (SIZE (11))
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Provides entry of Tx circuit identifier. Circuits can
be given up to
               11 character alphanumeric identity such as LINK1."
   ::= { radDmd20ModNVStatus 40 }

radDmd20TxAlarms1Mask OBJECT-TYPE
   SYNTAX      BITS {
               txFpgaProcessorFault(0),
               bit1Reserved(1),
               txSymbolClockLock(2),
               bit3Reserved(3),
               ifLBandSynthesizerLock(4),
               bit5Reserved(5),
               bit6Reserved(6),
               bit7Reserved(7)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Alarm mask:
               0 = Mask, 1 = Allow"
   ::= { radDmd20ModNVStatus 41 }

radDmd20TxAlarms2Mask OBJECT-TYPE
   SYNTAX      BITS {
               terrClockActivity(0),
               internalClockActivity(1),
               satClockActivity(2),
               dataActivity(3),
               dataAISFault(4),
               clockFallbackFault(5),
               dvbFrameFault(6),
               bit7Reserved(7)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Alarm mask:
               0 = Mask, 1 = Allow"
```

```
   ::= { radDmd20ModNVStatus 42 }

radDmd20TxForcedAlarms OBJECT-TYPE
   SYNTAX      BITS {
               backwardAlarm1(0),
               backwardAlarm2(1),
               backwardAlarm3(2),
               backwardAlarm4(3),
               dataAISRequest(4),
               yellowAlarm(5),
               ibsPromptAlarm(6),
               ibsServiceAlarm(7)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Tx forced backward alarms:
               Bit 0 = IDR and IBS backward alarm 1
               Bit 1 = IDR only backward alarm 2
               Bit 2 = IDR only backward alarm 3
               Bit 3 = IDR only backward alarm 4
               Bit 4 = Tx data AIS request
               Bit 5 = Yellow alarm (D&I mode)
               0=Do not force, 1=Force alarm"
   ::= { radDmd20ModNVStatus 43 }

radDmd20TxDropStatusMask OBJECT-TYPE
   SYNTAX      BITS {
               terrFrameFault(0),
               terrMultiframeFault(1),
               terrCrcFault(2),
               bit3Reserved(3),
               bit4Reserved(4),
               bit5Reserved(5),
               bit6Reserved(6),
               bit7Reserved(7)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Alarm mask:
               Bit 0 = Terrestrial frame lock fault (all modes)
               Bit 1 = Terrestrial multi-frame lock fault (PCM-30 and
PCM-30C only)
               Bit 2 = Terrestrial CRC lock fault (PCM-30C and PCM-31C
only)
               0 = Mask, 1 = Allow"
   ::= { radDmd20ModNVStatus 44 }

radDmd20TxTerrestrialFraming OBJECT-TYPE
   SYNTAX      INTEGER {
               noFraming(1),
               dvb188(2),
               dvb204(3)
               }
   MAX-ACCESS  read-write
   STATUS      current
```

```
   DESCRIPTION
               "Selects the terrestrial framing."
   ::= { radDmd20ModNVStatus 45 }

radDmd20TxSpectralMask OBJECT-TYPE
   SYNTAX      INTEGER {
               intelsat035(1),
               dvbSat025(2),
               dvbSat035(3),
               milStd188pt165A(4)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the transmit spectral mask and roll off."
   ::= { radDmd20ModNVStatus 46 }

radDmd20TxAlarms4Mask OBJECT-TYPE
   SYNTAX      BITS {
               bucCurrentFault(0),
               bucVoltageFault(1),
               ethernetWanMajorAlarm(2),
               bit3Reserved(3),
               bit4Reserved(4),
               bit5Reserved(5),
               bit6Reserved(6),
               bit7Reserved(7)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Alarm mask:
               0 = Mask, 1 = Allow"
   ::= { radDmd20ModNVStatus 47 }

radDmd20TxEthFlowControl OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Disables/Enables the flow control of the Ethernet
Bridge card."
   ::= { radDmd20ModNVStatus 48 }

radDmd20TxEthDaisyChain OBJECT-TYPE
   SYNTAX      INTEGER {
               disable(1),
               port4(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects PORT 4 Daisy Chain for Ethernet Bridge card."
   ::= { radDmd20ModNVStatus 49 }

radDmd20TxRsOfecRate OBJECT-TYPE
   SYNTAX      INTEGER (0..255255)
```

```
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "This provides the ReedSolomon N and K Values, the
integer
               fieldValue = (N * 1000) + K

               Example: a Dvb Code Rate of 188/204 has a field value of
204188 = (204 * 1000) + 188

               A ReedSolomon N code is the codeword length or block
length.
               It is the sum of message and check symbols. N = K + R.
               ReedSolomon K code is the message length or user data.
It is
               the number of user data symbols in one message block.
Message
               length is K = N - R."
   ::= { radDmd20ModNVStatus 50 }

radDmd20TxTpcInterleaver OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Disables/Enables the TPC interleaver. Valid only for
Radyne turbo codes
               TPC.495 and TPC.793"
   ::= { radDmd20ModNVStatus 51 }

radDmd20TxEsEnhancedEnable OBJECT-TYPE
   SYNTAX      INTEGER {
               normal(1),
               enhanced(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the async mode. Enhanced mode is only valid in
Closed Net mode."
   ::= { radDmd20ModNVStatus 52 }

radDmd20TxEsSerialControlInterface OBJECT-TYPE
   SYNTAX      INTEGER {
               rs232(1),
               rs485(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the port type for enhanced async. This applies
only if the async
               mode is set to enhanced. This affects both transmit and
receive interface
               types."
   ::= { radDmd20ModNVStatus 53 }
```

```
radDmd20TxEsBaudRate OBJECT-TYPE
   SYNTAX      INTEGER {
               baud150(1),
               baud300(2),
               baud600(3),
               baud1200(4),
               baud2400(5),
               baud4800(6),
               baud9600(7),
               baud19200(8)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the baud rate for enhanced async. This applies
only if the async
               mode is set to enhanced."
   ::= { radDmd20ModNVStatus 54 }

radDmd20TxEsBitsPerChar OBJECT-TYPE
   SYNTAX      INTEGER {
               seven(1),
               eight(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the data bits setting for enhanced async. This
applies only if the async
               mode is set to enhanced."
   ::= { radDmd20ModNVStatus 55 }

radDmd20TxCarrierDelaySec OBJECT-TYPE
   SYNTAX      INTEGER (0..255)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "LBST systems- selects the minimum number of seconds the
modulator waits between
               power-up and enabling the carrier for the first time.
This allows time for
               the BUC to stabilize.
               Non-LBST systems- set to zero."
   ::= { radDmd20ModNVStatus 56 }

radDmd20TxSccCtlRatio OBJECT-TYPE
   SYNTAX      INTEGER {
               ratio1(1),
               ratio2(2),
               ratio3(3),
               ratio4(4),
               ratio5(5),
               ratio6(6),
               ratio7(7)
               }
   MAX-ACCESS  read-write
   STATUS      current
```

```
   DESCRIPTION
               "Selects SCC format overhead ratio."
   ::= { radDmd20ModNVStatus 57 }

radDmd20TxSccInbandRate OBJECT-TYPE
   SYNTAX      Unsigned32 (300..200000)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the SCC format in-band overhead rate."
   ::= { radDmd20ModNVStatus 58 }

radDmd20TxSctClockPolarity OBJECT-TYPE
   SYNTAX      INTEGER {
               normal(1),
               inverted(2)
               }
   MAX-ACCESS  read-write
   STATUS      obsolete
   DESCRIPTION
               "Selects Sct clock polarity."
   ::= { radDmd20ModNVStatus 59 }

radDmd20TxCompensation OBJECT-TYPE
   SYNTAX      RadTransmitCompensation
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Sets upto a 1 dBm Tx Power compensation for local
cabling and connections"
   ::= { radDmd20ModNVStatus 60 }

radDmd20TxForceAlarmTest OBJECT-TYPE
   SYNTAX      BITS {
               forceMajorAlarmTest(0),
               bit1Reserved(1),
               bit2Reserved(2),
               bit3Reserved(3),
               bit4Reserved(4),
               bit5Reserved(5),
               bit6Reserved(6),
               bit7Reserved(7)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Tx forced alarms:
               0=Do not force, 1=Force alarm"
   ::= { radDmd20ModNVStatus 61 }

radDmd20TxAsyncInbandRate OBJECT-TYPE
   SYNTAX      INTEGER {
               inband150(1),
               inband300(2),
               inband600(3),
               inband1200(4),
               inband2400(5),
```

```
                inband4800(6),
                inband9600(7),
                inband19200(8)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects Efficient D&I format Inband Rate."
   ::= { radDmd20ModNVStatus 62 }


-- ------------------------------------------------------------------
--------------------------------
-- Dmd20 modulator status information.

radDmd20TxAlarms1 OBJECT-TYPE
   SYNTAX       BITS {
                txFpgaProcessorFault(0),
                bit1Reserved(1),
                txSymbolClockLock(2),
                bit3Reserved(3),
                ifLBandSynthesizerLock(4),
                bit5Reserved(5),
                bit6Reserved(6),
                modSummaryFault(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                Activity/Lock: 1 = Pass, 0 = Fail
                Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20ModStatus 1 }

radDmd20TxAlarms2 OBJECT-TYPE
   SYNTAX       BITS {
                terrClockActivity(0),
                internalClockActivity(1),
                satClockActivity(2),
                dataActivity(3),
                dataAISFault(4),
                clockFallbackFault(5),
                dvbFrameFault(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                Activity/Lock: 1 = Pass, 0 = Fail
                Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20ModStatus 2 }

radDmd20TxDropStatus OBJECT-TYPE
   SYNTAX       BITS {
```

```
                terrFrameFault(0),
                terrMultiframeFault(1),
                terrCrcFault(2),
                bit3Reserved(3),
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                Bit 0 = Terrestrial frame lock fault (all modes)
                Bit 1 = Terrestrial multi-frame lock fault (PCM-30 and
PCM-30C only)
                Bit 2 = Terrestrial CRC lock fault (PCM-30C and PCM-31C
only)

                Activity/Lock: 1 = Pass, 0 = Fail
                Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20ModStatus 3 }

radDmd20TxBackwardAlarms OBJECT-TYPE
   SYNTAX       BITS {
                idrBackwardAlarm1(0),
                idrBackwardAlarm2(1),
                idrBackwardAlarm3(2),
                idrBackwardAlarm4(3),
                reservedBit4(4),
                reservedBit5(5),
                ibsPromptAlarm(6),
                ibsServiceAlarm(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Not transmitted, 1 = Transmitted"
   ::= { radDmd20ModStatus 4 }

radDmd20TxLatchedAlarms1 OBJECT-TYPE
   SYNTAX       BITS {
                txFpgaProcessorFault(0),
                bit1Reserved(1),
                txSymbolClockLock(2),
                bit3Reserved(3),
                ifLBandSynthesizerLock(4),
                bit5Reserved(5),
                bit6Reserved(6),
                modSummaryFault(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
```

```
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Pass, 1 = Fail"
   ::= { radDmd20ModStatus 5 }

radDmd20TxLatchedAlarms2 OBJECT-TYPE
   SYNTAX       BITS {
                terrClockActivity(0),
                internalClockActivity(1),
                satClockActivity(2),
                dataActivity(3),
                dataAISFault(4),
                clockFallbackFault(5),
                dvbFrameFault(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Pass, 1 = Fail"
   ::= { radDmd20ModStatus 6 }

radDmd20TxSymbolRateHz OBJECT-TYPE
   SYNTAX       Unsigned32 (9600..10000000)
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "Modulator symbol rate"
   ::= { radDmd20ModStatus 7 }

radDmd20TxAlarms4 OBJECT-TYPE
   SYNTAX       BITS {
                bucCurrentFault(0),
                bucVoltageFault(1),
                ethernetWanMajorAlarm(2),
                bit3Reserved(3),
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                Activity/Lock: 1 = Pass, 0 = Fail
                Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20ModStatus 8 }

radDmd20TxLatchedAlarms4 OBJECT-TYPE
   SYNTAX       BITS {
                bucCurrentFault(0),
                bucVoltageFault(1),
                ethernetWanMajorAlarm(2),
```

```
                bit3Reserved(3),
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Pass, 1 = Fail"
   ::= { radDmd20ModStatus 9 }

-- ---------------------------------------------------------------------
--------------------------------
-- Dmd20 demodulator non-volatile status information.

radDmd20RxNetworkSpec OBJECT-TYPE
   SYNTAX       INTEGER {
                closednet(1),
                idr(2),
                ibs(3),
                dropInsert(4),
                dvbSat(5),
                milStd188pt165A(6)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the demodulator's mode of operation. The mode
sets a
                number of parameters within the demodulator to meet a
set of
                specifications. The purpose is to eliminate additional
                commands and compatibility problems."
   ::= { radDmd20DemodNVStatus 1 }

radDmd20RxCarrierFrequencyHz OBJECT-TYPE
   SYNTAX       Unsigned32 (50000000..180000000|950000000..2050000000)
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects IF frequency in Hz steps. The range is 50 MHz
to 180 MHz
                for the 70/140 MHz type modems and 950 MHz to 2050 MHz
for the
                LBand modems."
   ::= { radDmd20DemodNVStatus 2 }

radDmd20RxTerrDataRateHz OBJECT-TYPE
   SYNTAX       Unsigned32 (4800..10000000)
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the data rate in BPS. The data rate is variable
from
```

```
                4800 bps to 10 Mbps. It varies based on demodulation and
code rate.
                Please refer to the Dmd20 modem technical specifications
manual
                for Data Rate Limits."
   ::= { radDmd20DemodNVStatus 3 }

radDmd20RxStrapCode OBJECT-TYPE
   SYNTAX       INTEGER (0..1000)
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the demodulator strap code. This is a quick set
key that
                configures many of the modem parameters. When a strap
code is
                entered, the demodulator is automatically configured for
the
                corresponding data rate, overhead, code rate, framing,
descrambler
                type, and demodulation."
   ::= { radDmd20DemodNVStatus 4 }

radDmd20RxInnerFecRate OBJECT-TYPE
   SYNTAX       INTEGER {
                none(1),              viterbi1x2(2),    viterbi2x3(3),
                viterbi3x4(4),        viterbi5x6(5),    viterbi7x8(6),
                reserved3(7),         sequential1x2(8), reserved4(9),
                sequential3x4(10),    reserved5(11),
sequential7x8(12),
                reserved6(13),        reserved7(14),    trellis2x3(15),
                trellis3x4(16),       trellis5x6(17),   trellis7x8(18),
                trellis8x9(19),       comstream3x4(20), tpc793x2d(21),
                tpc495x3d(22),        tpc1x2(23),       tpc3x4(24),
                tpc7x8(25),           tpc21x44(26),
                tpc750(27),           tpc875(28)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects Rx code rate and type. The reserved selections
are
                unimplemented types reserved for future use."
   ::= { radDmd20DemodNVStatus 5 }

radDmd20RxDemodulationType OBJECT-TYPE
   SYNTAX       INTEGER {
                qpsk(1),
                bpsk(2),
                psk8(3),
                qam16(4),
                oqpsk(5)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the demodulation type."
```

```
   ::= { radDmd20DemodNVStatus 6 }

radDmd20RxSatFraming OBJECT-TYPE
   SYNTAX      INTEGER {
               framingNone(1),
               framing96kIdr(2),
               framingIbs(3),
               framingEfAupc(4),
               framingDvb(5),
               framingEdmac(6),
               framingScc(7),
               framing96k(8),
               framingEfficientDnI(9)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects framing type."
   ::= { radDmd20DemodNVStatus 7 }

radDmd20RxOuterFecEnable OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Disables/enables the ReedSolomon decoder"
   ::= { radDmd20DemodNVStatus 8 }

radDmd20RxOuterFecRate OBJECT-TYPE
   SYNTAX      INTEGER {
               rsN126K112(1),
               rsN194K178(2),
               rsN219K201(3),
               rsN225K205(4),
               rsN204K188(5),
               rsCustomNK(6)
               }
   MAX-ACCESS  read-write
   STATUS      obsolete
   DESCRIPTION
               "ReedSolomon N code is the codeword length or block
length.
               It is the sum of message and check symbols. N = K + R.
               ReedSolomon K code is the message length or user data.
It is
               the number of user data symbols in one message block.
Message
               length is K = N - R.

               This object is obsolete, N and K values are no longer
limited
               to the five selections listed above.
               see radDmd20RxRsOfecRate"
   ::= { radDmd20DemodNVStatus 9 }

radDmd20RxInterleaverDepth OBJECT-TYPE
   SYNTAX      INTEGER {
```

```
                interleaverDepth4(1),
                interleaverDepth8(2),
                interleaverDepth12(3)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "ReedSolomon interleaver depth. It can either be a value
of 4
                or 8."
   ::= { radDmd20DemodNVStatus 10 }

radDmd20RxInsertMode OBJECT-TYPE
   SYNTAX       INTEGER {
                disable(1),
                t1d4(2),
                t1esf(3),
                pcm30(4),
                pcm30c(5),
                pcm31(6),
                pcm31c(7),
                slc96(8),
                t1d4s(9),
                t1esfs(10)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the demodulator insert mode. SLC-96 is not yet
implemented and
                is reserved for future use."
   ::= { radDmd20DemodNVStatus 11 }

radDmd20RxInsertMap OBJECT-TYPE
   SYNTAX       OCTET STRING (SIZE (32))
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the demodulator insert map. Current mapping of
satellite channels
                to insert terrestrial time slots. Valid insert channels
are 1 through 31.
                If the insert mode is either PCM-30 or PCM-30C, then the
channel number
                16 is invalid. It is used for signaling."
   ::= { radDmd20DemodNVStatus 12 }

radDmd20RxBufferClockSource OBJECT-TYPE
   SYNTAX       BufferClockSourceType
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "The active Rx Buffer Clock Source, Note: this is not
necessarily the primary source"
   ::= { radDmd20DemodNVStatus 13 }

radDmd20RxBufferClockPolarity OBJECT-TYPE
```

```
   SYNTAX      INTEGER {
               normal(1),
               inverted(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects Rx buffer clock polarity."
   ::= { radDmd20DemodNVStatus 14 }

radDmd20RxBufferSize OBJECT-TYPE
   SYNTAX      INTEGER (0..64)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects Rx buffer size in msecs."
   ::= { radDmd20DemodNVStatus 15 }

radDmd20RxDataPolarity OBJECT-TYPE
   SYNTAX      INTEGER {
               none(1),
               terrestrial(2),
               baseband(3),
               terrestrialAndBaseband(4)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects data polarity"
   ::= { radDmd20DemodNVStatus 16 }

radDmd20RxSpectrum OBJECT-TYPE
   SYNTAX      INTEGER {
               normal(1),
               inverted(2),
               autoDetect(3)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Inverts the direction of rotation for PSK
demodulation."
   ::= { radDmd20DemodNVStatus 17 }

radDmd20RxDescramblingEnable OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Enables descrambler operation"
   ::= { radDmd20DemodNVStatus 18 }

radDmd20RxDescramblingType OBJECT-TYPE
   SYNTAX      INTEGER {
               none(1),
               ibsDescrambler(2),
               v35Iess(3),
```

```
                v35CCITT(4),
                v35EfData(5),
                v36FC(6),
                om73(7),
                rsDescrambler(8),
                v35EfRs(9),
                tpcDescrambler(10),
                dvbDescrambler(11),
                edmac(12),
                tpcIbs(13),
                tpcEdmac(14),
                v35Comstream(15)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects scrambler type. The reserved settings are
unimplemented and
                are set aside for future use."
   ::= { radDmd20DemodNVStatus 19 }

radDmd20RxDifferentialDecoder OBJECT-TYPE
   SYNTAX       ControlType
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Disables/enables differential decoder"
   ::= { radDmd20DemodNVStatus 20 }

radDmd20RxBpskSymbolPairingSwap OBJECT-TYPE
   SYNTAX       INTEGER {
                normal(1),
                swapped(2)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects symbol pairing."
   ::= { radDmd20DemodNVStatus 21 }

radDmd20RxT1E1FramingSource OBJECT-TYPE
   SYNTAX       INTEGER {
                internal(1),
                external(2)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "This applies only if an IDR or IBS interface card is
installed."
   ::= { radDmd20DemodNVStatus 22 }

radDmd20RxExtClockSource OBJECT-TYPE
   SYNTAX       BufferClockSourceType
   MAX-ACCESS   read-write
   STATUS       deprecated
   DESCRIPTION
```

```
                "Formerly, selected the external clock source"
   ::= { radDmd20DemodNVStatus 23 }

radDmd20RxCarrierSweepRange OBJECT-TYPE
   SYNTAX      INTEGER (0..255)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "The value will used as a negative and positive limit
                Example: 25 implies [-25 .. +25]"
   ::= { radDmd20DemodNVStatus 24 }

radDmd20RxCarrierLevelLimitdBmX100 OBJECT-TYPE
   SYNTAX      INTEGER (30..90)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects lower level limit in 1 dB steps, implied sign"
   ::= { radDmd20DemodNVStatus 25 }

radDmd20RxEscOverheadType OBJECT-TYPE
   SYNTAX      INTEGER {
               voice(1),
               data(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects IDR overhead type. This applies only if an IDR
or IBS interface card is
                installed and the receive mode is set to IDR mode. If
not ignore."
   ::= { radDmd20DemodNVStatus 26 }

radDmd20RxEsc1GaindBX100 OBJECT-TYPE
   SYNTAX      RadESCGain
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Sets the ESC receive channel #1 volume in dB. This
applies only if an IDR or IBS
                interface card is installed and the receive mode is set
to IDR mode. If not ignore."
   ::= { radDmd20DemodNVStatus 27 }

radDmd20RxEsc2GaindBX100 OBJECT-TYPE
   SYNTAX      RadESCGain
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Sets the ESC receive channel #2 volume in dB. This
applies only if an IDR or IBS
                interface card is installed and the receive mode is set
to IDR mode. If not ignore."
   ::= { radDmd20DemodNVStatus 28 }

radDmd20RxTerrInterfaceType OBJECT-TYPE
```

```
   SYNTAX      INTEGER {
               g703BT1Ami(1),
               g703BT1B8zs(2),
               g703BE1(3),
               g703BT2(4),
               g703UE1(5),
               g703UT2(6),
               g703UE2(7),
               rs422(8),
               v35(9),
               rs232(10),
               hssi(11),
               asi(12),
               aasi(13),
               m2p(14),
               dvb(15),
               ethernetBridge(25),
               milStd188pt114A(26),
               rs423(27)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects scrambler type. The reserved settings are
unimplemented and
               are set aside for future use."
   ::= { radDmd20DemodNVStatus 29 }

radDmd20RxEsEnhancedEnable OBJECT-TYPE
   SYNTAX      INTEGER {
               normal(1),
               enhanced(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the async mode. Enhanced mode is only valid in
Closed Net mode."
   ::= { radDmd20DemodNVStatus 30 }

radDmd20RxEsSerialControlInterface OBJECT-TYPE
   SYNTAX      INTEGER {
               rs232(1),
               rs485(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the port type for enhanced async. This applies
only if the async
               mode is set to enhanced."
   ::= { radDmd20DemodNVStatus 31 }

radDmd20RxEsBaudRate OBJECT-TYPE
   SYNTAX      INTEGER {
               baud150(1),
               baud300(2),
```

```
                baud600(3),
                baud1200(4),
                baud2400(5),
                baud4800(6),
                baud9600(7),
                baud19200(8)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the baud rate for enhanced async. This applies
only if the async
                mode is set to enhanced."
   ::= { radDmd20DemodNVStatus 32 }

radDmd20RxEsBitsPerChar OBJECT-TYPE
   SYNTAX       INTEGER {
                seven(1),
                eight(2)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the data bits setting for enhanced async. This
applies only if the async
                mode is set to enhanced."
   ::= { radDmd20DemodNVStatus 33 }

radDmd20RxTestPattern OBJECT-TYPE
   SYNTAX       INTEGER {
                normal(1),
                test2047(2),
                testPattern2To15Minus1(3),
                testPattern2To23Minus1(4)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Enables test pattern operation."
   ::= { radDmd20DemodNVStatus 34 }

radDmd20RxCircuitName OBJECT-TYPE
   SYNTAX       OCTET STRING (SIZE (11))
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Provides entry of Rx circuit identifier. Circuits can
be given up to 11
                character alphanumeric identity such as LINK1."
   ::= { radDmd20DemodNVStatus 35 }

radDmd20RxForcedAlarms OBJECT-TYPE
   SYNTAX       BITS {
                forceSummaryAlarm(0),
                bit1Reserved(1),
                bit2Reserved(2),
                bit3Reserved(3),
```

```
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-write
   STATUS       deprecated
   DESCRIPTION
                "Rx forced alarms:
                0=Do not force, 1=Force alarm
                This alarm was improperly titled and is being
deprecated, use radDmd20RxForceAlarmTest in future"
   ::= { radDmd20DemodNVStatus 36 }

radDmd20RxAlarms1Mask OBJECT-TYPE
   SYNTAX       BITS {
                rxFpgaProcessorFault(0),
                carrierFault(1),
                multiframeSyncFault(2),
                frameSyncFault(3),
                ibsBerFault(4),
                satelliteAisFault(5),
                dataActivity(6),
                agcLevelFault(7)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Alarm mask:
                0 = Mask, 1 = Allow"
   ::= { radDmd20DemodNVStatus 37 }

radDmd20RxAlarms2Mask OBJECT-TYPE
   SYNTAX       BITS {
                bufferUnderflow(0),
                bufferOverflow(1),
                bufferUnder10Percent(2),
                bufferOver90Percent(3),
                rsDecoderFault(4),
                rsDeinterleaverFault(5),
                rsDecoderUncorrectableWordFault(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Alarm mask:
                0 = Mask, 1 = Allow"
   ::= { radDmd20DemodNVStatus 38 }

radDmd20RxAlarms3Mask OBJECT-TYPE
   SYNTAX       BITS {
                lBandSynthesizerLock(0),
                bit1Reserved(1),
                bufferClockLock(2),
                viterbiDecoderLock(3),
                sequentialDecoderLock(4),
```

