Figure 72. Remote RF Window
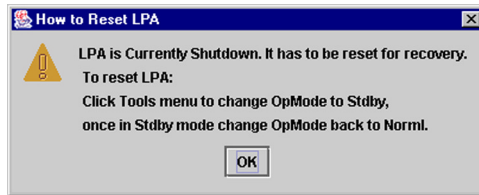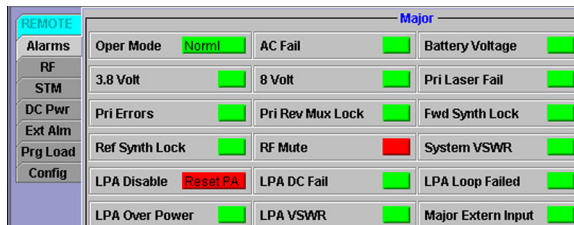

Figure 73. Reset LPA Pop-Up Window

Figure 74. "Reset PA" Message in Remote Alarms Window

Table 23 describes the RF system alarms. Table 24 describes the LPA alarms. Table 25 describes the dashboard displays. For more accurate readings, use a spectrum analyzer to test the RF signal power.

83

NOTE: RF attenuation is set in the factory to the maximum value, 31 dB. This is also the default value.

Table 23: RF System Alarms When Faulted

ALARM NAME	DESCRIPTION
Oper Mode	Operating mode is not "Norml." For a description of other modes, see Topic 4.1.4, Tools Menu, on page 60.
System VSWR	Voltage Standing Wave Ratio measured at the duplexer is too high.

Table 24: Linear Power Amplifier Alarms When Faulted

ALARM NAME	DESCRIPTION
LPA Detect	The LPA is "not present" when read (physically not there).
LPA Disable	The LPA has been disabled due to an alarm.
LPA DC Fail	LPA DC power is faulted.
LPA Loop Faulted	LPA has an internal loop failure.
LPA Low Power	RF output signal level measured in LPA is too low.
LPA VSWR	Voltage Standing Wave Ratio measured in LPA is too high.
LPA Fan	LPA fan is faulted.
LPA Temp	LPA temperature is too hot.

Table 25: RF Levels Display

ALARM NAME	DESCRIPTION
RF Power	If alarmed (red), indicates that the RF output signal measured in LPA is too low.
RF Output Power	Current level of RF output signal as measured in LPA. The accuracy of this readout is +/-3 dB. If a more accurate measurement is needed, measure at the remote unit.
Current VSWR	Current reading of the Voltage Standing Wave Ratio.
Remote Fwd Att	Current attenuation setting for forward path RF signal. Clicking on **Edit** button displays a dialog used for setting the remote forward path attenuation. For more information on setting attenuation, refer to Topic 3.11 on page 44.

84

4.5.3 Remote STM Window

The remote **STM** (Spectrum Transport Module) window, shown in Figure 75, contains subsets of alarm indicators pertaining to the STM optics function and synthesizers. The indicators are refreshed about every three seconds. Table 26 describes the optics alarms. Table 27 describes the synthesizer alarms. Table 28 describes the band indicator.
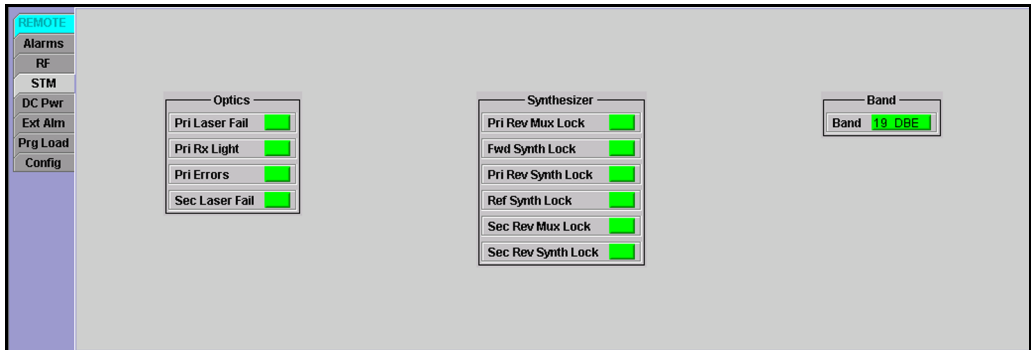

Figure 75. Remote STM Window

Table 26: Remote STM Optics Alarms When Faulted

ALARM NAME	DESCRIPTION
Pri Laser Fail	The reverse path primary fiber laser is not sending light (no light from remote unit to host unit).
Pri Rx Light	No light is being