```
                testPatternLock(5),
                externalReferenceLock(6),
                bit7Reserved(7)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Alarm mask:
                0 = Mask, 1 = Allow"
    ::= { radDmd20DemodNVStatus 39 }

radDmd20RxAlarms4Mask OBJECT-TYPE
    SYNTAX      BITS {
                bufferClockActivity(0),
                externalBncActivity(1),
                satelliteClockActivity(2),
                externalIdiClockActivity(3),
                externalReferenceActivity(4),
                hsReferenceActivity(5),
                clockFallbackFault(6),
                ebnoFault(7)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Alarm mask:
                0 = Mask, 1 = Allow"
    ::= { radDmd20DemodNVStatus 40 }

radDmd20RxAlarms5Mask OBJECT-TYPE
    SYNTAX      BITS {
                trellisDecoderLock(0),
                bit1Reserved(1),
                insertSignalingFault(2),
                turboDecoderFault(3),
                reservedbit4(4),
                reservedbit5(5),
                dvbFrameFault(6),
                bit7Reserved(7)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Alarm mask:
                0 = Mask, 1 = Allow"
    ::= { radDmd20DemodNVStatus 41 }

radDmd20RxInsertStatusMask OBJECT-TYPE
    SYNTAX      BITS {
                terrFrameFault(0),
                terrMultiframeFault(1),
                terrCrcFault(2),
                bit3Reserved(3),
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
```

```
                }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Alarm mask:
               0 = Mask, 1 = Allow"
   ::= { radDmd20DemodNVStatus 42 }

radDmd20RxTerrestrialFraming OBJECT-TYPE
   SYNTAX      INTEGER {
               noFraming(1),
               dvb188(2),
               dvb204(3)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the receive terrestrial framing."
   ::= { radDmd20DemodNVStatus 43 }

radDmd20RxTerrestrialStreaming OBJECT-TYPE
   SYNTAX      INTEGER {
               packetOutput(1),
               byteOutput(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the receive terrestrial streaming."
   ::= { radDmd20DemodNVStatus 44 }

radDmd20RxAlarms6Mask OBJECT-TYPE
   SYNTAX      BITS {
               lnbCurrentFault(0),
               lnbVoltageFault(1),
               ethernetWanMajorAlarm(2),
               bit3Reserved(3),
               bit4Reserved(4),
               bit5Reserved(5),
               bit6Reserved(6),
               bit7Reserved(7)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Alarm mask:
               0 = Mask, 1 = Allow"
   ::= { radDmd20DemodNVStatus 45 }

radDmd20RxCarrierReacqRange OBJECT-TYPE
   SYNTAX      INTEGER (0..65535)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Reacquisition range is -/+ selected value."
   ::= { radDmd20DemodNVStatus 46 }
```

```
radDmd20RxRsOfecRate OBJECT-TYPE
   SYNTAX      INTEGER (0..255255)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "This provides the ReedSolomon N and K Values, the
integer
               fieldValue = (N * 1000) + K

               Example: a Dvb Code Rate of 188/204 has a field value of
204188 = (204 * 1000) + 188

               A ReedSolomon N code is the codeword length or block
length.
               It is the sum of message and check symbols. N = K + R.
               ReedSolomon K code is the message length or user data.
It is
               the number of user data symbols in one message block.
Message
               length is K = N - R."
   ::= { radDmd20DemodNVStatus 47 }

radDmd20RxTpcInterleaver OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Disables/Enables the TPC interleaver. Valid only for
Radyne turbo codes
               TPC.495 and TPC.793"
   ::= { radDmd20DemodNVStatus 48 }

radDmd20RxCarrierSweepDelay OBJECT-TYPE
   SYNTAX      CarrierSweepDelayType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Sets the carrier sweep delay in secs. There is an
implied decimal point.
               A value of 215 corresponds to a 21.5 sec sweep delay."
   ::= { radDmd20DemodNVStatus 49 }

radDmd20RxEbnoAlarmThreshold OBJECT-TYPE
   SYNTAX      EbnoAlarmThresholdType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "EbNo alarm threshold. There is an implied decimal
point."
   ::= { radDmd20DemodNVStatus 50 }

radDmd20RxBufferReset OBJECT-TYPE
   SYNTAX      INTEGER (0..4294967295)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Any write to this object reset the buffer."
```

```
   ::= { radDmd20DemodNVStatus 51 }

radDmd20RxRestartTestPattern  OBJECT-TYPE
   SYNTAX      INTEGER (0..4294967295)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Any write to this object restarts the test pattern."
   ::= { radDmd20DemodNVStatus 52 }

radDmd20RxSccCtlRatio OBJECT-TYPE
   SYNTAX      INTEGER {
               ratio1(1),
               ratio2(2),
               ratio3(3),
               ratio4(4),
               ratio5(5),
               ratio6(6),
               ratio7(7)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects SCC format overhead ratio."
   ::= { radDmd20DemodNVStatus 53 }

radDmd20RxSccInbandRate OBJECT-TYPE
   SYNTAX      Unsigned32 (300..200000)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the SCC format in-band overhead rate."
   ::= { radDmd20DemodNVStatus 54 }

radDmd20RxFastAcquisition OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Disables/enables the Rx fast acquisition capability"
   ::= { radDmd20DemodNVStatus 55 }

radDmd20RxSpectralMask OBJECT-TYPE
   SYNTAX      INTEGER {
               intelsat035(1),
               dvbSat025(2),
               dvbSat035(3),
               milStd188pt165A(4)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the receive spectral mask and roll off."
   ::= { radDmd20DemodNVStatus 56 }

radDmd20RxAdjacentCarrierType OBJECT-TYPE
   SYNTAX      INTEGER {
```

```
                normal(1),
                highPower(2)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "User indicates adjacent carrier as normal or high
power.
                Unit will increase or decrease post decimation gain
appropriately."
   ::= { radDmd20DemodNVStatus 57 }

radDmd20RxForceAlarmTest OBJECT-TYPE
   SYNTAX       BITS {
                forceMajorAlarmTest(0),
                bit1Reserved(1),
                bit2Reserved(2),
                bit3Reserved(3),
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Rx forced alarms:
                0=Do not force, 1=Force alarm"
   ::= { radDmd20DemodNVStatus 58 }

radDmd20NumRxBufferClockSources OBJECT-TYPE
   SYNTAX       Unsigned32 (1..5)
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the number of clock sources to be considered
for use"
   ::= { radDmd20DemodNVStatus 59 }


radDmd20RxBufferClockSource1 OBJECT-TYPE
   SYNTAX       BufferClockSourceType
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the primary Rx Buffer Clock Source"
   ::= { radDmd20DemodNVStatus 60 }


radDmd20RxBufferClockSource2 OBJECT-TYPE
   SYNTAX       BufferClockSourceType
   MAX-ACCESS   read-write
   STATUS       current
   DESCRIPTION
                "Selects the second Rx Buffer Clock Source, e.g. the
first fallback
                Each radDmd20RxBufferClockSource should be unique
```

```
                "
   ::= { radDmd20DemodNVStatus 61 }

radDmd20RxBufferClockSource3 OBJECT-TYPE
   SYNTAX      BufferClockSourceType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects the third Rx Buffer Clock Source, e.g. the
second fallback
                Each radDmd20RxBufferClockSource should be unique
                "
   ::= { radDmd20DemodNVStatus 62 }

radDmd20RxBufferClockSource4 OBJECT-TYPE
   SYNTAX      BufferClockSourceType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects the fourth Rx Buffer Clock Source, e.g. the
third fallback
                Each radDmd20RxBufferClockSource should be unique
                "
   ::= { radDmd20DemodNVStatus 63 }


radDmd20RxBufferClockSource5 OBJECT-TYPE
   SYNTAX      BufferClockSourceType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects the fifth Rx Buffer Clock Source, e.g. the
fourth fallback
                Each radDmd20RxBufferClockSource should be unique
                "
   ::= { radDmd20DemodNVStatus 64 }

radDmd20RxAsyncInbandRate OBJECT-TYPE
   SYNTAX      INTEGER {
                inband150(1),
                inband300(2),
                inband600(3),
                inband1200(4),
                inband2400(5),
                inband4800(6),
                inband9600(7),
                inband19200(8)
                }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
                "Selects Efficient D&I format Inband Rate."
   ::= { radDmd20DemodNVStatus 65 }


-- ------------------------------------------------------------------
--------------------------------
```

```
-- Dmd20 demodulator volatile status information.

radDmd20RxAlarms1 OBJECT-TYPE
   SYNTAX      BITS {
               rxFpgaProcessorFault(0),
               carrierFault(1),
               multiframeSyncFault(2),
               frameSyncFault(3),
               ibsBerFault(4),
               satelliteAisFault(5),
               dataActivity(6),
               agcLevelFault(7)
               }
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
               Activity/Lock: 1 = Pass, 0 = Fail
               Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 1 }

radDmd20RxAlarms2 OBJECT-TYPE
   SYNTAX      BITS {
               bufferUnderflow(0),
               bufferOverflow(1),
               bufferUnder10Percent(2),
               bufferOver90Percent(3),
               rsDecoderFault(4),
               rsDeinterleaverFault(5),
               rsDecoderUncorrectableWordFault(6),
               summaryFault(7)
               }
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
               Activity/Lock: 1 = Pass, 0 = Fail
               Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 2 }

radDmd20RxAlarms3 OBJECT-TYPE
   SYNTAX      BITS {
               lBandSynthesizerLock(0),
               bit1Reserved(1),
               bufferClockLock(2),
               viterbiDecoderLock(3),
               sequentialDecoderLock(4),
               testPatternLock(5),
               externalReferenceLock(6),
               bit7Reserved(7)
               }
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
```

```
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                Activity/Lock: 1 = Pass, 0 = Fail
                Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 3 }

radDmd20RxAlarms4 OBJECT-TYPE
   SYNTAX       BITS {
                bufferClockActivity(0),
                externalBncActivity(1),
                satelliteClockActivity(2),
                externalIdiClockActivity(3),
                externalReferenceActivity(4),
                hsReferenceActivity(5),
                clockFallbackFault(6),
                ebnoFault(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                Activity/Lock: 1 = Pass, 0 = Fail
                Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 4 }

radDmd20RxAlarms5 OBJECT-TYPE
   SYNTAX       BITS {
                trellisDecoderLock(0),
                bit1Reserved(1),
                insertSignalingFault(2),
                turboDecoderFault(3),
                reservedbit4(4),
                reservedbit5(5),
                dvbFrameFault(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                Activity/Lock: 1 = Pass, 0 = Fail
                Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 5 }

radDmd20RxInsertStatus OBJECT-TYPE
   SYNTAX       BITS {
                terrFrameFault(0),
                terrMultiframeFault(1),
                terrCrcFault(2),
                bit3Reserved(3),
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
                }
```

```
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
               Activity/Lock: 1 = Pass, 0 = Fail
               Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 6 }

radDmd20RxBackwardAlarms OBJECT-TYPE
   SYNTAX      BITS {
               idrBackwardAlarm1(0),
               idrBackwardAlarm2(1),
               idrBackwardAlarm3(2),
               idrBackwardAlarm4(3),
               reservedBit4(4),
               reservedBit5(5),
               reservedBit6(6),
               reservedBit7(7)
               }
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
               Activity/Lock: 1 = Pass, 0 = Fail
               Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 7 }

radDmd20RxLatchedAlarms1 OBJECT-TYPE
   SYNTAX      BITS {
               rxFpgaProcessorFault(0),
               carrierFault(1),
               multiframeSyncFault(2),
               frameSyncFault(3),
               ibsBerFault(4),
               satelliteAisFault(5),
               dataActivity(6),
               agcLevelFault(7)
               }
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
               0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 8 }

radDmd20RxLatchedAlarms2 OBJECT-TYPE
   SYNTAX      BITS {
               bufferUnderflow(0),
               bufferOverflow(1),
               bufferUnder10Percent(2),
               bufferOver90Percent(3),
               rsDecoderFault(4),
               rsDeinterleaverFault(5),
               rsDecoderUncorrectableWordFault(6),
```

```
                summaryFault(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 9 }

radDmd20RxLatchedAlarms3 OBJECT-TYPE
   SYNTAX       BITS {
                lBandSynthesizerLock(0),
                bit1Reserved(1),
                bufferClockLock(2),
                viterbiDecoderLock(3),
                sequentialDecoderLock(4),
                testPatternLock(5),
                externalReferenceLock(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 10 }

radDmd20RxLatchedAlarms4 OBJECT-TYPE
   SYNTAX       BITS {
                bufferClockActivity(0),
                externalBncActivity(1),
                satelliteClockActivity(2),
                externalIdiClockActivity(3),
                externalReferenceActivity(4),
                hsReferenceActivity(5),
                clockFallbackFault(6),
                ebnoFault(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 11 }

radDmd20RxLatchedAlarms5 OBJECT-TYPE
   SYNTAX       BITS {
                trellisDecoderLock(0),
                bit1Reserved(1),
                insertSignalingFault(2),
                turboDecoderFault(3),
                reservedbit4(4),
                reservedbit5(5),
                dvbFrameFault(6),
```

```
                bit7Reserved(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 12 }

radDmd20RxBerEbnoStatus OBJECT-TYPE
   SYNTAX       INTEGER (0..255)
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B
                Bit 0 = Raw BER and corrected BER status. 1 = Valid
                Bit 1 = Test BER status                   1 = Valid
                Bit 2,3 = EbNo status
                   0 = EbNo invalid
                   1 = EbNo valid
                   2 = EbNo is smaller than indicated value
                   3 = EbNo is greater than indicated value
                Bit 4..7 = Reserved"
   ::= { radDmd20DemodStatus 13 }

radDmd20RxEbno OBJECT-TYPE
   SYNTAX       EbnoType
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "Estimated EbNo as seen by the demodulator, 2 implied
decimal places."
   ::= { radDmd20DemodStatus 14 }

radDmd20RxBufferLevel OBJECT-TYPE
   SYNTAX       INTEGER (0..100)
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "Pleisiochronous buffer percent full status. Unsigned
binary value in 1% steps."
   ::= { radDmd20DemodStatus 15 }

radDmd20RxCarrierLeveldBmX100 OBJECT-TYPE
   SYNTAX       RadReceivePowerLevel
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "Estimated receive signal level, implied decimal point"
   ::= { radDmd20DemodStatus 16 }

radDmd20RxBitErrorCount OBJECT-TYPE
   SYNTAX       Counter32
   MAX-ACCESS   read-only
   STATUS       current
```

```
   DESCRIPTION
               "Shows the number of errors detected in the data stream"
   ::= { radDmd20DemodStatus 17 }

radDmd20RxTestPatternErrorCount OBJECT-TYPE
   SYNTAX      Counter32
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "Shows the number of errors detected by the test pattern
checker."
   ::= { radDmd20DemodStatus 18 }

radDmd20RxLossOfTerrInputSignal OBJECT-TYPE
   SYNTAX      INTEGER {
               normal(1),
               lossOfSignal(2)
               }
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "Status of terrestrial input"
   ::= { radDmd20DemodStatus 19 }

radDmd20RxSymbolRateHz OBJECT-TYPE
   SYNTAX      Unsigned32 (9600..10000000)
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "Demodulator symbol rate."
   ::= { radDmd20DemodStatus 20 }

radDmd20RxAlarms6 OBJECT-TYPE
   SYNTAX      BITS {
               lnbCurrentFault(0),
               lnbVoltageFault(1),
               ethernetWanMajorAlarm(2),
               bit3Reserved(3),
               bit4Reserved(4),
               bit5Reserved(5),
               bit6Reserved(6),
               bit7Reserved(7)
               }
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
               Activity/Lock: 1 = Pass, 0 = Fail
               Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20DemodStatus 21 }

radDmd20RxLatchedAlarms6 OBJECT-TYPE
   SYNTAX      BITS {
               lnbCurrentFault(0),
               lnbVoltageFault(1),
               ethernetWanMajorAlarm(2),
```

```
                bit3Reserved(3),
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
                }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Pass, 1 = Fail"
    ::= { radDmd20DemodStatus 22 }

radDmd20RxEthPktErrorCount OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
                "Ethernet Bridge card packet error count."
    ::= { radDmd20DemodStatus 23 }

radDmd20RxEthPktTotalCount OBJECT-TYPE
    SYNTAX      Counter32
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
                "Ethernet Bridge card total packet count."
    ::= { radDmd20DemodStatus 24 }

radDmd20RxEthPort1Status OBJECT-TYPE
    SYNTAX      INTEGER {
                down(1),
                unresolved(2),
                halfDuplex10mbs(3),
                halfDuplex100mbs(4),
                fullDuplex10mbs(5),
                fullDuplex100mbs(6)
                }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
                "Ethernet Bridge card Port 1 Status."
    ::= { radDmd20DemodStatus 25 }

radDmd20RxEthPort2Status OBJECT-TYPE
    SYNTAX      INTEGER {
                down(1),
                unresolved(2),
                halfDuplex10mbs(3),
                halfDuplex100mbs(4),
                fullDuplex10mbs(5),
                fullDuplex100mbs(6)
                }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
```

```
                "Ethernet Bridge card Port 2 Status."
    ::= { radDmd20DemodStatus 26 }

radDmd20RxEthPort3Status OBJECT-TYPE
    SYNTAX      INTEGER {
                down(1),
                unresolved(2),
                halfDuplex10mbs(3),
                halfDuplex100mbs(4),
                fullDuplex10mbs(5),
                fullDuplex100mbs(6)
                }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
                "Ethernet Bridge card Port 3 Status."
    ::= { radDmd20DemodStatus 27 }

radDmd20RxEthPort4Status OBJECT-TYPE
    SYNTAX      INTEGER {
                down(1),
                unresolved(2),
                halfDuplex10mbs(3),
                halfDuplex100mbs(4),
                fullDuplex10mbs(5),
                fullDuplex100mbs(6)
                }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
                "Ethernet Bridge card Port 4 Status."
    ::= { radDmd20DemodStatus 28 }

radDmd20RxEthWanStatus OBJECT-TYPE
    SYNTAX      INTEGER {
                down(1),
                unresolved(2),
                halfDuplex10mbs(3),
                halfDuplex100mbs(4),
                fullDuplex10mbs(5),
                fullDuplex100mbs(6)
                }
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
                "Ethernet Bridge card WAN Status."
    ::= { radDmd20DemodStatus 29 }

radDmd20RxRawBerStatus OBJECT-TYPE
    SYNTAX      BerStatusStringType
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
                "Raw BER status"
    ::= { radDmd20DemodStatus 30 }

radDmd20RxCorrectedBerStatus OBJECT-TYPE
```

```
   SYNTAX      BerStatusStringType
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "Corrected BER status"
   ::= { radDmd20DemodStatus 31 }

radDmd20RxTestPatternBerStatus OBJECT-TYPE
   SYNTAX      BerStatusStringType
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "Test pattern BER status"
   ::= { radDmd20DemodStatus 32 }

radDmd20RxAupcRemoteBerStatus OBJECT-TYPE
   SYNTAX      BerStatusStringType
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "AUPC remote BER status"
   ::= { radDmd20DemodStatus 33 }

radDmd20RxCarrierFrequencyOffset OBJECT-TYPE
   SYNTAX      INTEGER (-2147483648..2147483647)
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "Carrier frequency offset in Hz."
   ::= { radDmd20DemodStatus 34 }

-- ------------------------------------------------------------------------
--------------------------------
-- Dmd20 common non-volatile status information.

radDmd20CommonExternalExcClock OBJECT-TYPE
   SYNTAX      INTEGER (2400..20000000)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the EXC clock frequency, being provided on the
Ext BNC port"
   ::= { radDmd20CommonNVStatus 1 }

radDmd20CommonExternalReference OBJECT-TYPE
   SYNTAX      INTEGER (256000..10000000)
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects the external frequency reference in Hz. Valid
settings are
               from 256 KHz to 10 Mhz in 8 kHz steps."
   ::= { radDmd20CommonNVStatus 2 }

radDmd20CommonFrequencyReferenceSource OBJECT-TYPE
   SYNTAX      INTEGER {
               internal(1),
```

```
                external(2),
                highStab(3)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Selects the frequency reference source."
    ::= { radDmd20CommonNVStatus 3 }

radDmd20CommonAlarms1Mask OBJECT-TYPE
    SYNTAX      BITS {
                minus12VoltAlarm(0),
                plus12VoltAlarm(1),
                plus5VoltAlarm(2),
                bit3Reserved(3),
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Alarm mask:
                0 = Mask, 1 = Allow"
    ::= { radDmd20CommonNVStatus 4 }

radDmd20CommonAlarms2Mask OBJECT-TYPE
    SYNTAX      BITS {
                bit0Reserved(0),
                bit1Reserved(1),
                bit2Reserved(2),
                bit3Reserved(3),
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Alarm mask:
                0 = Mask, 1 = Allow"
    ::= { radDmd20CommonNVStatus 5 }

radDmd20CommonCarrierType OBJECT-TYPE
    SYNTAX      INTEGER {
                normal(1),
                cw(2),
                dual(3),
                offset(4),
                posFir(5),
                negFir(6)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
```

```
                "Selects the carrier type"
    ::= { radDmd20CommonNVStatus 6 }

radDmd20CommonLoopback OBJECT-TYPE
    SYNTAX      INTEGER {
                none(1),
                terrTx(2),
                terrRx(3),
                terrTxRx(4),
                basebandTx(5),
                basebandRx(6),
                basebandTxRx(7),
                if(8)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Selects the loopback type"
    ::= { radDmd20CommonNVStatus 7 }

radDmd20CommonSerialRemoteControl OBJECT-TYPE
    SYNTAX      INTEGER {
                computer(1),
                terminal(2)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Selects wheather the serial remote control is terminal
or computer."
    ::= { radDmd20CommonNVStatus 8 }

radDmd20CommonTerminalBaudRate OBJECT-TYPE
    SYNTAX      INTEGER {
                baud150(1),
                baud300(2),
                baud600(3),
                baud1200(4),
                baud2400(5),
                baud4800(6),
                baud9600(7),
                baud19200(8),
                baud38400(9),
                baud57600(10),
                baud115200(11)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Selects terminal baud rate."
    ::= { radDmd20CommonNVStatus 9 }

radDmd20CommonTerminalEmulation OBJECT-TYPE
    SYNTAX      INTEGER {
                addsvp(1),
                vt100(2),
                wyse50(3)
```

```
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Selects terminal emulation."
    ::= { radDmd20CommonNVStatus 10 }

radDmd20CommonRemoteAddress OBJECT-TYPE
    SYNTAX      INTEGER (32..255)
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Remote port address, 32 through 255."
    ::= { radDmd20CommonNVStatus 11 }

radDmd20CommonRemoteBaudRate OBJECT-TYPE
    SYNTAX      INTEGER {
                baud150(1),
                baud300(2),
                baud600(3),
                baud1200(4),
                baud2400(5),
                baud4800(6),
                baud9600(7),
                baud19200(8),
                baud38400(9),
                baud57600(10),
                baud115200(11)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Selects remote port Baud Rate."
    ::= { radDmd20CommonNVStatus 12 }

radDmd20CommonRemoteInterface OBJECT-TYPE
    SYNTAX      INTEGER {
                rs232(1),
                rs485(2)
                }
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Selects remote line interface type."
    ::= { radDmd20CommonNVStatus 13 }

radDmd20CommonEventClear  OBJECT-TYPE
    SYNTAX      INTEGER (0..4294967295)
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
                "Any write to this object clears the event buffer."
    ::= { radDmd20CommonNVStatus 14 }

radDmd20CommonLatchedAlarmsClear  OBJECT-TYPE
    SYNTAX      INTEGER (0..4294967295)
    MAX-ACCESS  read-write
```

```
   STATUS      current
   DESCRIPTION
               "Any write to this object clears the latched alarms."
   ::= { radDmd20CommonNVStatus 15 }

-- ------------------------------------------------------------------
--------------------------------
-- Dmd20 common status information.

radDmd20CommonAlarms1 OBJECT-TYPE
   SYNTAX      BITS {
               minus12VoltAlarm(0),
               plus12VoltAlarm(1),
               plus5VoltAlarm(2),
               bit3Reserved(3),
               bit4Reserved(4),
               bit5Reserved(5),
               bit6Reserved(6),
               bit7Reserved(7)
               }
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
               Activity/Lock: 1 = Pass, 0 = Fail
               Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20CommonStatus 1 }

radDmd20CommonAlarms2 OBJECT-TYPE
   SYNTAX      BITS {
               bit0Reserved(0),
               bit1Reserved(1),
               bit2Reserved(2),
               bit3Reserved(3),
               bit4Reserved(4),
               bit5Reserved(5),
               bit6Reserved(6),
               bit7Reserved(7)
               }
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
               Activity/Lock: 1 = Pass, 0 = Fail
               Alarm/Fault:   0 = Pass, 1 = Fail"
   ::= { radDmd20CommonStatus 2 }

radDmd20CommonLatchedAlarms1 OBJECT-TYPE
   SYNTAX      BITS {
               minus12VoltAlarm(0),
               plus12VoltAlarm(1),
               plus5VoltAlarm(2),
               bit3Reserved(3),
               bit4Reserved(4),
               bit5Reserved(5),
```

```
                bit6Reserved(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Pass, 1 = Fail"
   ::= { radDmd20CommonStatus 3 }

radDmd20CommonLatchedAlarms2 OBJECT-TYPE
   SYNTAX       BITS {
                bit0Reserved(0),
                bit1Reserved(1),
                bit2Reserved(2),
                bit3Reserved(3),
                bit4Reserved(4),
                bit5Reserved(5),
                bit6Reserved(6),
                bit7Reserved(7)
                }
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "A bit field.  On startup, the agent initializes this to
the value '00000000'B.
                0 = Pass, 1 = Fail"
   ::= { radDmd20CommonStatus 4 }

radDmd20CommonPos5VDcX10 OBJECT-TYPE
   SYNTAX       RadVoltageLevel
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "+5V voltage. Implied decimal point, 49 means 4.9Volts"
   ::= { radDmd20CommonStatus 5 }

radDmd20CommonPos12VDcX10 OBJECT-TYPE
   SYNTAX       RadVoltageLevel
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "+12V voltage. Implied decimal point, 121 means
12.1Volts"
   ::= { radDmd20CommonStatus 6 }

radDmd20CommonNeg12VDcX10 OBJECT-TYPE
   SYNTAX       RadVoltageLevel
   MAX-ACCESS   read-only
   STATUS       current
   DESCRIPTION
                "-12V voltage. Implied decimal point and sign, 121 means
-12.1Volts"
   ::= { radDmd20CommonStatus 7 }

radDmd20CommonFirmwareName OBJECT-TYPE
```

```
   SYNTAX      FirmwareNameType
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "This is the modem firmware name."
   ::= { radDmd20CommonStatus 8 }

-- ------------------------------------------------------------------------
-------------------------------
-- Dmd20 Trap definitions.

-- Include Prefix for compatibility with SNMPv1 traps and procedures
-- employed by multi-lingual and proxy forwarding systems

radDmd20TrapPrefix   OBJECT IDENTIFIER ::= { radDmd20Traps 0 }

radDmd20TxMajorAlarmTrap NOTIFICATION-TYPE
   OBJECTS     {
               radDmd20TxAlarms1
               }
   STATUS      current
   DESCRIPTION "Transmit major alarm trap."
   ::= { radDmd20TrapPrefix 1 }

radDmd20TxMinorAlarmTrap NOTIFICATION-TYPE
   OBJECTS     {
               radDmd20TxAlarms2,
               radDmd20TxDropStatus,
               radDmd20TxBackwardAlarms,
               radDmd20TxAlarms4
               }
   STATUS      current
   DESCRIPTION "Transmit minor alarm trap."
   ::= { radDmd20TrapPrefix 2 }

radDmd20RxMajorAlarmTrap NOTIFICATION-TYPE
   OBJECTS     {
               radDmd20RxAlarms1,
               radDmd20RxAlarms2,
               radDmd20RxAlarms3
               }
   STATUS      current
   DESCRIPTION "Receive major alarm trap."
   ::= { radDmd20TrapPrefix 3 }

radDmd20RxMinorAlarmTrap NOTIFICATION-TYPE
   OBJECTS     {
               radDmd20RxAlarms4,
               radDmd20RxAlarms5,
               radDmd20RxInsertStatus,
               radDmd20RxBackwardAlarms
               }
   STATUS      current
   DESCRIPTION "Receive minor alarm trap."
   ::= { radDmd20TrapPrefix 4 }

radDmd20CommonAlarmTrap NOTIFICATION-TYPE
```

```
   OBJECTS     {
               radDmd20CommonAlarms1,
               radDmd20CommonAlarms2
               }
   STATUS      current
   DESCRIPTION "Common alarm trap."
   ::= { radDmd20TrapPrefix 5 }

-- ------------------------------------------------------------------
--------------------------------
-- DMD20 LBST
-- Dmd20 Mod Lbst nonvolatile status information.

radDmd20LbstTxUplinkFrequencyHz OBJECT-TYPE
   SYNTAX      Counter64
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects RF frequency in Hz steps. 2GHz to 99 GHz."
   ::= { radDmd20ModLbstNVStatus 1 }

radDmd20LbstTxLoFrequencyHz OBJECT-TYPE
   SYNTAX      Counter64
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects local oscillator frequency in Hz steps. 2GHz to
99 GHz."
   ::= { radDmd20ModLbstNVStatus 2 }

radDmd20LbstTxSideBand OBJECT-TYPE
   SYNTAX      INTEGER {
               highSide(1),
               lowSide(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Oscillator side band select."
   ::= { radDmd20ModLbstNVStatus 3 }

radDmd20LbstTx10MhzReferenceEnable OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "10 MHz BUC reference enable."
   ::= { radDmd20ModLbstNVStatus 4 }

radDmd20LbstTxVoltageEnable OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "BUC supply voltage enable."
   ::= { radDmd20ModLbstNVStatus 5 }
```

```
radDmd20LbstTxVoltageLowerThreshold OBJECT-TYPE
   SYNTAX      RadVoltageLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "BUC low voltage alarm threshold. There is an implied
decimal point."
   ::= { radDmd20ModLbstNVStatus 6 }

radDmd20LbstTxVoltageUpperThreshold OBJECT-TYPE
   SYNTAX      RadVoltageLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "BUC Hi voltage alarm threshold. There is an implied
decimal point."
   ::= { radDmd20ModLbstNVStatus 7 }

radDmd20LbstTxCurrentLowerThreshold OBJECT-TYPE
   SYNTAX      RadCurrentLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "BUC Low current draw alarm threshold. There is an
implied decimal point."
   ::= { radDmd20ModLbstNVStatus 8 }

radDmd20LbstTxCurrentUpperThreshold OBJECT-TYPE
   SYNTAX      RadCurrentLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "BUC Hi current draw alarm threshold. There is an
implied decimal point."
   ::= { radDmd20ModLbstNVStatus 9 }

-- ------------------------------------------------------------------------
--------------------------------
-- Dmd20 Mod Lbst volatile status information.

radDmd20LbstTxBucVoltageX10 OBJECT-TYPE
   SYNTAX      RadVoltageLevel
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "BUC voltage. Implied decimal point, 482 means
48.2Volts"
   ::= { radDmd20ModLbstStatus 1 }

radDmd20LbstTxBucCurrentX1000 OBJECT-TYPE
   SYNTAX      RadCurrentLevel
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "BUC current. Implied decimal point, 5500 means
5.500Amps"
   ::= { radDmd20ModLbstStatus 2 }
```

```
-- ---------------------------------------------------------------------
-------------------------------
-- Dmd20 Demod Lbst nonvolatile status information.

radDmd20LbstRxDownlinkFrequencyHz OBJECT-TYPE
   SYNTAX      Counter64
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects RF frequency in Hz steps. 2GHz to 99 GHz."
   ::= { radDmd20DemodLbstNVStatus 1 }

radDmd20LbstRxLoFrequencyHz OBJECT-TYPE
   SYNTAX      Counter64
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Selects local oscillator frequency in Hz steps. 2GHz to
99 GHz."
   ::= { radDmd20DemodLbstNVStatus 2 }

radDmd20LbstRxSideBand OBJECT-TYPE
   SYNTAX      INTEGER {
               highSide(1),
               lowSide(2)
               }
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "Oscillator side band select."
   ::= { radDmd20DemodLbstNVStatus 3 }

radDmd20LbstRx10MhzReferenceEnable OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "10 MHz LNB reference enable."
   ::= { radDmd20DemodLbstNVStatus 4 }

radDmd20LbstRxVoltageEnable OBJECT-TYPE
   SYNTAX      ControlType
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "LNB supply voltage enable."
   ::= { radDmd20DemodLbstNVStatus 5 }

radDmd20LbstRxVoltageSelect OBJECT-TYPE
   SYNTAX      INTEGER {
               select13Volts(1),
               select15Volts(2),
               select18Volts(3),
               select20Volts(4)
               }
   MAX-ACCESS  read-write
```

```
   STATUS      current
   DESCRIPTION
               "LNB supply voltage. Valid settings are 13, 15, 18, and
20 volts."
   ::= { radDmd20DemodLbstNVStatus 6 }

radDmd20LbstRxVoltageLowerThreshold OBJECT-TYPE
   SYNTAX      RadVoltageLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "LNB low voltage alarm threshold. There is an implied
decimal point."
   ::= { radDmd20DemodLbstNVStatus 7 }

radDmd20LbstRxVoltageUpperThreshold OBJECT-TYPE
   SYNTAX      RadVoltageLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "LNB Hi voltage alarm threshold. There is an implied
decimal point."
   ::= { radDmd20DemodLbstNVStatus 8 }

radDmd20LbstRxCurrentLowerThreshold OBJECT-TYPE
   SYNTAX      RadCurrentLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "LNB Low current draw alarm threshold. There is an
implied decimal point."
   ::= { radDmd20DemodLbstNVStatus 9 }

radDmd20LbstRxCurrentUpperThreshold OBJECT-TYPE
   SYNTAX      RadCurrentLevel
   MAX-ACCESS  read-write
   STATUS      current
   DESCRIPTION
               "LNB Hi current draw alarm threshold. There is an
implied decimal point."
   ::= { radDmd20DemodLbstNVStatus 10 }

-- ------------------------------------------------------------------
--------------------------------
-- Dmd20 Demod Lbst volatile status information.

radDmd20LbstRxLnbVoltageX10 OBJECT-TYPE
   SYNTAX      RadVoltageLevel
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "LNB voltage. Implied decimal point, 181 means
18.1Volts"
   ::= { radDmd20DemodLbstStatus 1 }

radDmd20LbstRxLnbCurrentX1000 OBJECT-TYPE
   SYNTAX      RadCurrentLevel
```

```
   MAX-ACCESS  read-only
   STATUS      current
   DESCRIPTION
               "LNB current. Implied decimal point, 498 means
0.498Amps"
   ::= { radDmd20DemodLbstStatus 2 }

-- ------------------------------------------------------------------------
-------------------------------
-- DMD20 MIB conformance

radDmd20ModNVStatusGroup OBJECT-GROUP
   OBJECTS  {
               radDmd20TxCarrierControl,
               radDmd20TxNetworkSpec,
               radDmd20TxCarrierLeveldBmX100,
               radDmd20TxCarrierFrequencyHz,
               radDmd20TxTerrDataRateHz,
               radDmd20TxStrapCode,
               radDmd20TxInnerFecRate,
               radDmd20TxModulationType,
               radDmd20TxSatFraming,
               radDmd20TxOuterFecEnable,
               radDmd20TxOuterFecRate,
               radDmd20TxInterleaverDepth,
               radDmd20TxDropMode,
               radDmd20TxDropMap,
               radDmd20TxClockSource,
               radDmd20TxClockPolarity,
               radDmd20TxSctClockSource,
               radDmd20TxDataPolarity,
               radDmd20TxSpectrum,
               radDmd20TxScramblingEnable,
               radDmd20TxScramblingType,
               radDmd20TxDifferentialEncoder,
               radDmd20TxBpskSymbolPairingSwap,
               radDmd20TxEscOverheadType,
               radDmd20TxEsc1GaindBX100,
               radDmd20TxEsc2GaindBX100,
               radDmd20TxTerrInterfaceType,
               radDmd20TxAupcLocalMode,
               radDmd20TxAupcRemoteMode,
               radDmd20TxAupcLocalCarrierLossAction,
               radDmd20TxAupcRemoteCarrierLossAction,
               radDmd20TxAupcTrackingRate,
               radDmd20TxAupcRemoteBasebandLoopback,
               radDmd20TxAupcRemoteTestPattern,
               radDmd20TxAupcTargetEbnoDbX100,
               radDmd20TxAupcMinCarrierLeveldBmX100,
               radDmd20TxAupcMaxCarrierLeveldBmX100,
               radDmd20TxAupcNomCarrierLeveldBmX100,
               radDmd20TxTestPattern,
               radDmd20TxCircuitName,
               radDmd20TxAlarms1Mask,
               radDmd20TxAlarms2Mask,
               radDmd20TxForcedAlarms,
               radDmd20TxDropStatusMask,
```

```
                radDmd20TxTerrestrialFraming,
                radDmd20TxSpectralMask,
                radDmd20TxAlarms4Mask,
                radDmd20TxEthFlowControl,
                radDmd20TxEthDaisyChain,
                radDmd20TxRsOfecRate,
                radDmd20TxTpcInterleaver,
                radDmd20TxEsEnhancedEnable,
                radDmd20TxEsSerialControlInterface,
                radDmd20TxEsBaudRate,
                radDmd20TxEsBitsPerChar,
                radDmd20TxCarrierDelaySec,
                radDmd20TxSccCtlRatio,
                radDmd20TxSccInbandRate,
                radDmd20TxSctClockPolarity,
                radDmd20TxCompensation,
                radDmd20TxForceAlarmTest,
                radDmd20TxAsyncInbandRate
                }
   STATUS       current
   DESCRIPTION "Modulator non-volatile status group."
::= { radDmd20Groups 1 }

radDmd20ModStatusGroup OBJECT-GROUP
   OBJECTS  {
                radDmd20TxAlarms1,
                radDmd20TxAlarms2,
                radDmd20TxDropStatus,
                radDmd20TxBackwardAlarms,
                radDmd20TxLatchedAlarms1,
                radDmd20TxLatchedAlarms2,
                radDmd20TxSymbolRateHz,
                radDmd20TxAlarms4,
                radDmd20TxLatchedAlarms4
                }
   STATUS       current
   DESCRIPTION "Modulator volatile status group."
::= { radDmd20Groups 2 }

radDmd20DemodNVStatusGroup OBJECT-GROUP
   OBJECTS  {
                radDmd20RxNetworkSpec,
                radDmd20RxCarrierFrequencyHz,
                radDmd20RxTerrDataRateHz,
                radDmd20RxStrapCode,
                radDmd20RxInnerFecRate,
                radDmd20RxDemodulationType,
                radDmd20RxSatFraming,
                radDmd20RxOuterFecEnable,
                radDmd20RxOuterFecRate,
                radDmd20RxInterleaverDepth,
                radDmd20RxInsertMode,
                radDmd20RxInsertMap,
                radDmd20RxBufferClockSource,
                radDmd20RxBufferClockPolarity,
                radDmd20RxBufferSize,
                radDmd20RxDataPolarity,
```

```
                radDmd20RxSpectrum,
                radDmd20RxDescramblingEnable,
                radDmd20RxDescramblingType,
                radDmd20RxDifferentialDecoder,
                radDmd20RxBpskSymbolPairingSwap,
                radDmd20RxT1E1FramingSource,
                radDmd20RxExtClockSource,
                radDmd20RxCarrierSweepRange,
                radDmd20RxCarrierLevelLimitdBmX100,
                radDmd20RxEscOverheadType,
                radDmd20RxEsc1GaindBX100,
                radDmd20RxEsc2GaindBX100,
                radDmd20RxTerrInterfaceType,
                radDmd20RxEsEnhancedEnable,
                radDmd20RxEsSerialControlInterface,
                radDmd20RxEsBaudRate,
                radDmd20RxEsBitsPerChar,
                radDmd20RxTestPattern,
                radDmd20RxCircuitName,
                radDmd20RxForcedAlarms,
                radDmd20RxAlarms1Mask,
                radDmd20RxAlarms2Mask,
                radDmd20RxAlarms3Mask,
                radDmd20RxAlarms4Mask,
                radDmd20RxAlarms5Mask,
                radDmd20RxInsertStatusMask,
                radDmd20RxTerrestrialFraming,
                radDmd20RxTerrestrialStreaming,
                radDmd20RxAlarms6Mask,
                radDmd20RxCarrierReacqRange,
                radDmd20RxRsOfecRate,
                radDmd20RxTpcInterleaver,
                radDmd20RxCarrierSweepDelay,
                radDmd20RxEbnoAlarmThreshold,
                radDmd20RxBufferReset,
                radDmd20RxRestartTestPattern,
                radDmd20RxSccCtlRatio,
                radDmd20RxSccInbandRate,
                radDmd20RxFastAcquisition,
                radDmd20RxSpectralMask,
                radDmd20RxAdjacentCarrierType,
                radDmd20RxForceAlarmTest,
                radDmd20NumRxBufferClockSources,
                radDmd20RxBufferClockSource1,
                radDmd20RxBufferClockSource2,
                radDmd20RxBufferClockSource3,
                radDmd20RxBufferClockSource4,
                radDmd20RxBufferClockSource5,
                radDmd20RxAsyncInbandRate
                }
   STATUS       current
   DESCRIPTION "Demodulator non-volatile status group."
::= { radDmd20Groups 3 }

radDmd20DemodStatusGroup OBJECT-GROUP
   OBJECTS  {
                radDmd20RxAlarms1,
```

```
                radDmd20RxAlarms2,
                radDmd20RxAlarms3,
                radDmd20RxAlarms4,
                radDmd20RxAlarms5,
                radDmd20RxInsertStatus,
                radDmd20RxBackwardAlarms,
                radDmd20RxLatchedAlarms1,
                radDmd20RxLatchedAlarms2,
                radDmd20RxLatchedAlarms3,
                radDmd20RxLatchedAlarms4,
                radDmd20RxLatchedAlarms5,
                radDmd20RxBerEbnoStatus,
                radDmd20RxEbno,
                radDmd20RxBufferLevel,
                radDmd20RxCarrierLeveldBmX100,
                radDmd20RxBitErrorCount,
                radDmd20RxTestPatternErrorCount,
                radDmd20RxLossOfTerrInputSignal,
                radDmd20RxSymbolRateHz,
                radDmd20RxAlarms6,
                radDmd20RxLatchedAlarms6,
                radDmd20RxEthPktErrorCount,
                radDmd20RxEthPktTotalCount,
                radDmd20RxEthPort1Status,
                radDmd20RxEthPort2Status,
                radDmd20RxEthPort3Status,
                radDmd20RxEthPort4Status,
                radDmd20RxEthWanStatus,
                radDmd20RxRawBerStatus,
                radDmd20RxCorrectedBerStatus,
                radDmd20RxTestPatternBerStatus,
                radDmd20RxAupcRemoteBerStatus,
                radDmd20RxCarrierFrequencyOffset
                }
   STATUS       current
   DESCRIPTION "Demodulator volatile status group."
::= { radDmd20Groups 4 }

radDmd20CommonNVStatusGroup OBJECT-GROUP
   OBJECTS  {
                radDmd20CommonExternalExcClock,
                radDmd20CommonExternalReference,
                radDmd20CommonFrequencyReferenceSource,
                radDmd20CommonAlarms1Mask,
                radDmd20CommonAlarms2Mask,
                radDmd20CommonCarrierType,
                radDmd20CommonLoopback,
                radDmd20CommonSerialRemoteControl,
                radDmd20CommonTerminalBaudRate,
                radDmd20CommonTerminalEmulation,
                radDmd20CommonRemoteAddress,
                radDmd20CommonRemoteBaudRate,
                radDmd20CommonRemoteInterface,
                radDmd20CommonEventClear,
                radDmd20CommonLatchedAlarmsClear
                }
   STATUS       current
```

```
   DESCRIPTION "Common non-volatile status group."
   ::= { radDmd20Groups 5 }

radDmd20CommonStatusGroup OBJECT-GROUP
   OBJECTS  {
               radDmd20CommonAlarms1,
               radDmd20CommonAlarms2,
               radDmd20CommonLatchedAlarms1,
               radDmd20CommonLatchedAlarms2,
               radDmd20CommonPos5VDcX10,
               radDmd20CommonPos12VDcX10,
               radDmd20CommonNeg12VDcX10,
               radDmd20CommonFirmwareName
               }
   STATUS      current
   DESCRIPTION "Common volatile status group."
   ::= { radDmd20Groups 6 }

radDmd20NotificationsGroup NOTIFICATION-GROUP
   NOTIFICATIONS
               {
               radDmd20TxMajorAlarmTrap,
               radDmd20TxMinorAlarmTrap,
               radDmd20RxMajorAlarmTrap,
               radDmd20RxMinorAlarmTrap,
               radDmd20CommonAlarmTrap
               }
   STATUS      current
   DESCRIPTION
               "Cold start trap and authentication failure trap are the
two notifications
               which an SNMPv2 entity is required to implement. Major,
minor, and common
               alarm traps are product specific."
   ::= { radDmd20Groups 7 }

-- ------------------------------------------------------------------
--------------------------------
radDmd20ModLbstNVStatusGroup OBJECT-GROUP
   OBJECTS  {
               radDmd20LbstTxUplinkFrequencyHz,
               radDmd20LbstTxLoFrequencyHz,
               radDmd20LbstTxSideBand,
               radDmd20LbstTx10MhzReferenceEnable,
               radDmd20LbstTxVoltageEnable,
               radDmd20LbstTxVoltageLowerThreshold,
               radDmd20LbstTxVoltageUpperThreshold,
               radDmd20LbstTxCurrentLowerThreshold,
               radDmd20LbstTxCurrentUpperThreshold
               }
   STATUS      current
   DESCRIPTION
               "Mod Lbst nonvolatile status group."
   ::= { radDmd20Groups 8 }

radDmd20ModLbstStatusGroup OBJECT-GROUP
   OBJECTS  {
```

```
                radDmd20LbstTxBucVoltageX10,
                radDmd20LbstTxBucCurrentX1000
                }
    STATUS      current
    DESCRIPTION
                "Mod Lbst volatile status group."
    ::= { radDmd20Groups 9 }

radDmd20DemodLbstNVStatusGroup OBJECT-GROUP
    OBJECTS  {
                radDmd20LbstRxDownlinkFrequencyHz,
                radDmd20LbstRxLoFrequencyHz,
                radDmd20LbstRxSideBand,
                radDmd20LbstRx10MhzReferenceEnable,
                radDmd20LbstRxVoltageEnable,
                radDmd20LbstRxVoltageSelect,
                radDmd20LbstRxVoltageLowerThreshold,
                radDmd20LbstRxVoltageUpperThreshold,
                radDmd20LbstRxCurrentLowerThreshold,
                radDmd20LbstRxCurrentUpperThreshold
                }
    STATUS      current
    DESCRIPTION
                "Demod Lbst nonvolatile status group."
    ::= { radDmd20Groups 10 }

radDmd20DemodLbstStatusGroup OBJECT-GROUP
    OBJECTS  {
                radDmd20LbstRxLnbVoltageX10,
                radDmd20LbstRxLnbCurrentX1000
                }
    STATUS      current
    DESCRIPTION
                "Demod Lbst volatile status group."
    ::= { radDmd20Groups 11 }

END
```


RADYNE

Web Browser

3

3.0 Web Browser User Interfaces

The Web Browser user interface is available on the DMD20, DMD20LBST, DMD50, DMD2050 and OM20. The Web Browser interface can be accessed through the RJ45, SNMP port located on the unit. Instructions on how to configure the interface for this application can be accessed from the product manual. This section is primarily designed to illustrate all the menus associated with the Web Browser and will not give full descriptions or details of these features. Full feature descriptions can be accessed from the product manual.

Setup and configuration of the Web Browser interface can be accessed in the following product manuals:

Equipment:	**Manual:**
DMD20	TM103
DMD50	TM118
DMD2050	TM110
OM20	TM116

The DMD20LBST and OM20 supports features for BUC and LNB operations. These products will have additional menus supporting BUC and LNB menus that are not available on the DMD20, DMD50 and the DMD2050.

3.1 Configuring Your PC

An example of the GUI layout is shown in Figure 3-1, showing the location and labeling of the Interface. The graphical user interface is designed to replicate the front panel. For users familiar with the front panel interface adjusting to the GUI interface should be seamless. The GUI Interface is divided into four functional areas: the Front Panel Display simulation, Gel-tab area, information/data entry and product information and contact area.

Figure 3-1. Web User Interface

Table 3-1.		
Item Number	**Description**	**Function**
1	Product Name	This describes what product is that the interface is connected to.
2	Product Name/Location	This can be used by the user to identify the unit.
3	Alarm and Monitor	Displays fault status and performance monitoring of unit.
4	Gel-Tab Area	This area allows access to data and control input of unit. Moving the cursor across the Gel-Tabs drop down menus appear and allow editing of the data entry area.
5	Data Entry Area	Parameter editing is done in this area.
6	Product Information Contact Information	Access to technical trouble-shooting, product options and specifications is accomplished by selecting one and clicking on that function. Contacting Radyne via Email is possible by clicking on “Contact Us”.

3.1.1 LED Indicators

Twelve LEDs on the GUI Interface (Refer to Table 3-2) indicate the status of the modems operation. The LED colors maintain a consistent meaning. Green is appropriate for normal operation, Yellow means that there is a condition not proper for normal operation, and Red indicates a fault condition that will result in lost communications.

Table 3-2.

LED	Color	Function
Modem LED Indicators		
Power	Green	Indicates that the unit is turned on.
Fault	Red	Indicates a hardware fault for the unit.
Event	Yellow	Indicates that a condition or event has occurred that the modem has stored in memory. The events may be viewed from the GUI or in the Terminal Mode.
Remote	Green	Indicates that the unit is in the process of updating firmware with FTP.
Modulator LED Indicators		
Transmit On	Green	Indicates that the Modulator transmitter is on.
Major Alarm	Red	Indicates that the Transmit Direction has failed, losing traffic.
Minor Alarm	Yellow	Indicates that a Transmit Warning Condition exists.
Test Mode	Yellow	Indicates that the transmitter is involved in a current Test Mode activity.
Demodulator LED Indicators		
Signal Lock	Green	Indicates that the receiver locked to an incoming carrier and data, including FEC Sync.
Major Alarm	Red	Indicates that the Receive Direction has failed, losing traffic.
Minor Alarm	Yellow	Indicates that a Receive Warning Condition exists.
Test Mode	Yellow	Indicates that the receiver is involved in a current Test Mode activity.

3.2 GUI Screen Menus

There are four main menus displayed on the Introduction screen upon startup of the web browser. This screen will give a brief overview of the product and contains no configurable items. The four main menu's and with submenus are:

- **Introduction**
- **Password Setup**
  - Access
  - Preferences
- **IP Administration**
  - Modem Addressing
  - Configure Apps
  - Configure PC
- **Monitor and Control**
  - Transmit
  - Receive
  - Interface
  - Monitor
  - Alarms
  - System
  - Test

3.2.1 Introduction Menu

This menu will first appear when starting up the web browser. This page lists the general features of the unit, and lists a brief description of the unit. Notice on the bottom of the page that there are selections for technical Specifications, Product Options, Troubleshooting, About Us, and Contact us. Access these areas for further detailed description of the selection.

Figure 3.2. Introduction Screen

3.2.1.1 Login Screen

Upon initially accessing either the Setup, Monitor & Control, or Administration configuration menu tabs a login prompt will appear. In order to gain access to any of the configuration menus, log in with the correct user name and password. (The factory default login name is “admin” and the default password is “admin”). For further information on setting user profiles see Section 3.2.3 IP and Application Administration Menu.

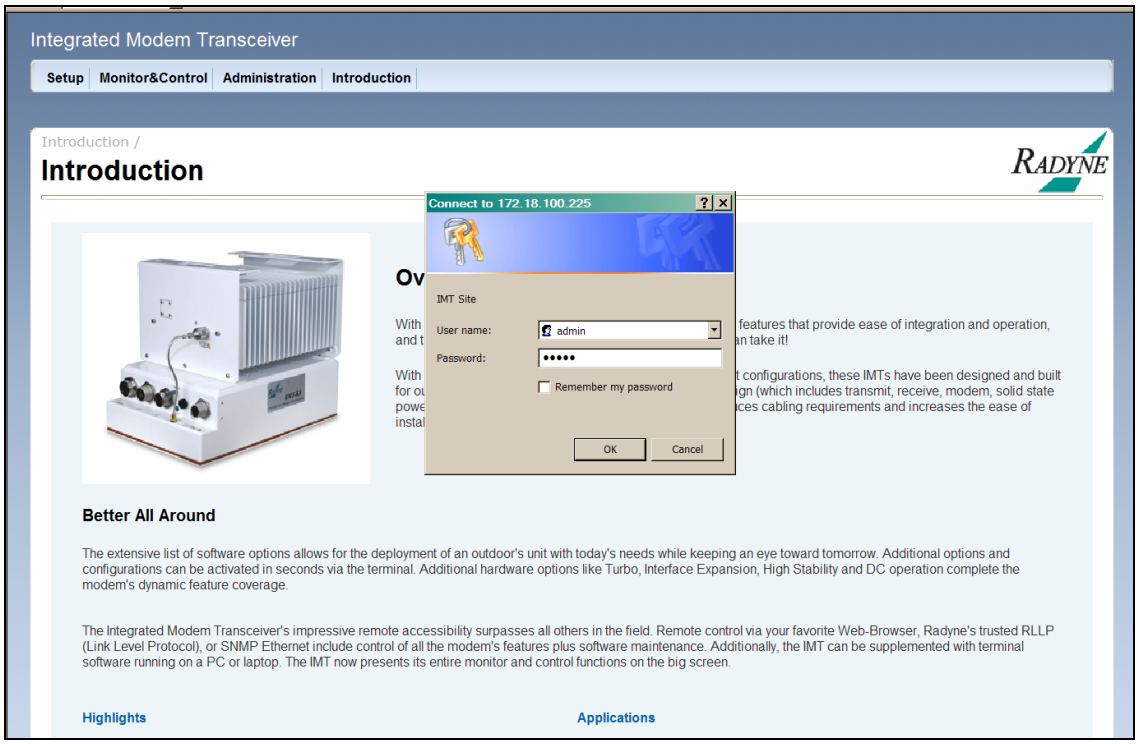


Figure 3-3. Login Screen

3.2.2 Password Setup

The Password Access Menu allows for multiple operators to be allowed access to the system. User access priorities can be set be completing the fields in the Access menu below.

Access Menu

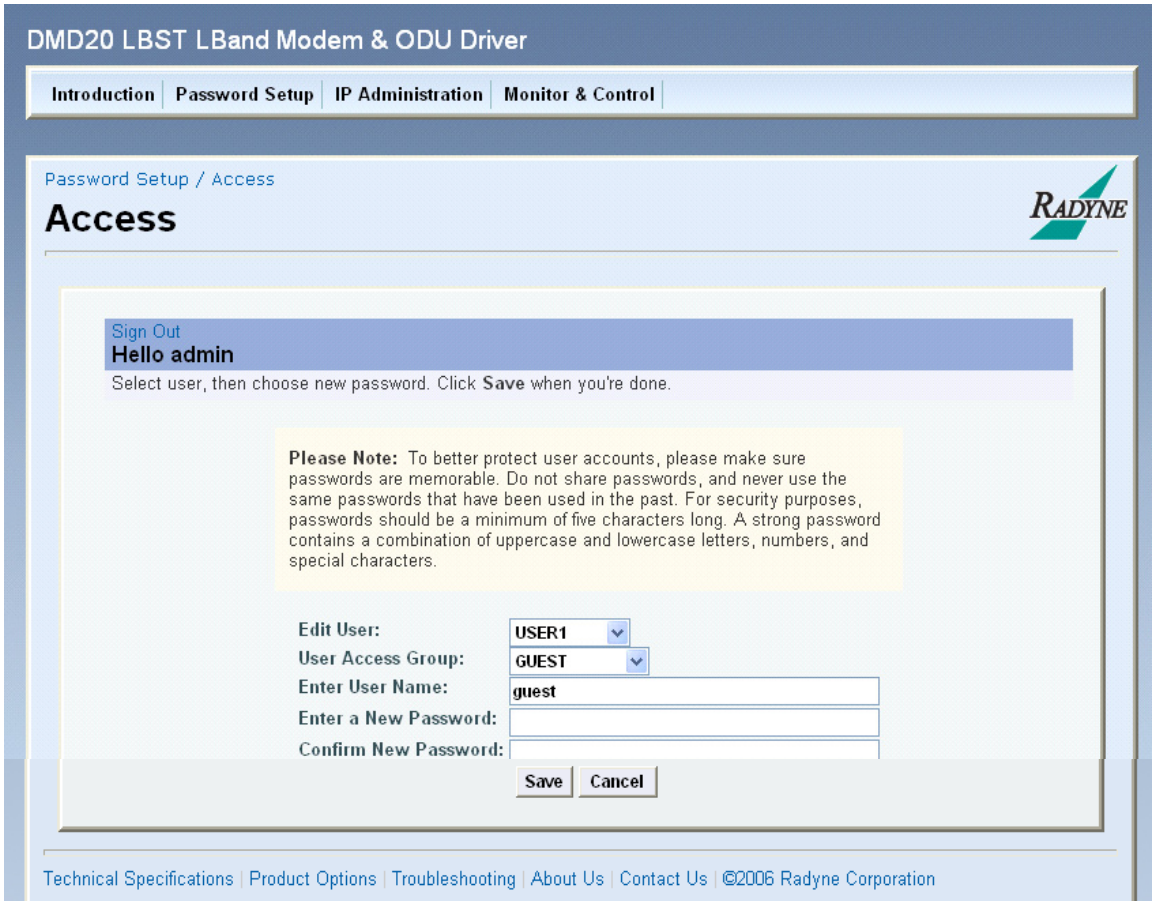


Figure 3-4. Access Menu

Edit User	**{USER 1, USER 2, USER 3}** Allows the operator to assign the applicable user group.
User Access Group	**{Guest, Operator, Admin}** Allows the operator to assign the applicable user Access Level group.
Enter User Name	Allows the operator to assign the applicable user name used for login.
Enter a New Password	Allows the operator to assign the applicable user name password used for login.
Confirm New Password	Allows the operator to confirm the applicable user password (this must exactly match the previously entered Password entry for the system to accept).

Preferences Menu

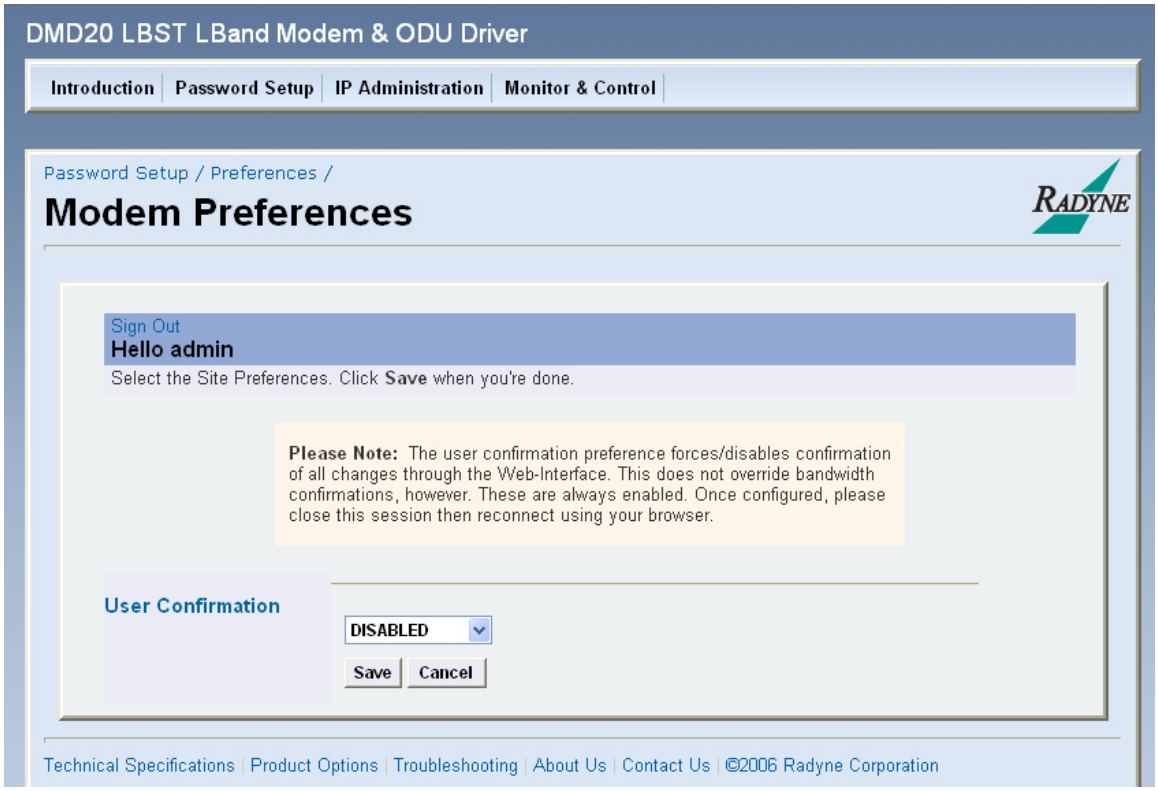


Figure 3-5. Modem Preferences menu

User Confirmation: **{DISABLED, ENABLED}**
The user information preference allows the user to force/disable confirmation of all changes through the web interface. This does not override bandwidth confirmations. However, these are always enabled.

3.2.3 IP and Application Administration

The IP and Application menu provides instructions on how to configure the modem, applications and PC.

Modem Addressing

Figure 3-6. Modem Addressing

Server Boot Mode: **{DEFAULT, NON-VOL, BOOTP, IP TEST}**

Default: All of the following parameters as shown in Table 3-3 through 3-7 will be set and will not change until the boot mode is changed.

IP

IPMASK:	255.000.000.000
MODEM IPADDR:	010.000.000.001
SERVER IP ADDR:	010.001.001.001
ROUTER IP ADDR:	010.000.001.001

Table 3-3. IP Parameters

SNMP

SNMP VERSION: V1 & V2			
TRAP VERSION: V1			
AUTHORIZATION: TRAPS OFF			
RD COMMUNITY: PUBLIC			
RDWR COMMUNITY: PUBLIC			
USER 1 Viewer-md5	USER 2 Viewer-sha	USER 3 Oper-md5	USER 4 Oper-sha
ACCESS GROUP VIEWER	ACCESS GROUP VIEWER	ACCESS GROUP OPER	ACCESS GROUP OPER
AUTH PASSWORD Viewer	AUTH PASSWORD Viewer	AUTH PASSWORD Oper	AUTH PASSWORD Oper
PRIV PASSWORD Viewer	PRIV PASSWORD Viewer	PRIV PASSWORD Oper	PRIV PASSWORD Oper
AUTHENTICATION MD5	AUTHENTICATION SHA	AUTHENTICATION MD5	AUTHENTICATION SHA
PRIVACY DES	PRIVACY DES	PRIVACY DES	PRIVACY DES

Table 3-4. SNMP Parameters

FTP

USER ID:	USER
PASSWORD:	PASSWORD

Table 3-5. FTP Parameters

WEB

CONFIRMATION: DISABLED		
USER 1 GUEST	USER 2 OPER	USER 3 ADMIN
ACCESS GROUP GUEST	ACCESS GROUP OPER	ACCESS GROUP ADMIN
AUTH PASSWORD GUEST	AUTH PASSWORD OPER	AUTH PASSWORD ADMIN

Table 3-6. Web Parameters

TERMINAL AND REMOTE PORT

TYPE	VT100
BAUD RATE	19200
INTERFACE	RS232
REMOTE CONTROL	TERMINAL

Table 3-7. Terminal and Remote Port Parameters

NON-VOL: Stores and uses IP Mask and addresses as provided by the user.

BOOTP: At boot time, use Bootp Protocol to get names, masks, and IP Addresses of the modem, router, and server.

IP TEST: The IP Test boot mode has a similar behavior to the default boot mode. The Terminal, IP, SNMP, FTP and Web parameters changed by the default setting will also be reset by the IP Test boot mode. However, instead of the IP addresses being set to an unreadable address, it will be set as follows as shown in Table 3-8:

IP TEST

IP ADDRESS MASK:	255.255.255.0
MODEM IP ADDRESS:	192.168.000.238
SERVER IP ADDRESS	192.168.000.101
ROUTER IP ADDRESS:	192.168.000.102

Table 3-8. IP Test

IP Address Mask: **{XXX.XXX.XXX.XXX}**
The IP Address Mask of the local network. The mask is expressed in a decimal format, and must be a valid TCP/IP Mask. This field should be set before changes are made to the Modem or Router Address.

Modem IP Address: **{XXX.XXX.XXX.XXX}**
The IP Address of the modem. This address should be consistent for the mask defined. This address is expressed in decimal format. Broadcast and loop back addresses will not be allowed. These are addresses with all subnet bits set to 0's or 1's.

Server IP Address: **{XXX.XXX.XXX.XXX}**
The IP Address of the Boot Server and the address of the SNMP Trap Server when SNMP is active. If a server is used and there is no local router, this address must be consistent with the modem address. If a router has been specified, the address is presumed to be reachable via the router. Broadcast and loop back addresses will not

be allowed. These are addresses with all subnet bits set to 0's or 1's.

Router IP Address: **{XXX.XXX.XXX.XXX}**
The IP Address of the Local Network Router. If a router is present on the local network, this address must be consistent with the IP Mask and the subnet of the modem. If no router is present, then the address should be set to a foreign address. This address is expressed in decimal format. Broadcast and loop back addresses will not be allowed. These are addresses with all subnet bits set to 0's or 1's.

Configuring Applications

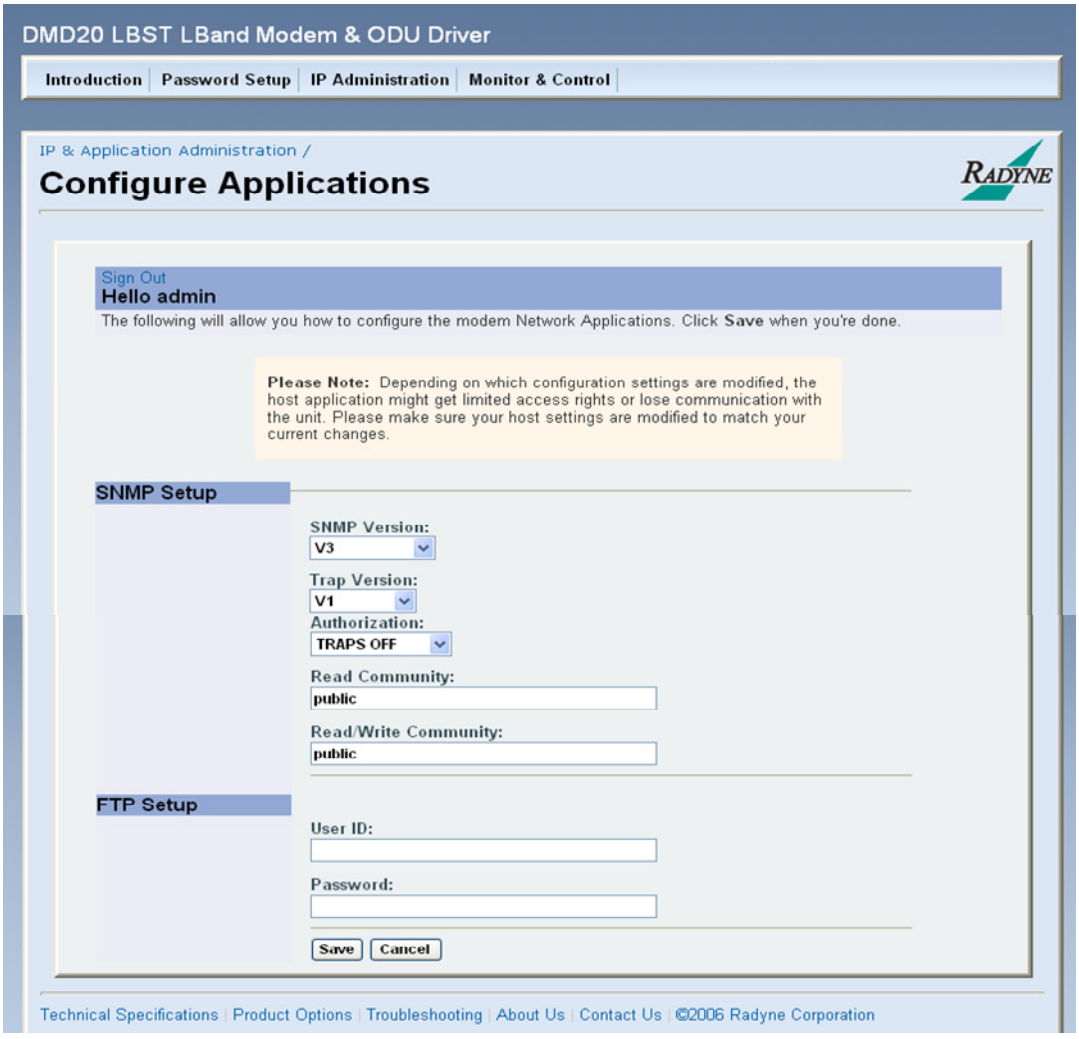


Figure 3-7. Configuring Applications

SNMP Setup:

SNMP Version: **{V1 & 2, V3} Default = V1 & V2**

Trap Version: **{V1 & 2} Default = V1**

Authorization: **{TRAPS ON, TRAPS OFF} Default = TRAPS OFF**

Read Community: **{Public} Default**

Read/Write Community: **{Public} Default**

FTP Setup:

UserID: **User**

Password: **Password**

Configuring The PC

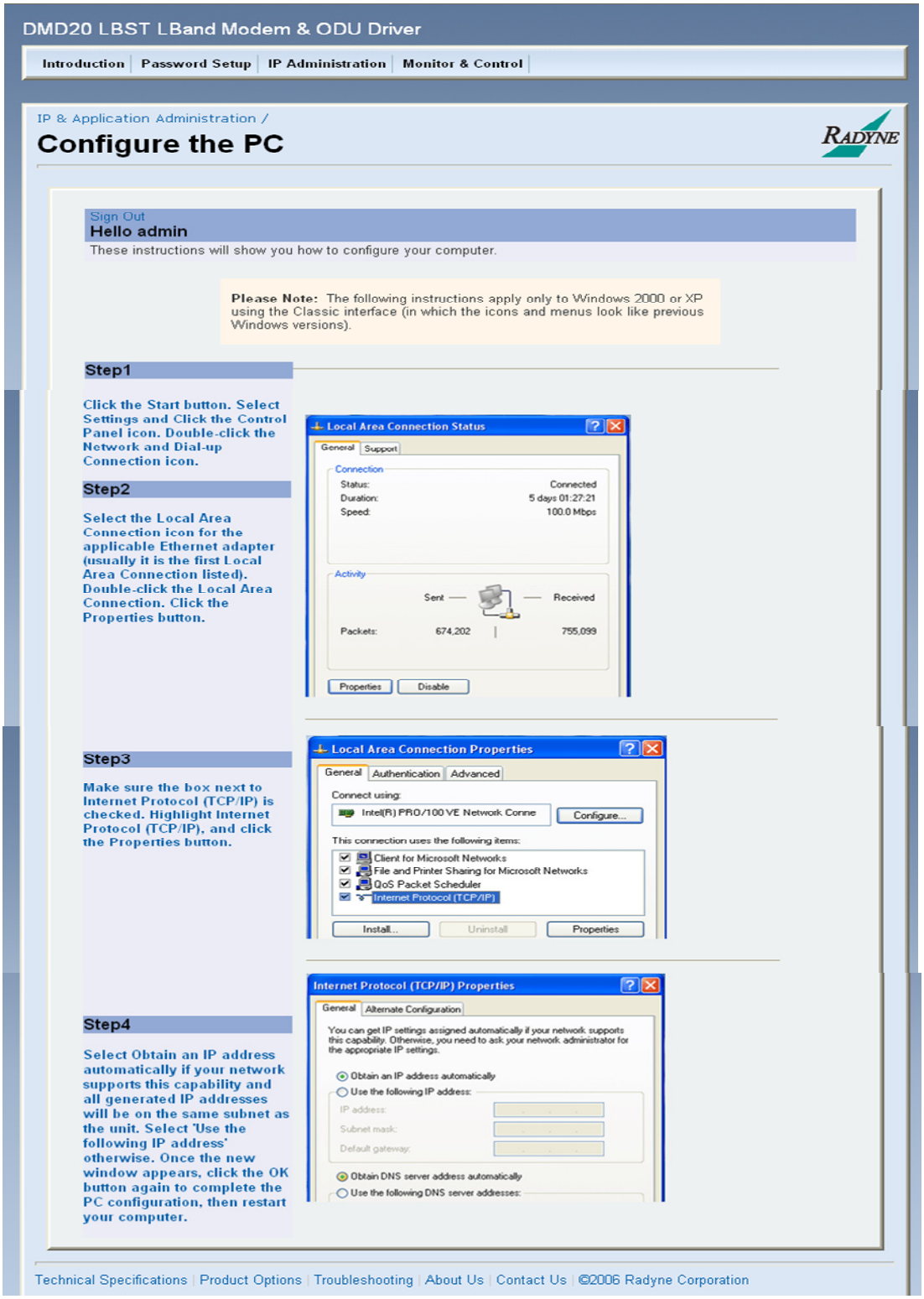


Figure 3-8. Configuring The PC

3.2.4 Monitor and Control Menu

Under this menu, all modem functions that are monitored and/or controlled are accessible. To access the M&C sub menu options drag the cursor across the gel-tabs. Note that as the cursor passes over a tab it is highlighted and a menu drops below the tab. Stop on the desired tab move the cursor down and then across to the desired function. Select the desired sub menu function and the data entry menu will appear in the data entry section allowing for adjustments to the parameters displayed.

3.2.4.1 Transmit Menus

The Transmit menu contains sub menus; General/IF, Data, Reed Solomon, ODU-BUC and AUPC.

TX General / IF Configuration Menu

Figure 3-9. Tx General Configurtation Menu

The Uplink Frequency (MHz) menu is only available with the DMD20LBST and the OM20

Tx Data Configuration Menu

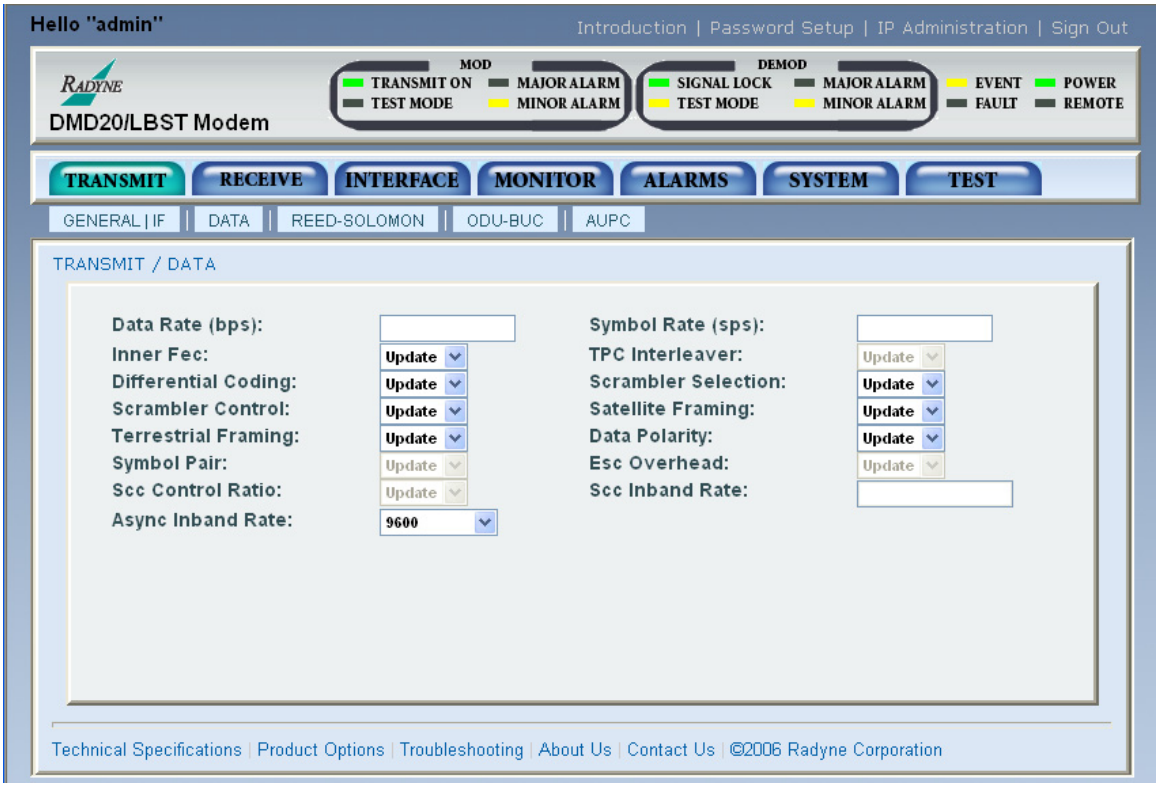


Figure 3-10. Tx Data Configuration

Tx AUPC Configuration Menu

These selections are visible only when the AUPC Option is installed.

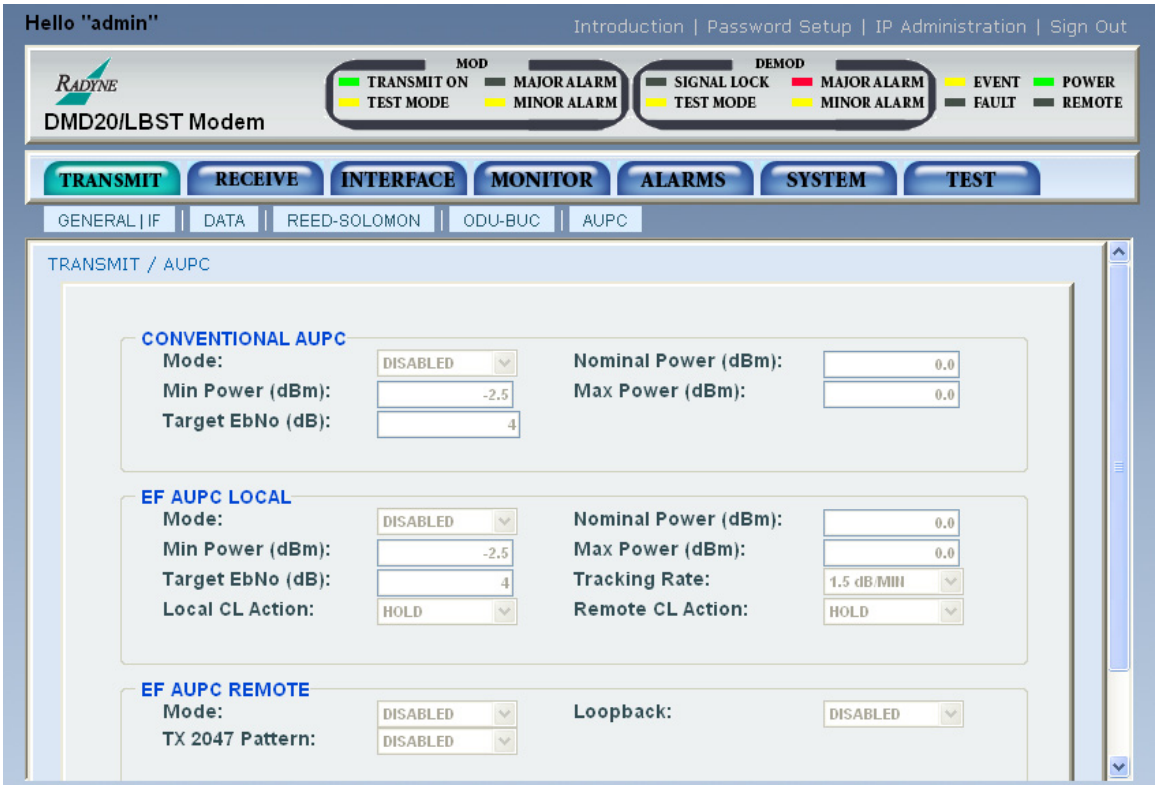


Figure 3-11. Tx Aupc Configuration

Tx ReedSolomon Configuration Menu

These selections are visible only when the Reed-Solomon Option is installed.

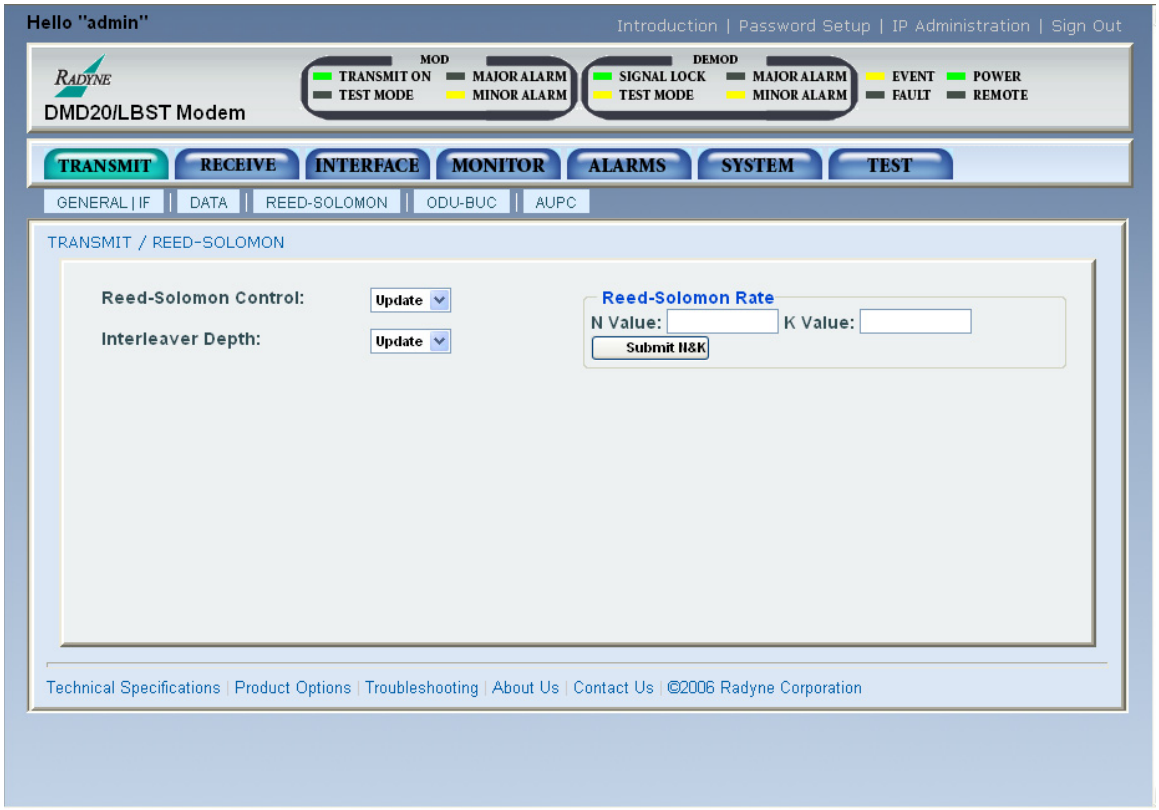


Figure 3-12. Tx ReedSolomon Configuration

ODU BUC Menu

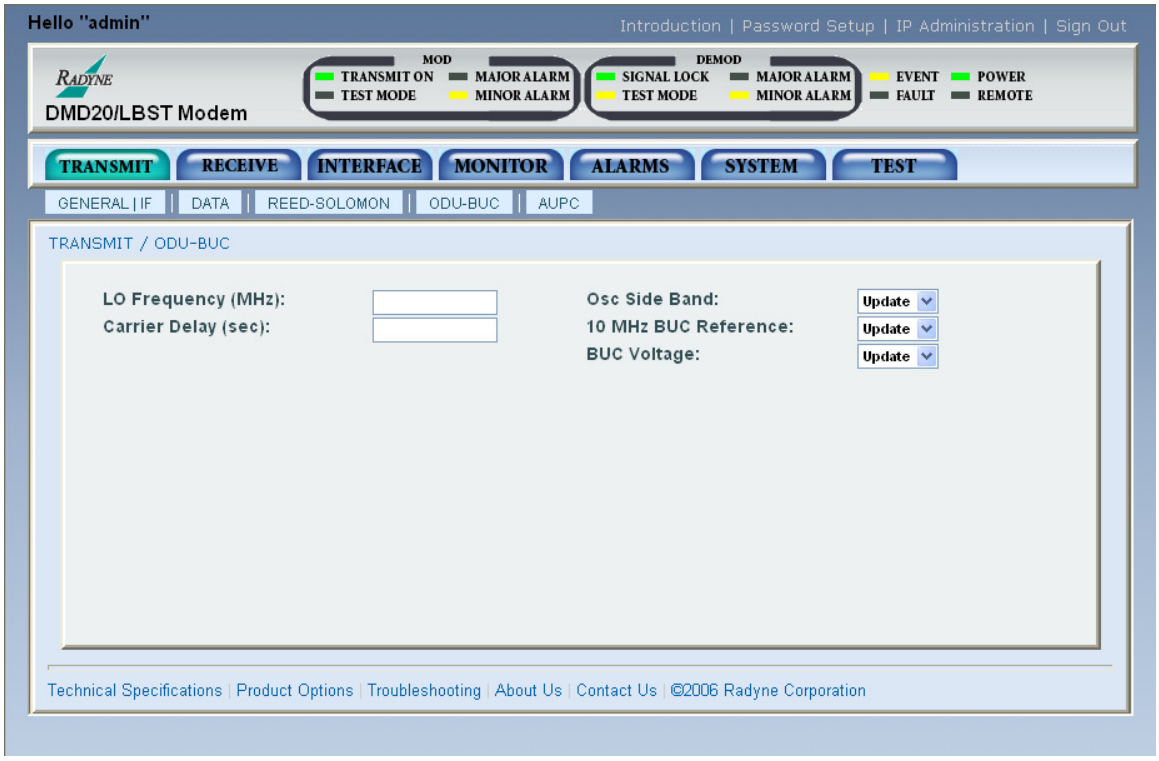


Figure 3-13. Tx OBU-BUC Configuration

NOTE

This menu is only available for the DMD20LBST and the OM20.

3.2.4.2 Receive Menu

The Receive menu contains sub menus; General | IF, Data, Reed Solomon and ODU-LNB.

RX General | IF Configuration Menu

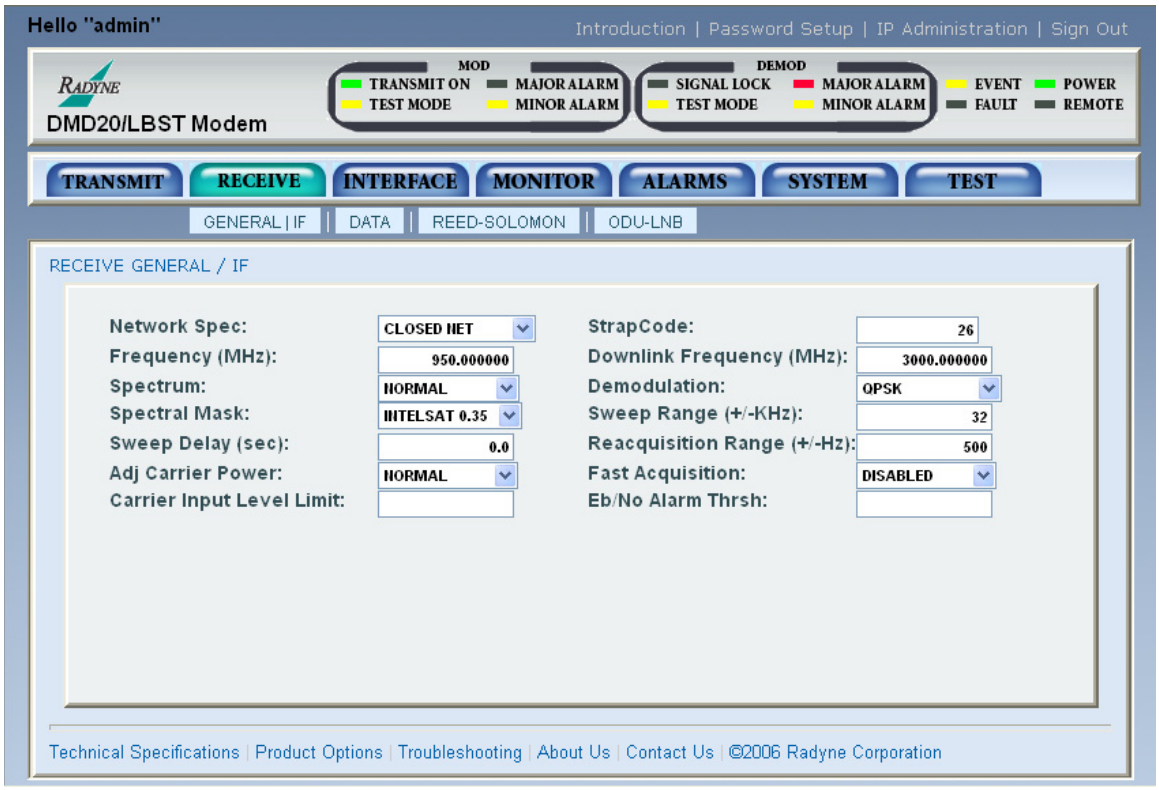


Figure 3-14. Rx General | IF Configuration

NOTE

The Downlink Frequency (MHz) menu is only available with the DMD20LBST and the OM20.

Rx Data Configuration Menu

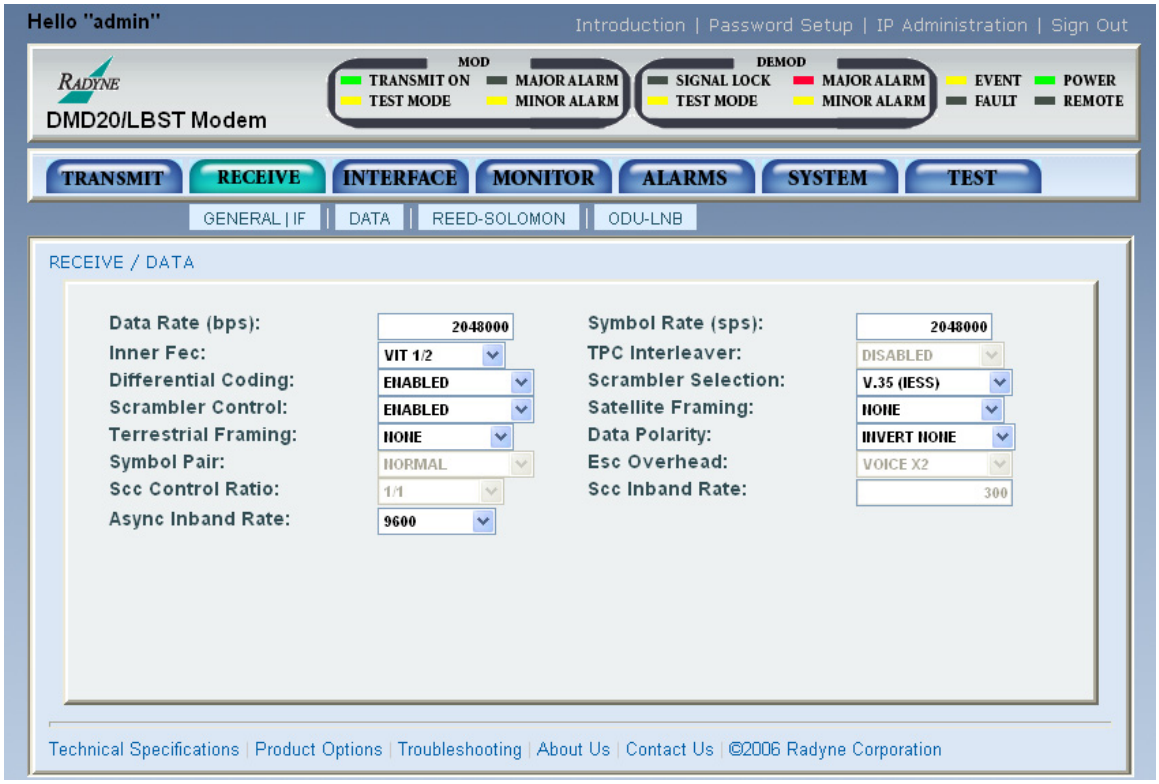


Figure 3-15. Rx Data Configuration

Rx ReedSolomon Configuration Menu

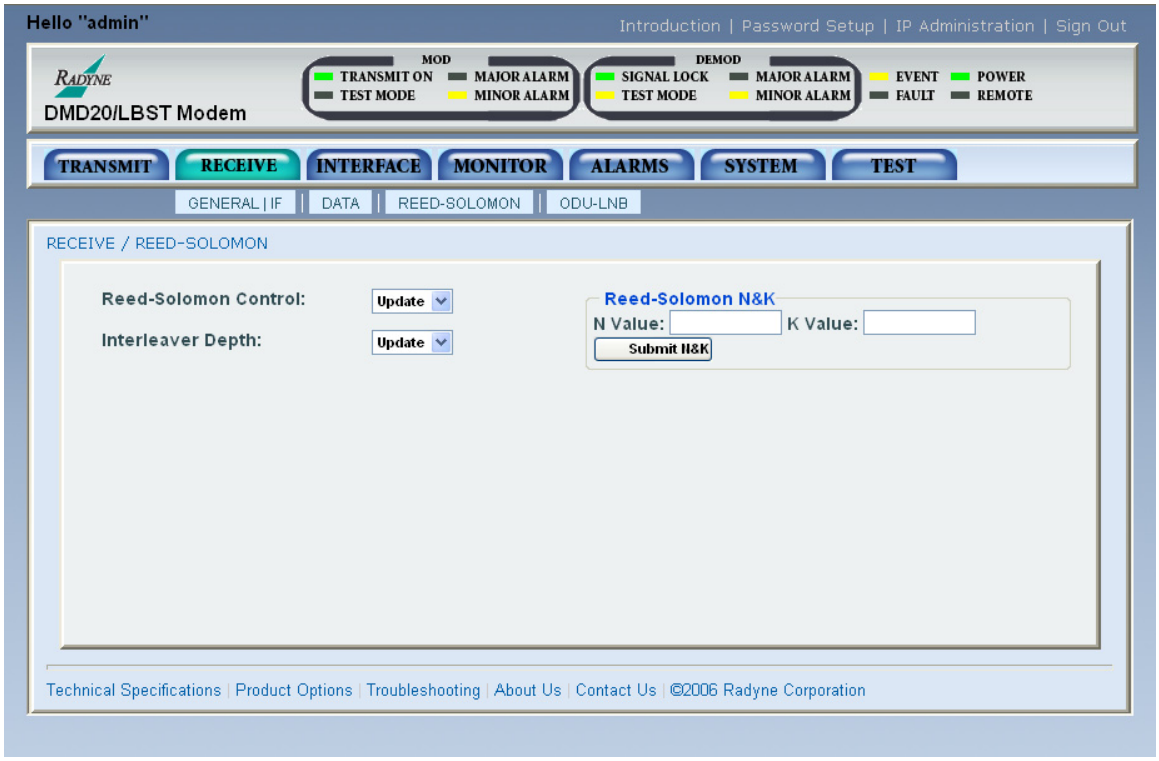


Figure 3-16. Rx ReedSolomon Configuration

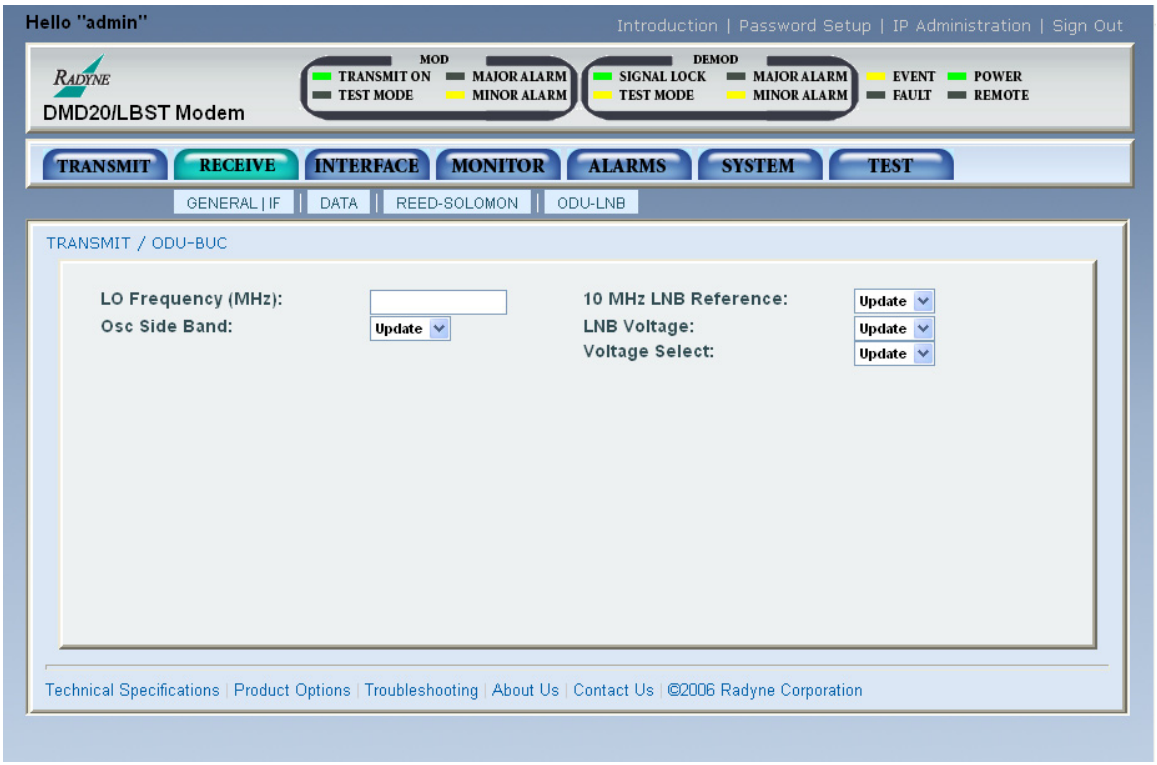


Figure 3-17. Rx ODU-LNB Configuration

NOTE

This menu is only available with the DMD20LBST and the OM20.

3.2.4.3 Interface Menu

TX Interface Configuration Menu

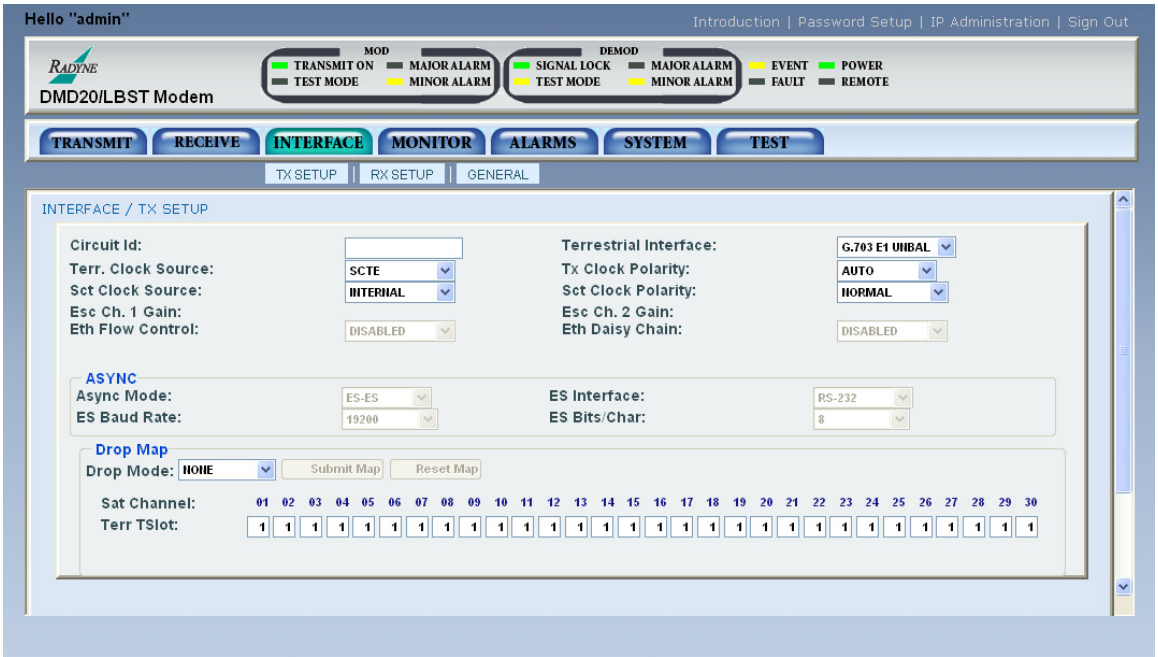


Figure 3-18. Tx Interface Configuration

RX Interface Configuration Menu

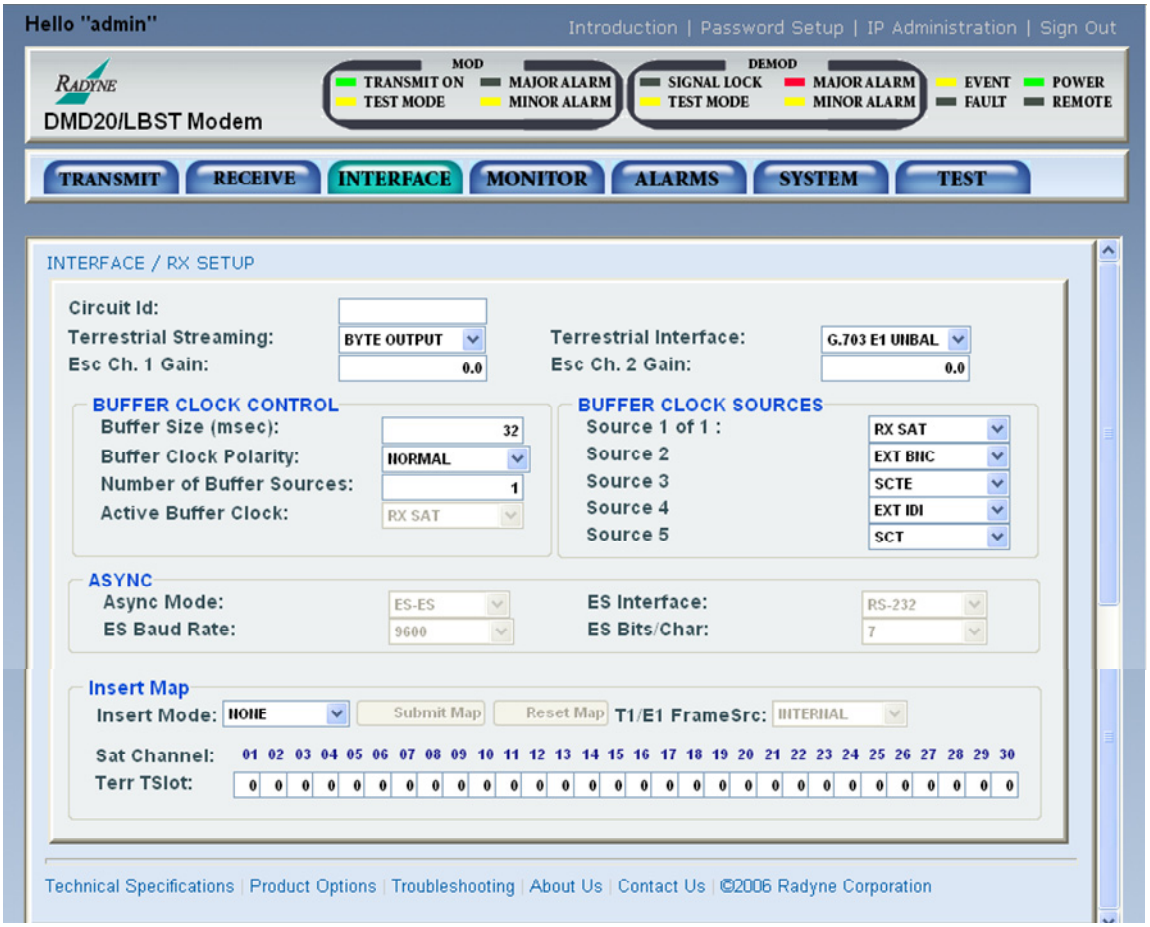


Figure 3-19. Rx Interface Configuration

General Interface Configuration Menu

Figure 3-20. General Interface Configuration

4.2.4.4 Monitor General | Voltages Menu

Figure 3-21. Monitor General | Voltages

NOTE

LNB and BUC options are only available on the DMD20LBST and the OM20.

Monitor Event Buffer Menu

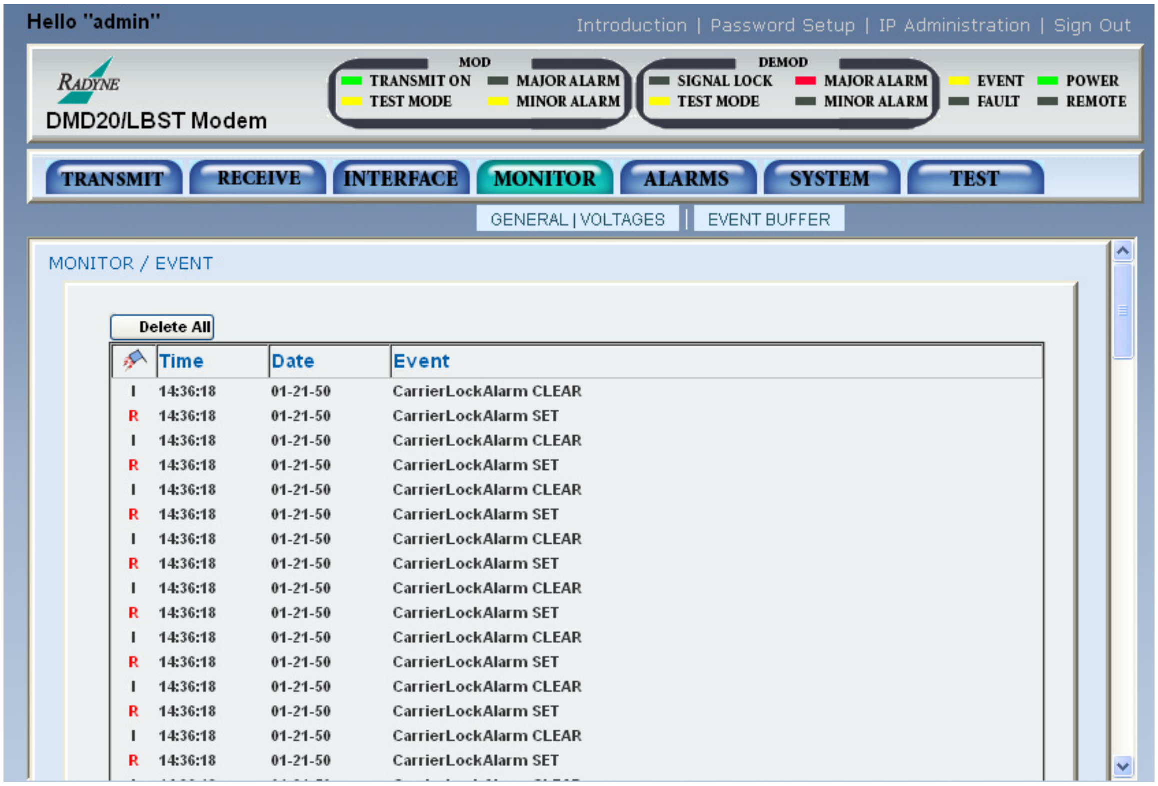
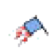


Figure 3-22. Monitor Event Buffer

Delete All:	Cleans the entire event buffer.
Event Type:	
I	Informational
Y	Yellow alarm. Indicates a transmit or receive warning condition**.**
R	Red alarm. Indicates a transmit or receive failure, losing traffic.

NOTE

The Event Buffer may be sorted by warning level, time, date, or event description. This feature may be used to further investigate event occurances.

3.2.4.5 Alarms Menu

Alarms / Transmit Menu

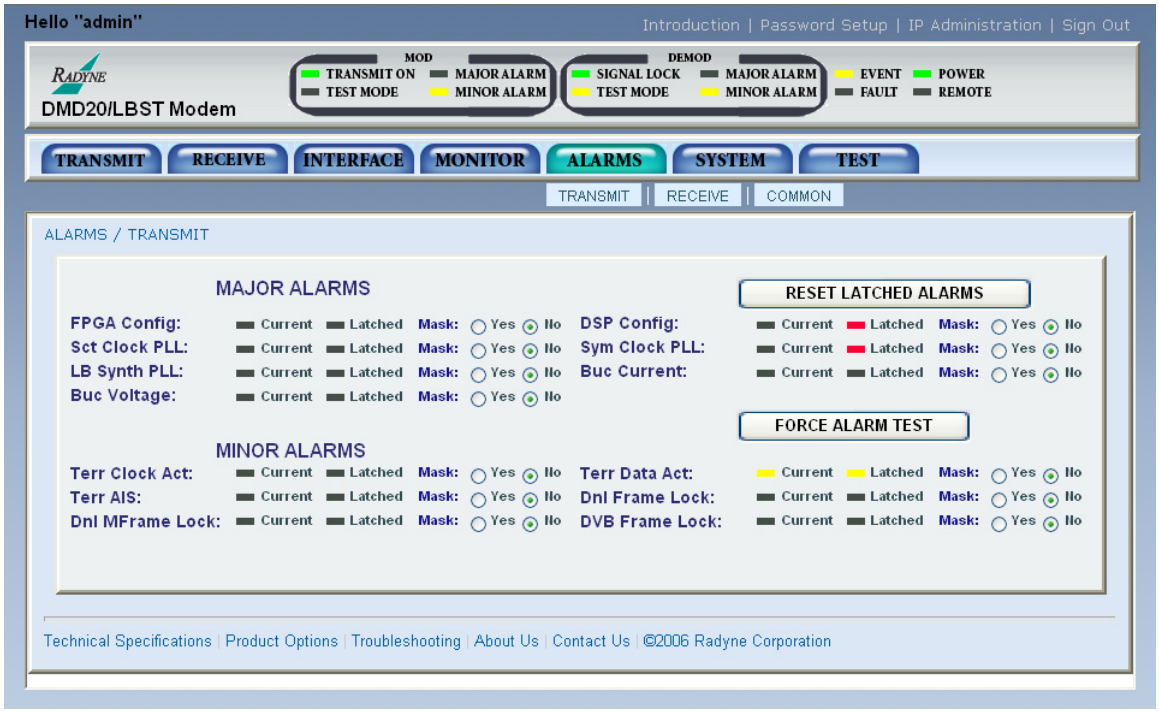


Figure 3-23. Alarms /Transmit

RESET LATCHED ALARMS: Clicking on this button will reset (Clear) all Latched Alarms

FORCE ALARM TEST: Clicking on this button will will force alarms

Alarms / Receive Menu

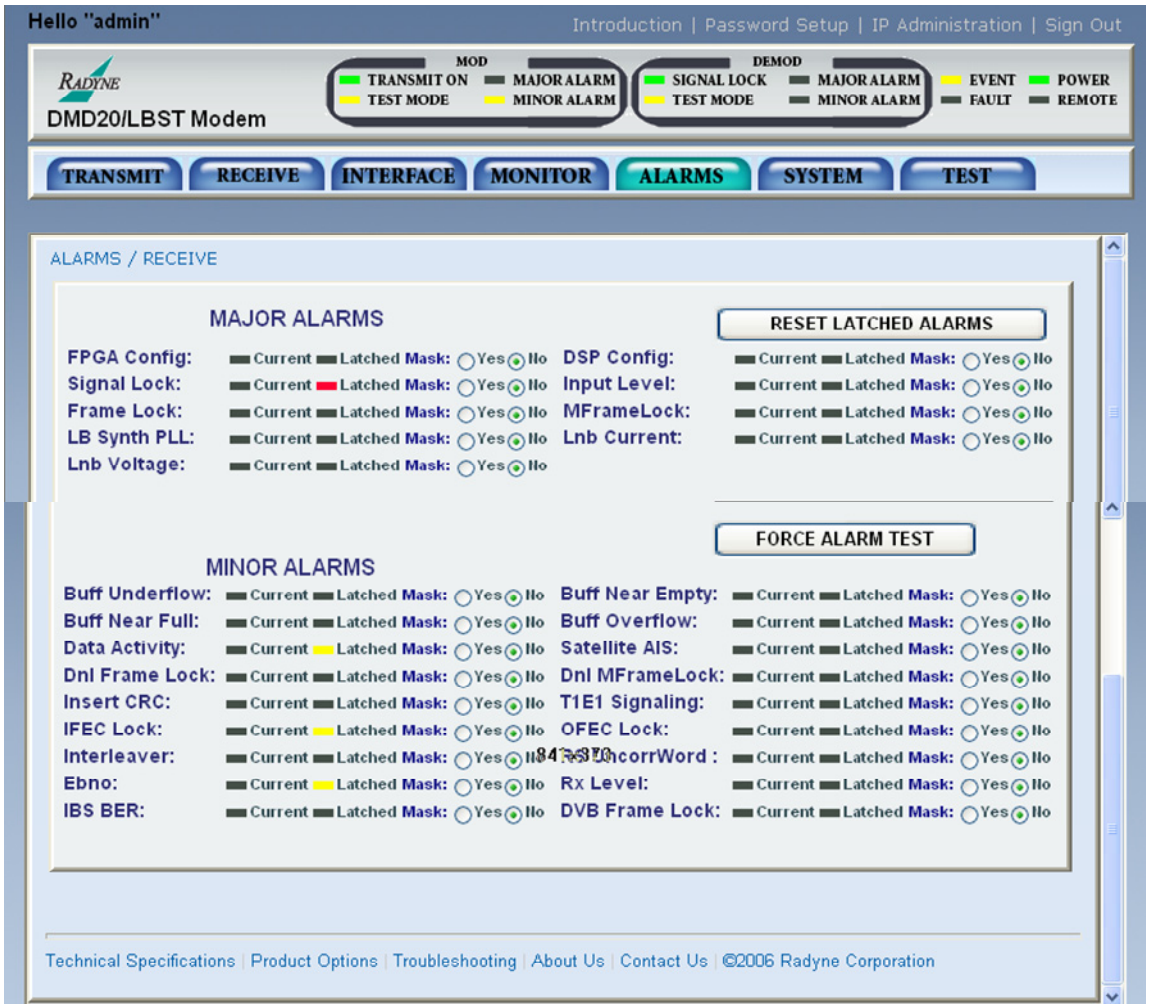


Figure 3-24. Alarms /Receive

RESET LATCHED ALARMS	Clicking on this button will reset (Clear) all Latched Alarms
FORCE ALARM TEST	Clicking on this button will force alarms.

Common Alarms Menu

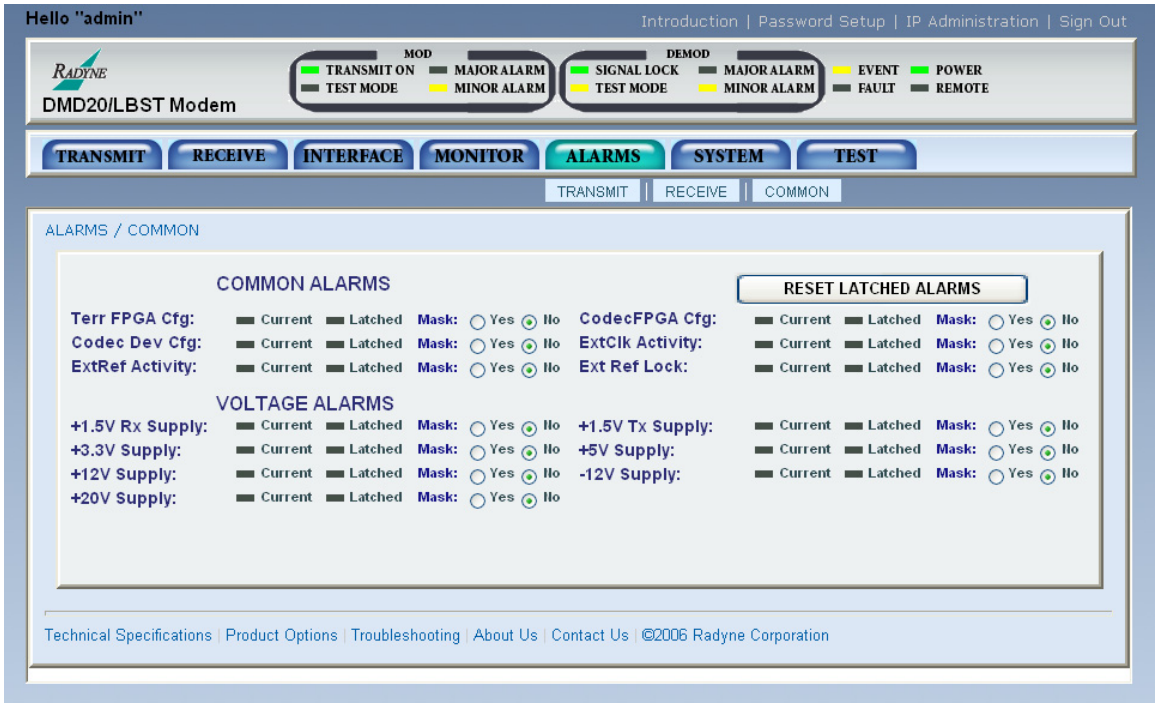


Figure 3-25. Common Alarms

RESET LATCHED ALARMS Clicking on this button will reset (Clear) all Latched Alarms

3.2.4.6 System Menu

Terminal & Remote Configuration Menu

Figure 3-26. Terminal & Remote Configuration

HW/SW Config Menu

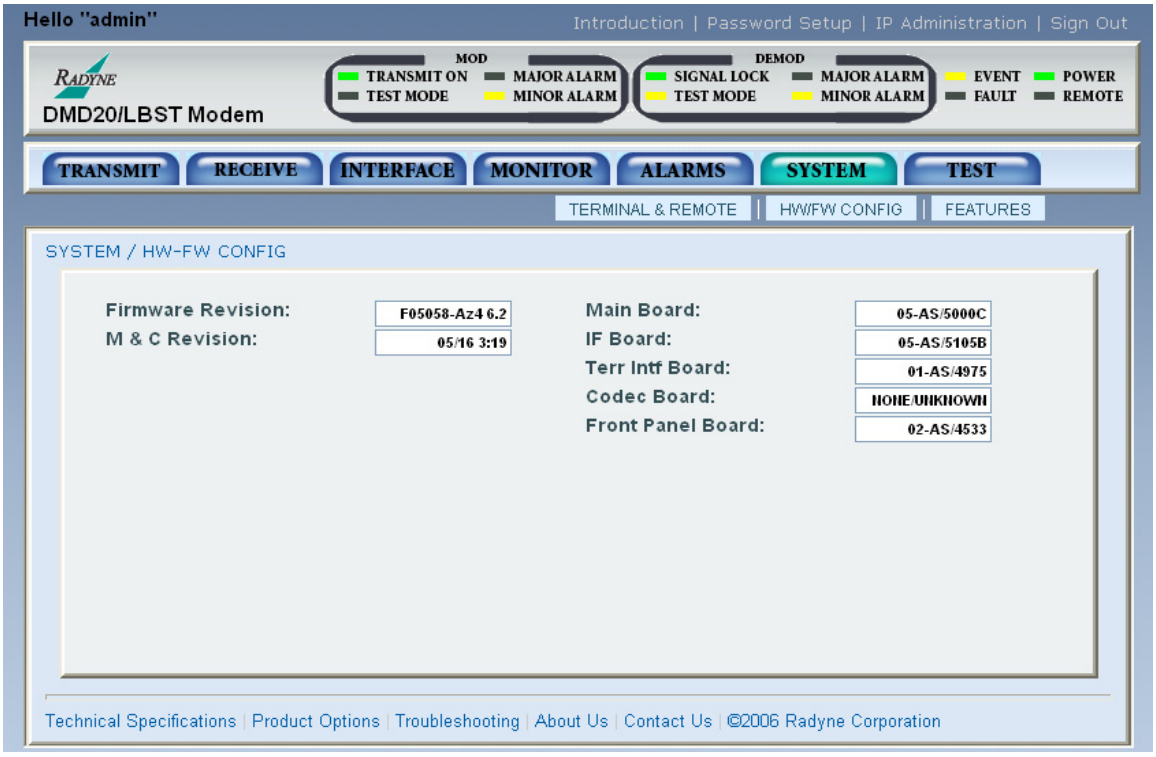


Figure 3-27. System Configuration

Installed Features Menu

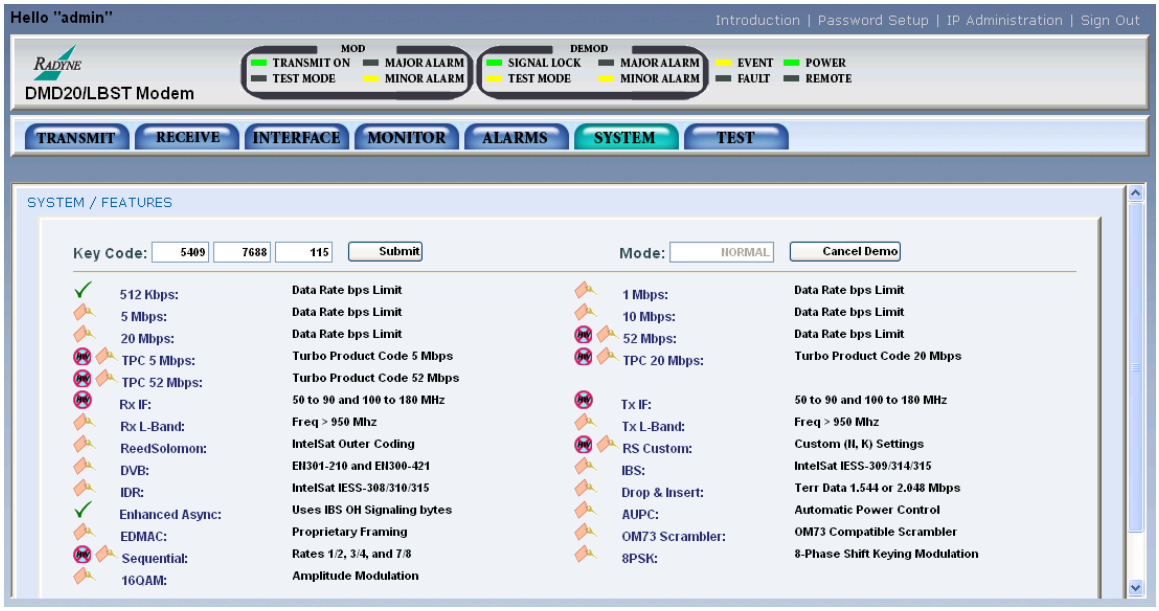


Figure 3-28. Installed Features

The Web Browser menu allows viewing of actively enabled features. Each feature displays a series of symbols that describe feature status. The following symbols indicate:

	Installed
	No hardware available. Requires hardware for upgrade.
	Feature is in Demo Mode and will expire.
	Key Code Required
	The telephone image is present when feature is enabled, but the modem has not detected the hardware or hardware feature has failed.

Features upgrades can also be implemented through the Web Browser interface.

3.2.4.7 Test Menu

Test Pattern/Carrier Menu

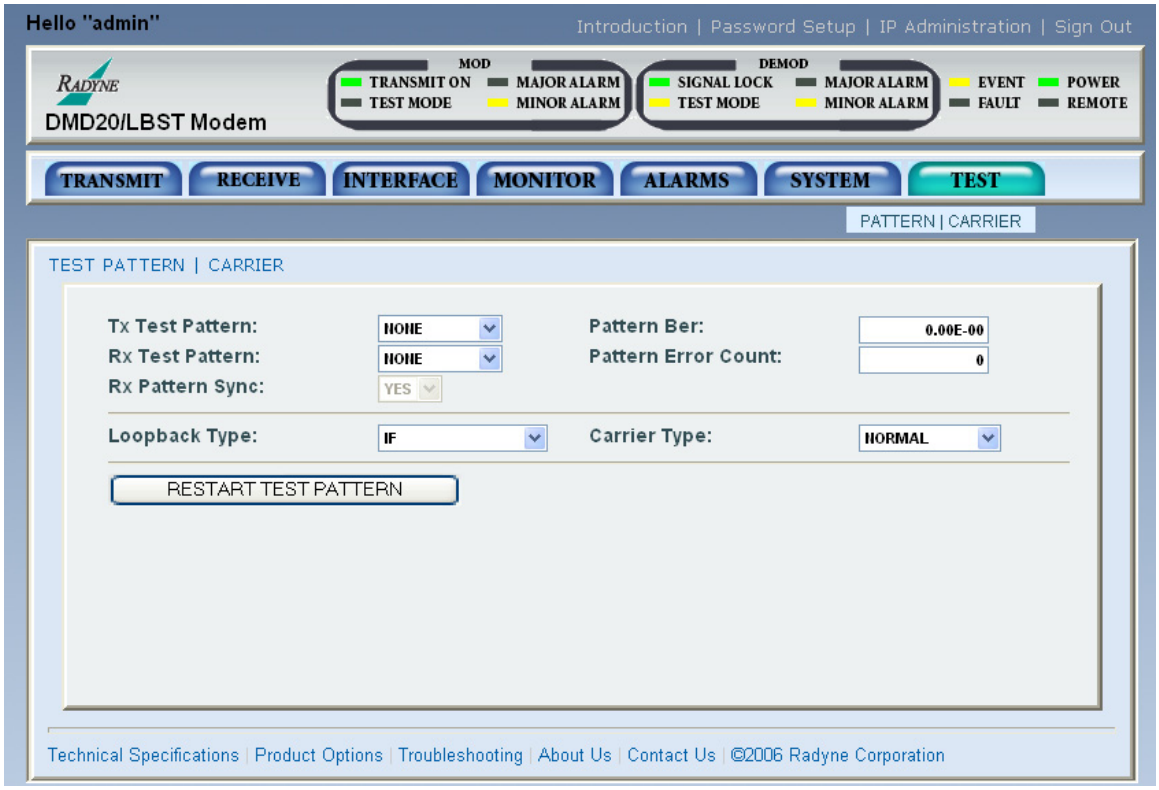


Figure 3-29. Test Pattern/Carrier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Protocol Terminal Menus

4

4.0 Terminal Mode Control

The Terminal Mode Control allows the use of an external terminal or computer to monitor and control the modem from a full screen interactive presentation operated by the modem itself. No external software is required other than VT-100 Terminal Emulation Software (e.g. “Procomm” for a computer when used as a terminal. The Control Port is normally used as an RS–232 Connection to the terminal device. The RS-232 operating parameters can be set using the modem Front Panel and stored in EEPROM for future use (refer to Section 4.11 for setup and terminal screens).

4.1 Modem Terminal Mode Control

The modem can be interactively monitored and controlled in the Terminal Mode, with a full screen presentation of current settings and status. Programming is accomplished by selecting the item to be modified and pressing the terminal key of the option number. For example, to change the transmit data rate, enter ‘33’ at the terminal. The modem will respond by presenting the options available and requesting input. Two types of input may be requested. If the input is multiple choice, the desired choice is selected by pressing the ‘Space’ key. When the desired option is displayed, press the ‘Enter’ key to select that option. The other possible input type requires a numerical input (such as entering a frequency or data rate. This type of input is followed by pressing the ‘Enter’ or carriage return key. An input can be aborted at any time by pressing the ‘ESC’ key. Invalid input keys cause an error message to be displayed on the terminal.

The Terminal Control Mode supports serial baud rates of 150, 300, 1200, 2400, 4800, 9600, 19200, and 38400. The connection must be set for 8 data bits, 1 stop bit and no parity (8,N,1). Three terminal emulations are supported: VT-100, WYSE 50, and ADDS-VP.

“$” is used for setting the screen when the terminal is used for the first time the non-volatile memory is reset.

4.1.1 Modem Setup for Terminal Mode (factory only)

Terminal Mode Communications and Protocol is set from the Front Panel Control by setting the “Control Mode” Parameter to “Terminal”, and then setting the “Modem Port”, “Term Baud” and “Emulation” Parameters as desired. Then a terminal is connected to Terminal Connector on the Back Panel. All operating software for the Terminal Mode is contained within the Modem Internal Control Software.

A “break” signal on the communications line, pressing “ESC” on the terminal or Power On of the modem will initiate full screen terminal mode printing and redraw the full screen. The Terminal Mode displays the present status of all user parameters controlled and read by the processor, and offers a menu allowing change to any controlled parameter.

User Terminal Mode Set up.
The modem will come from the factory pre-set to the Terminal mode. If it is necessary to set up the modem in the field attach the “Reset Connector” to J2 on the back of the modem. Cycle power and the modem will revert to default values for the terminal and Ethernet ports.

4.1.2 User Terminal Mode Set Up

The modem will come from the factory pre-set to the Terminal mode. If it is necessary to set up the modem in the field attach the “Reset Connector” to J2 on the back of the modem. Cycle power and the modem will revert to default values for the terminal and Ethernet ports.

The Terminal Control Mode is menu-driven and the allowable values for each item number will be shown. To change an item, type in its number followed by <ENTER>. If the parameter to be changed requires a numeric value, enter the number followed by <ENTER>. If the parameter is non-numeric, press <SPACE> to cycle through the list of available entries.

Items that do not have ID numbers are Status only and cannot be changed.

4.1.3 Connecting the Terminal

1. Connect the computer to the Remote Connector (J2) on the unit using the RS-232 Cable.

2. Enable the terminal by selecting Terminal Mode (located under the System - Control Mode Menu) from the GUI Interface.

3. Verify that your emulation software is set to the following:

   8 data bits
   no parity
   1 stop bit

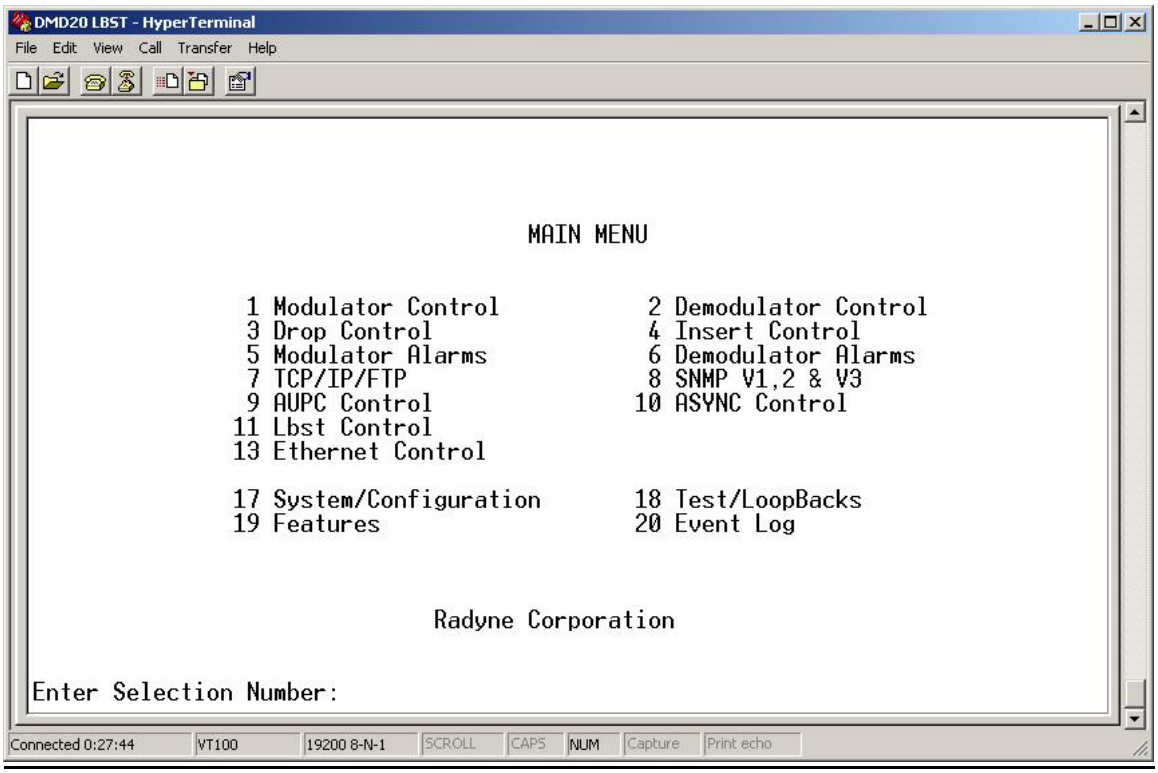
   Modify the selection, if necessary, to match the settings (the GUI Interface ‘SYSTEM’ Sub-Menu contains all the Terminal Emulation Controls).

4.1.4 Terminal Screens

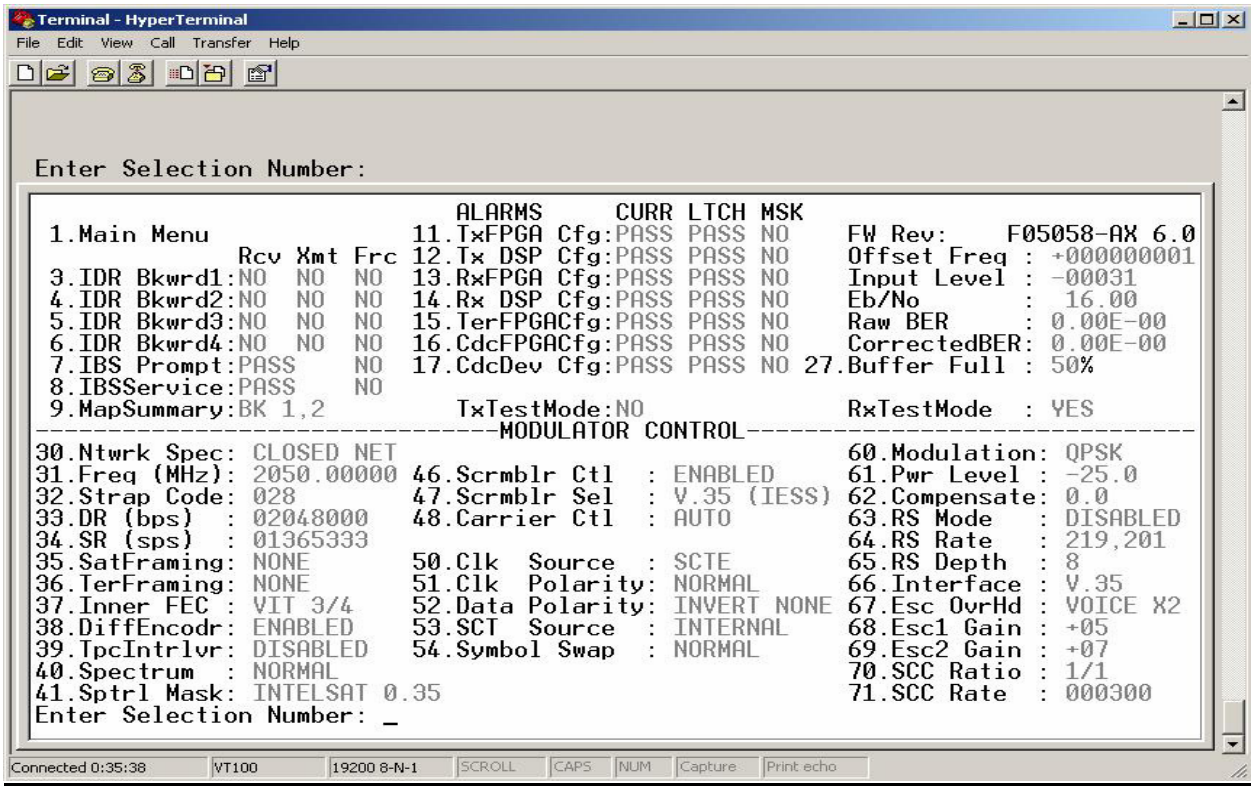
1. Modem configuration can be monitored and controlled via a full screen presentation of current settings and status. The <Esc> Key redraws the entire screen and aborts input any time. The Spacebar refreshes the status area and is used to scroll through selection when in user input mode.

2. To modify an item, the user simply presses its terminal selection followed by <Enter>. The modem responds by presenting the options available and requesting input. If the input is multiple choices, the user is prompted to use the Spacebar to scroll to the desired selection and then press <Enter>. An input can be aborted at any time by pressing <Esc>. Invalid input keys cause an error message to be displayed on the terminal. Some input or display status only appears when the user has the right access levels.

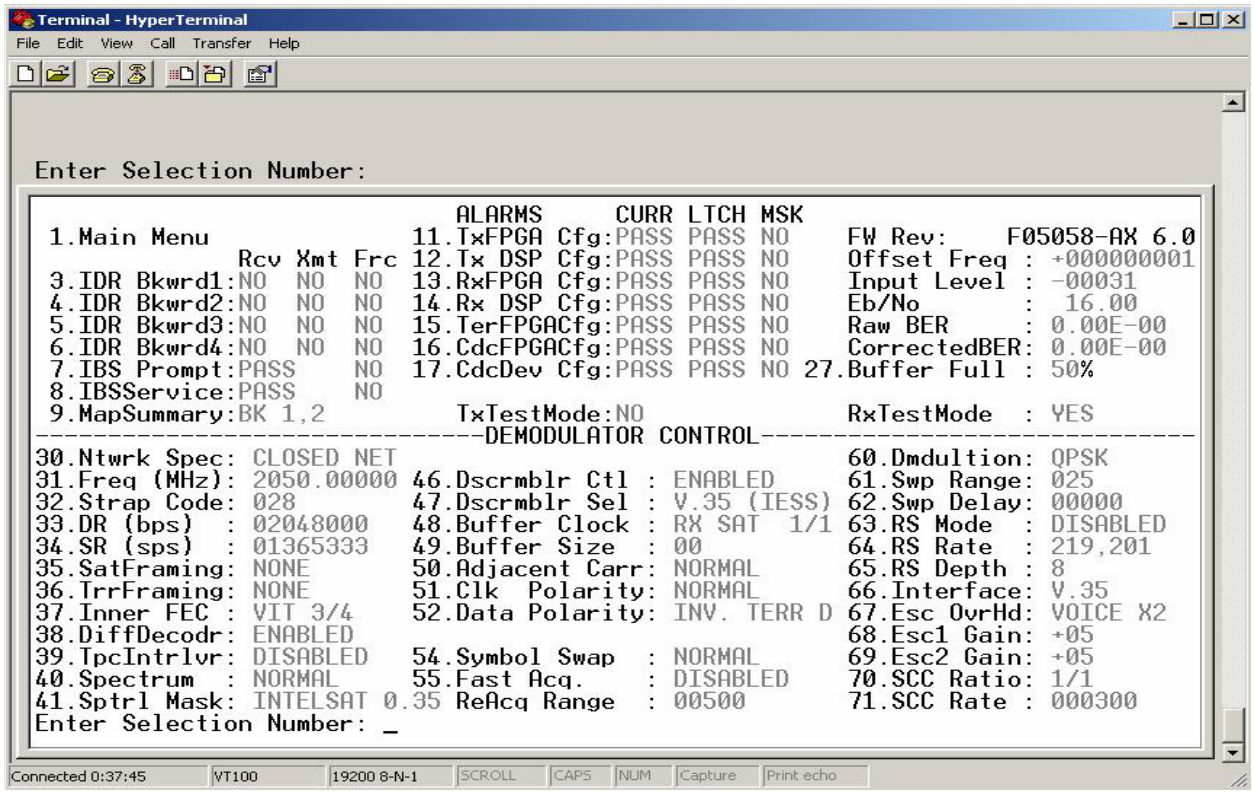
Main Menu Screen:



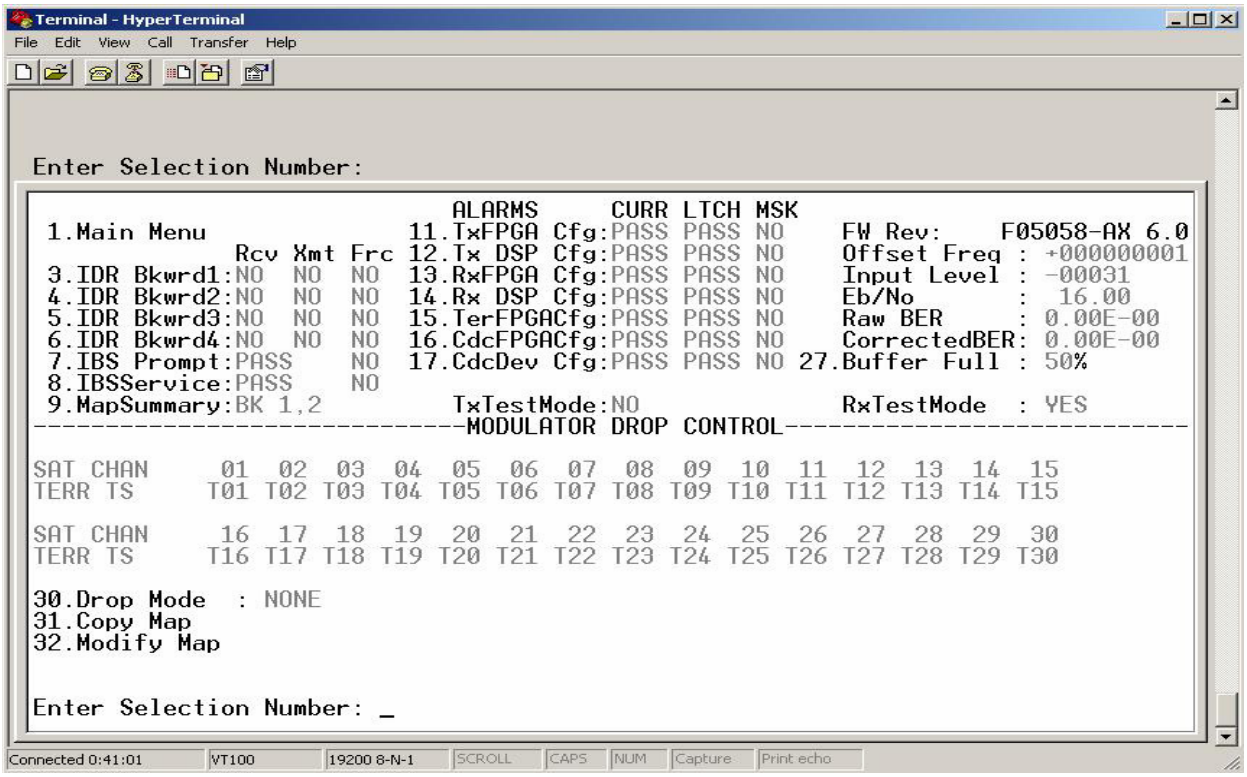
Modulator Control Screen:



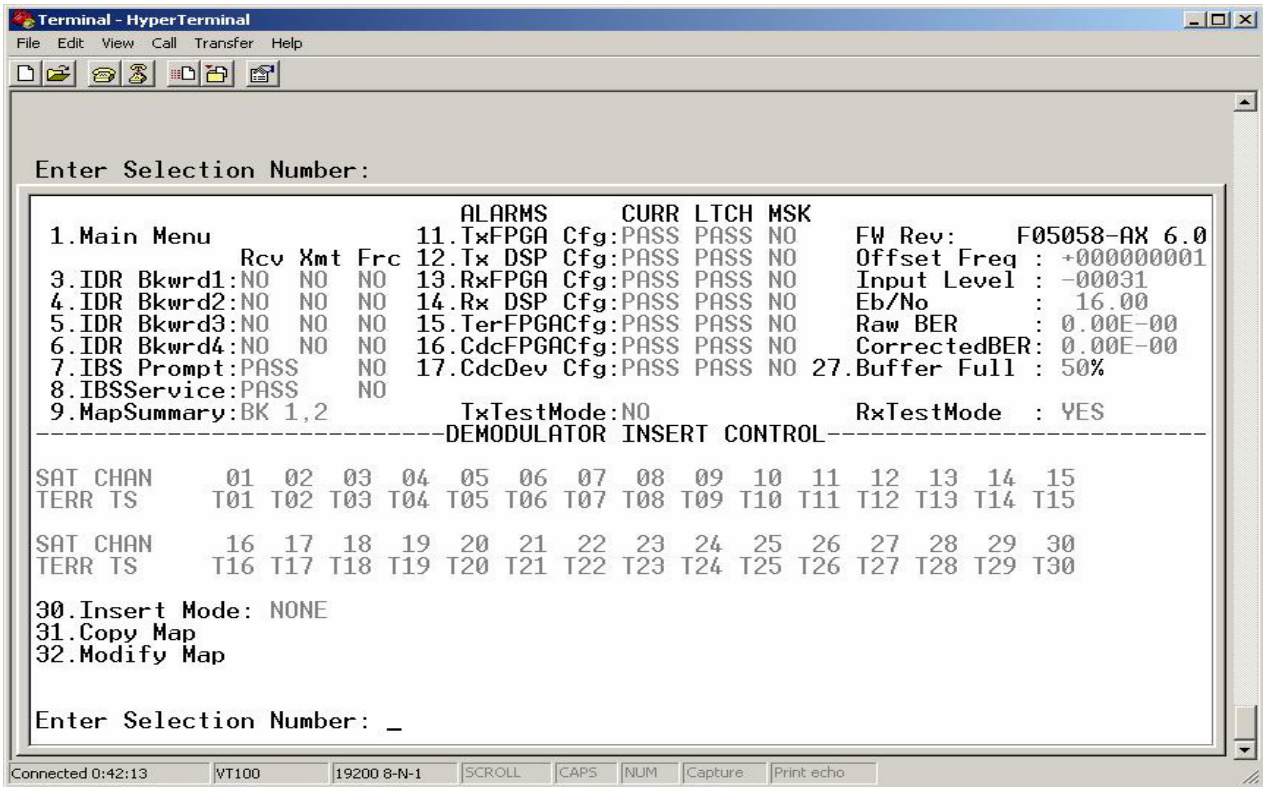
Demodulator Control Screen:



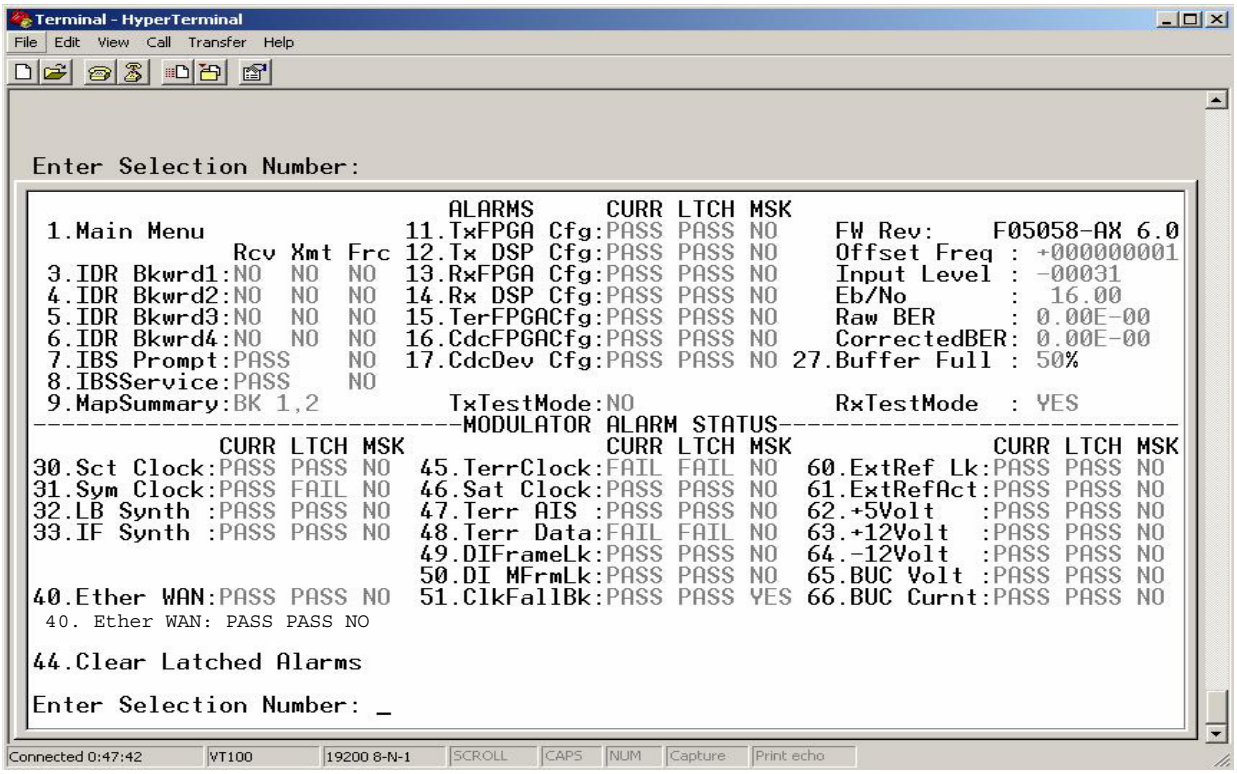
Modulator Drop Control Screen:



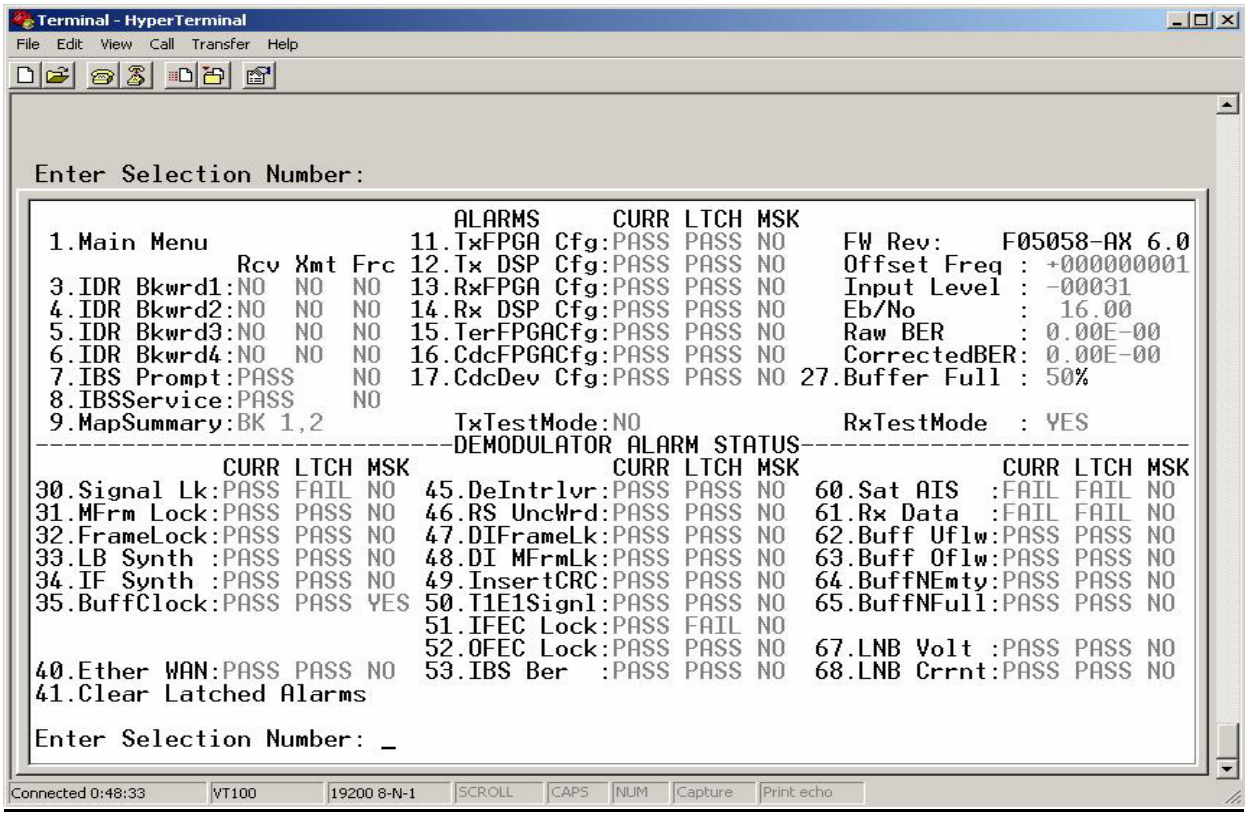
Demodulator Insert Control Screen:



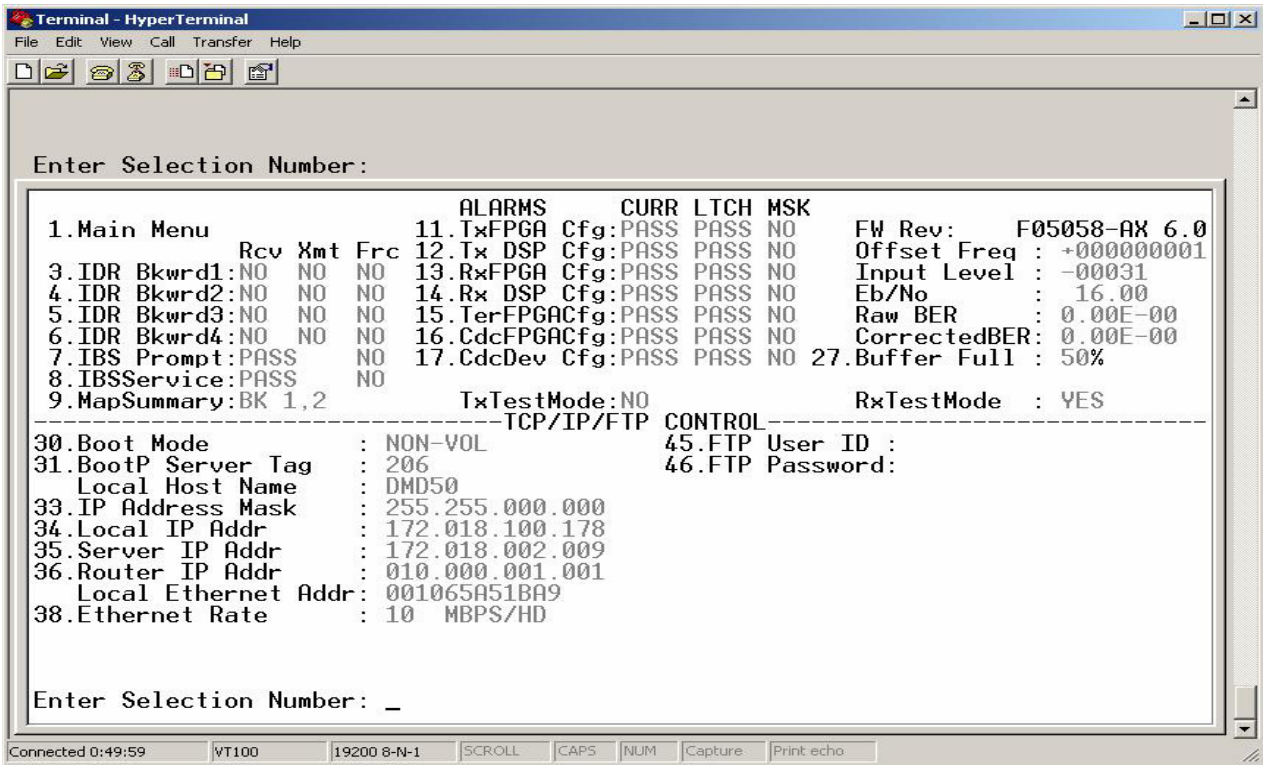
Modulator Alarm Status Screen:



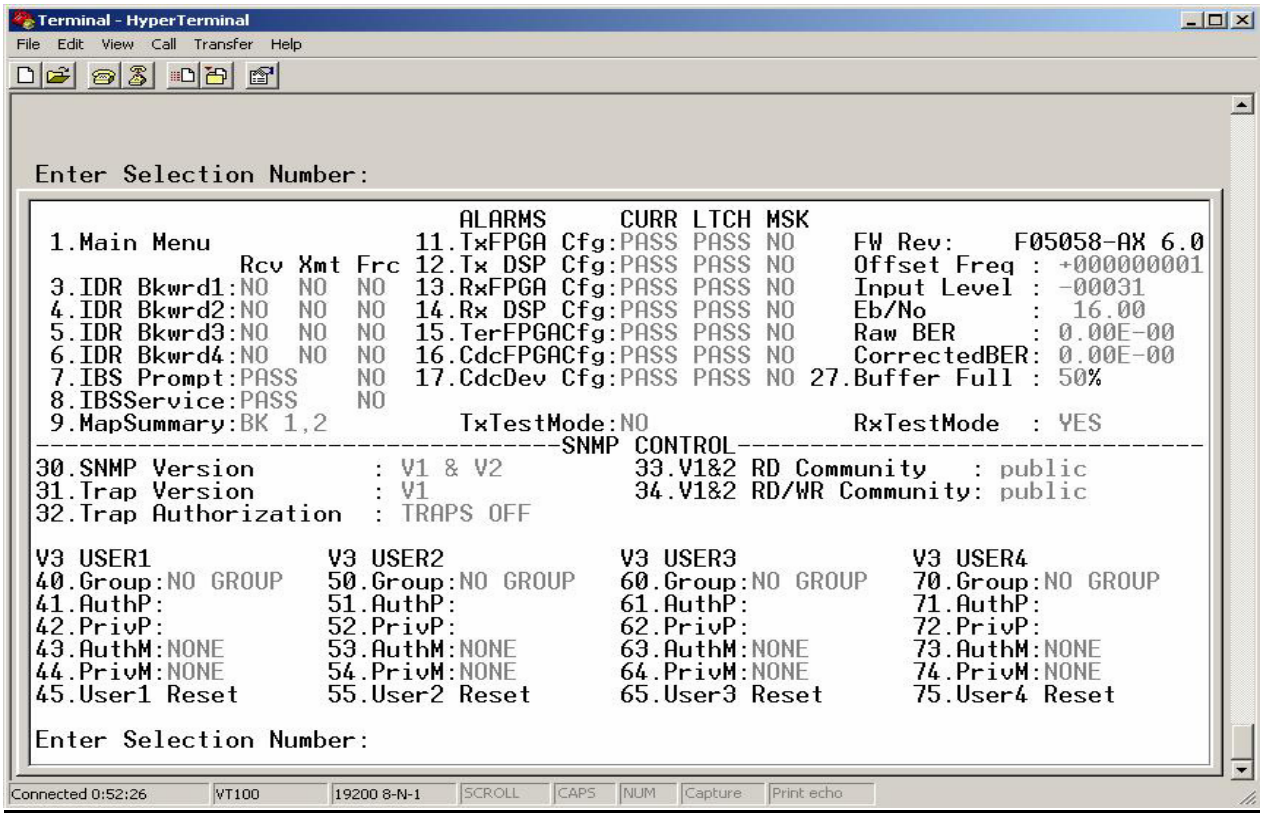
Demodulator Alarm Status Screen:



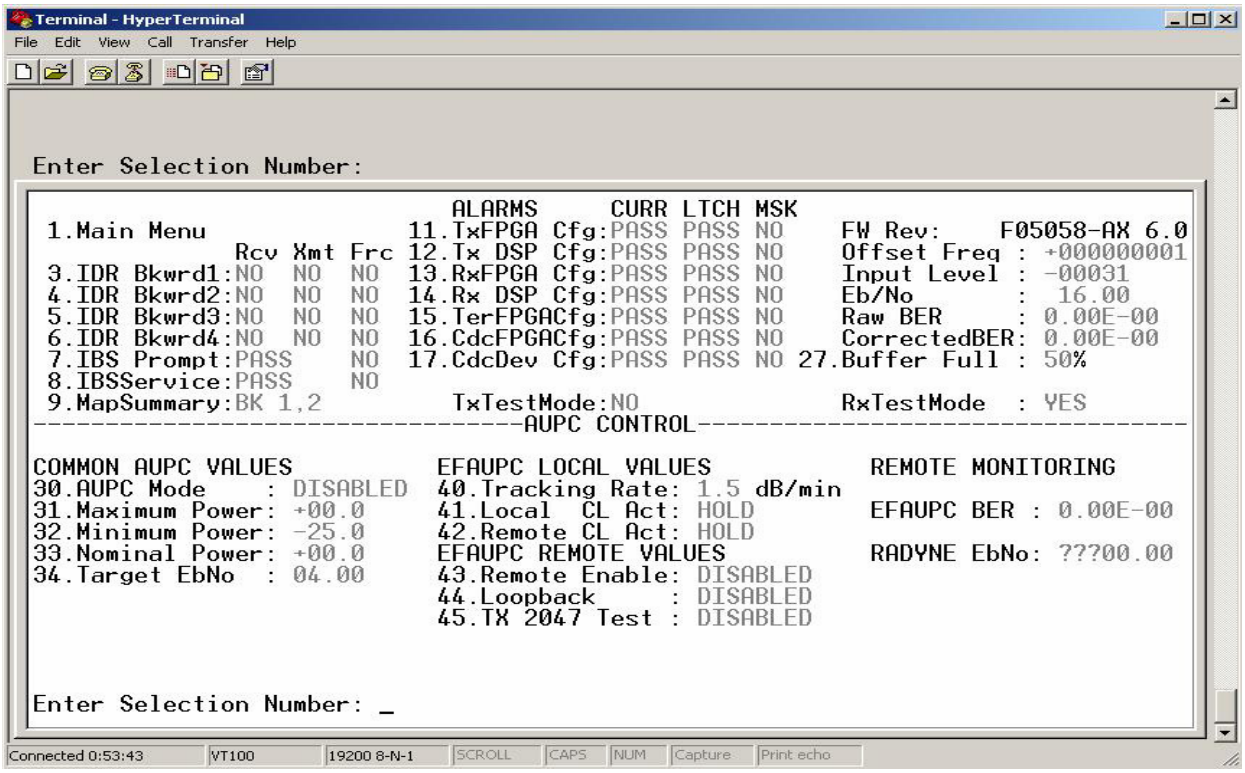
TCP/IP/FTP Control Screen



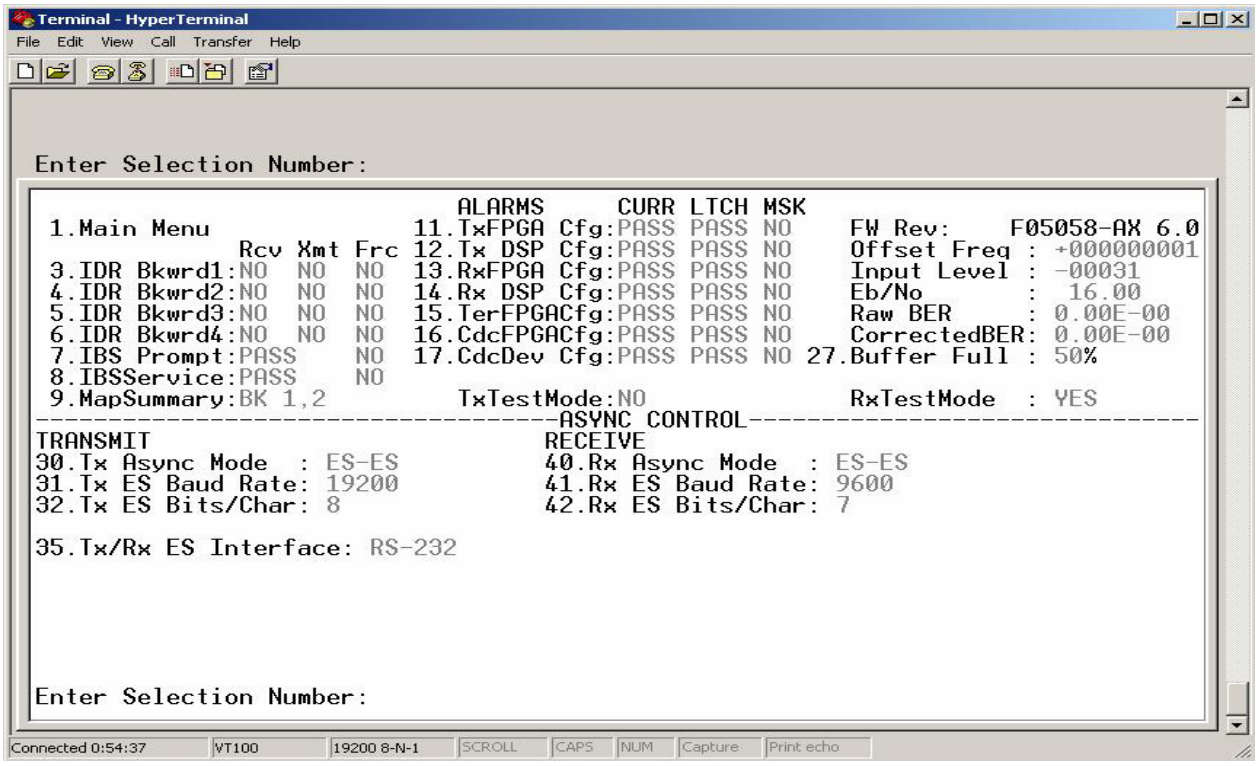
SNMP Control Screen:



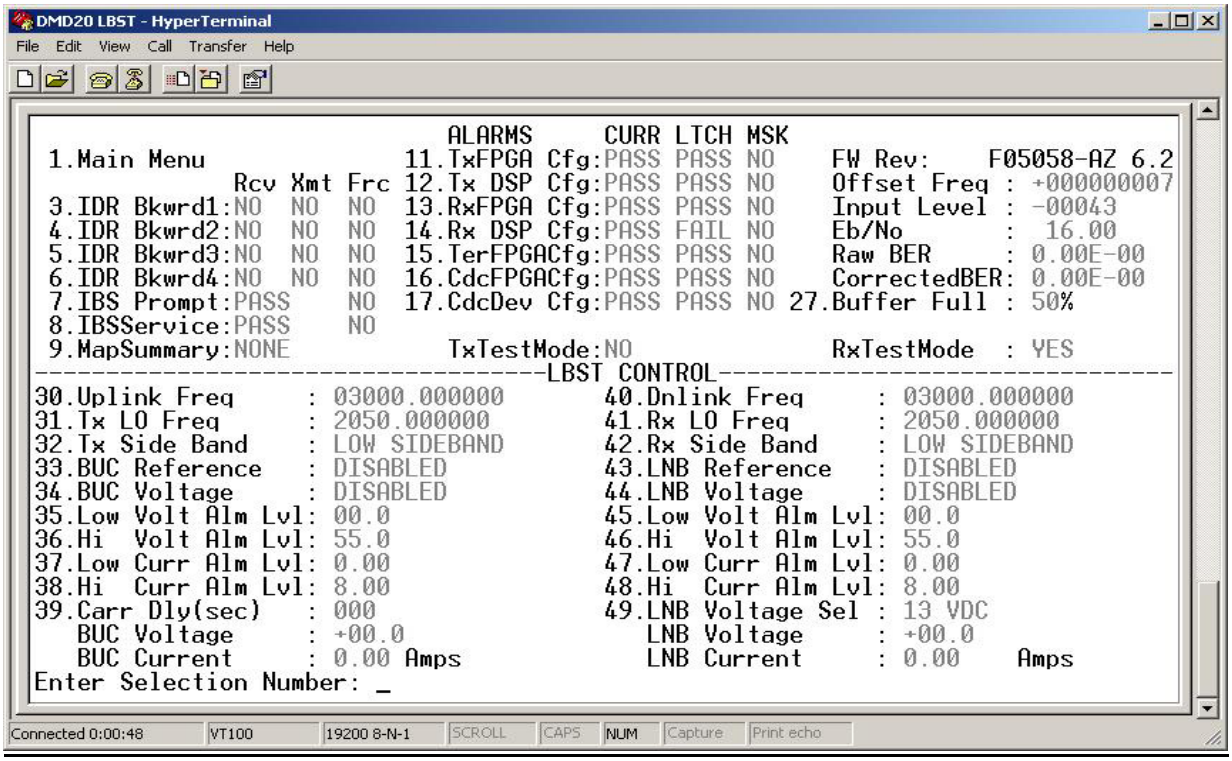
AUPC Control Screen:



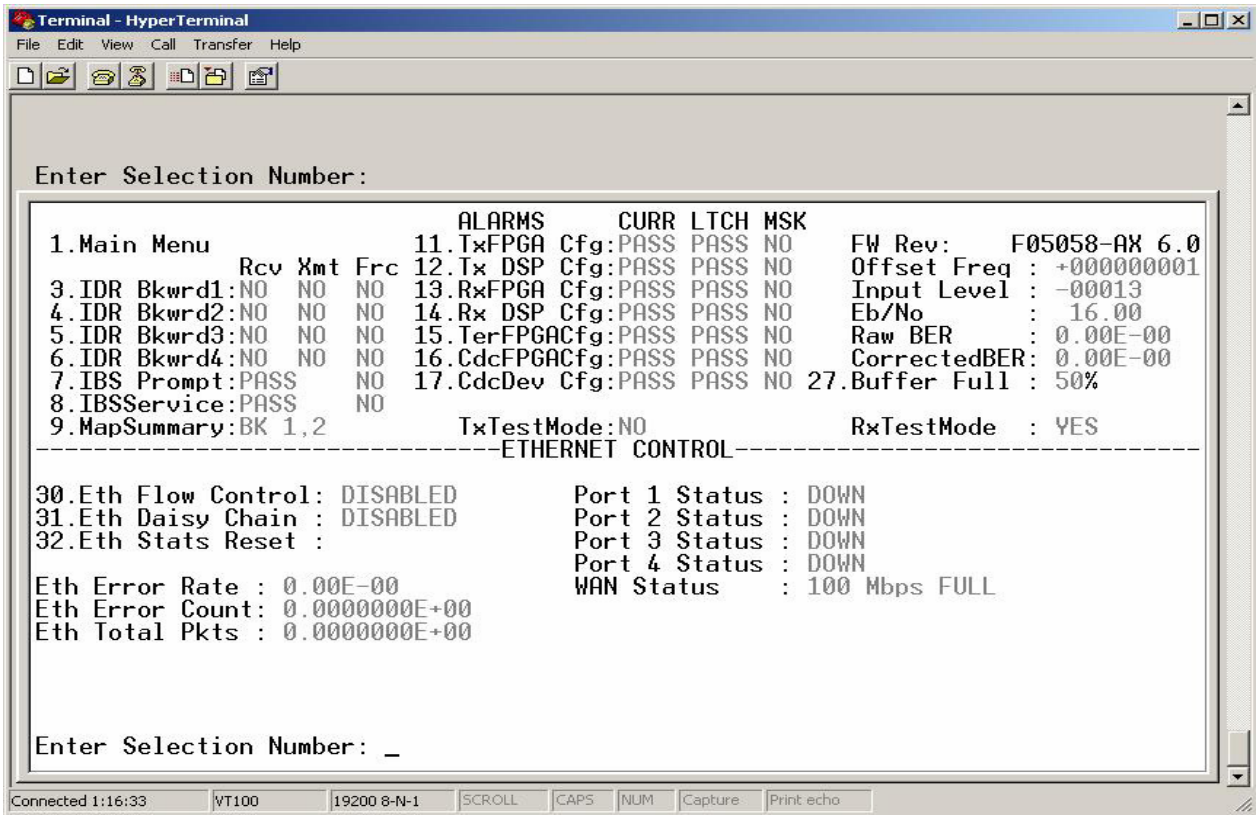
Async Control Screen:



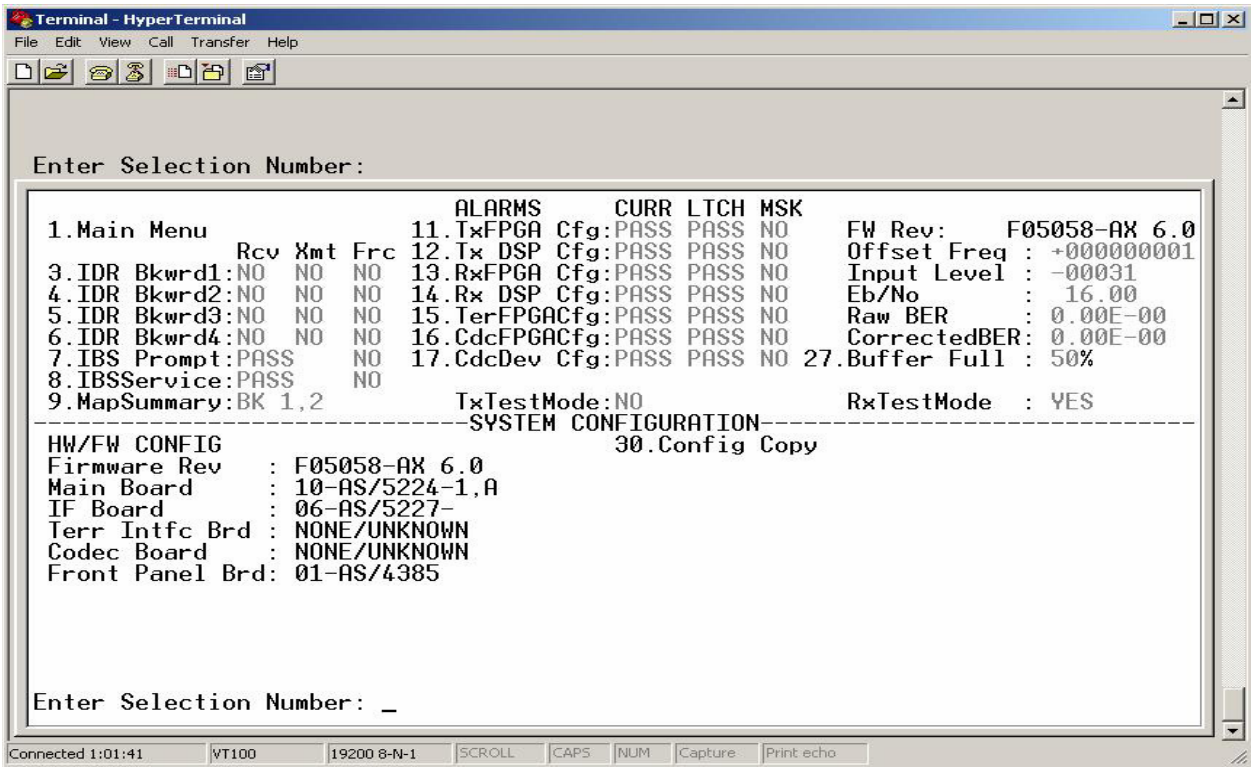
LBST Control



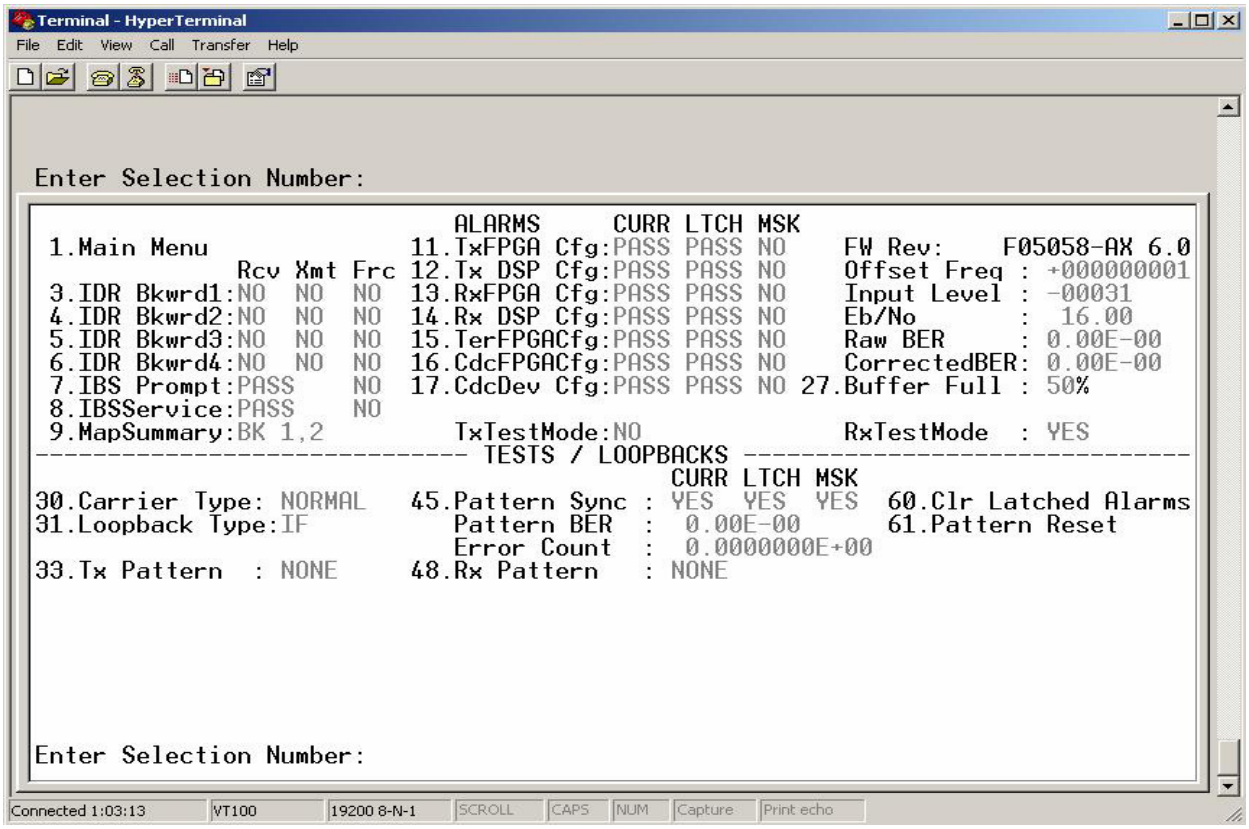
Ethernet Control Screen:



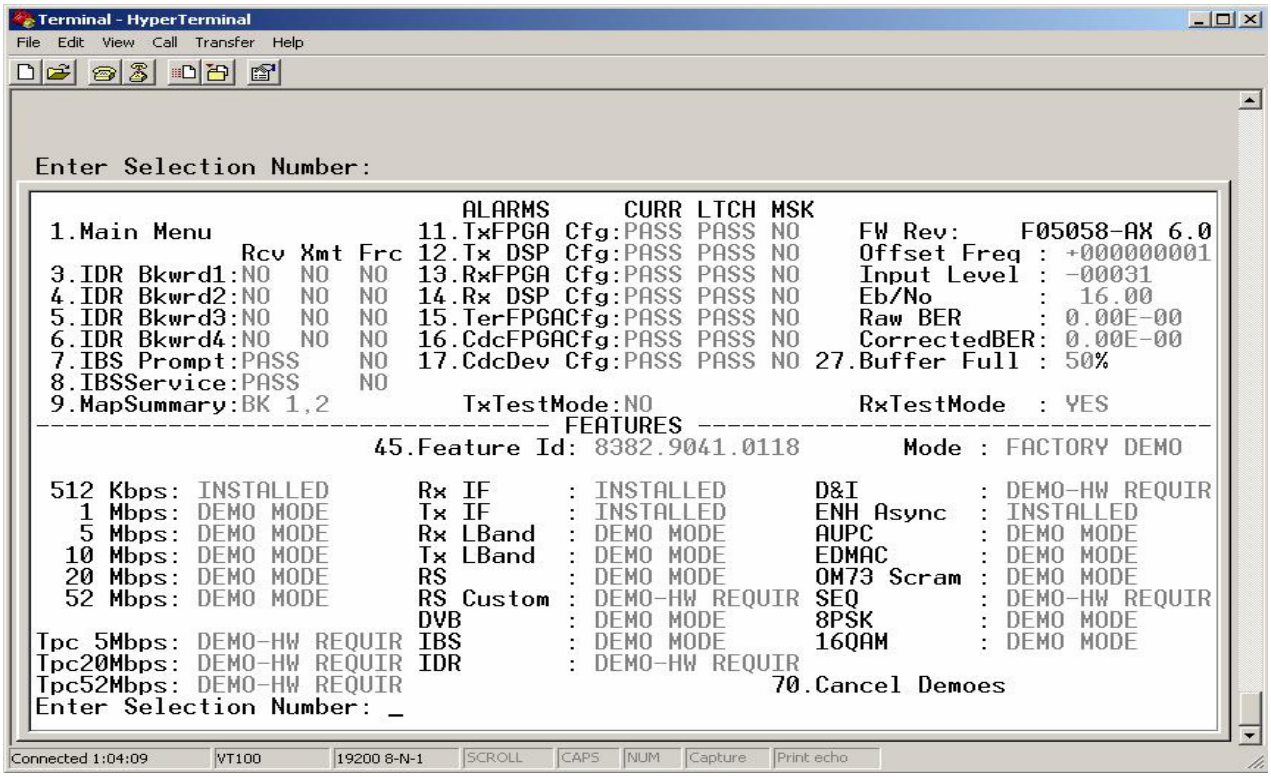
System Configuration Screen:



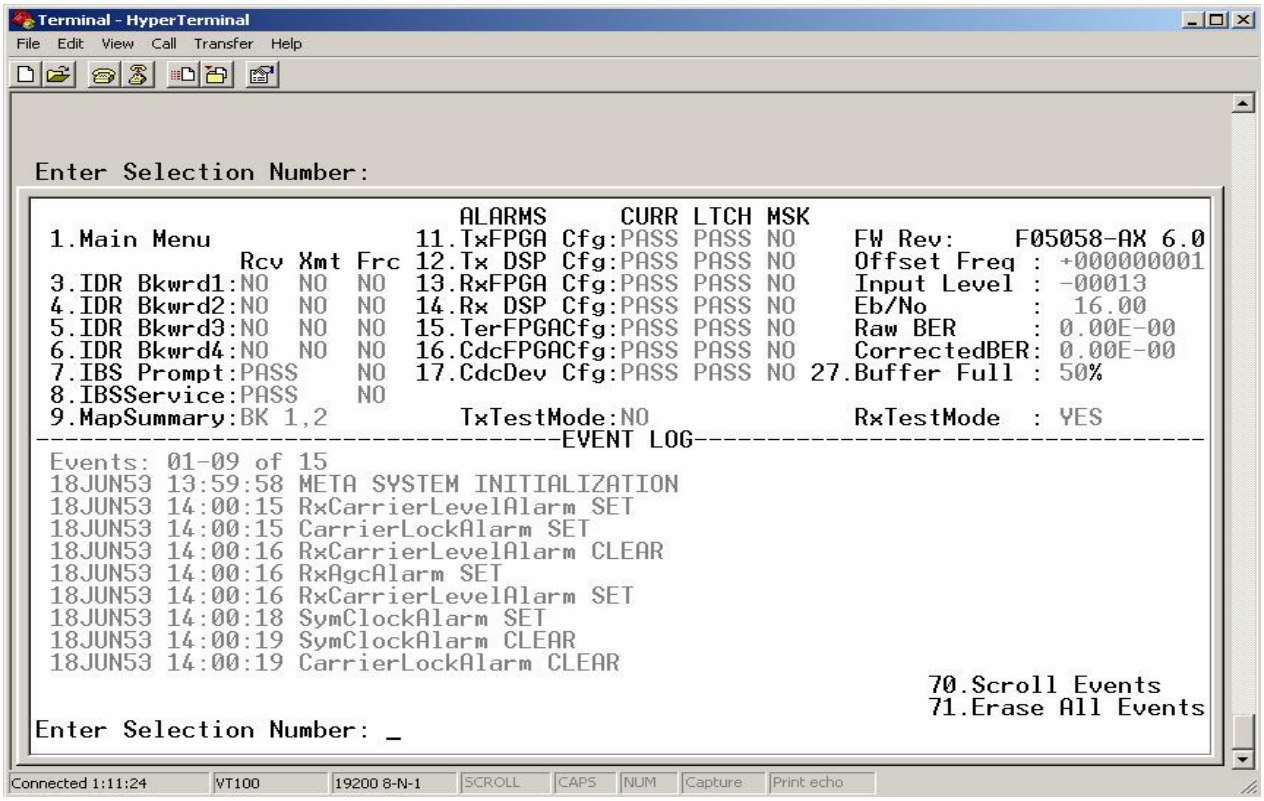
Tests / Loopbacks Screen:



Features Screen:



Event Log Screen:

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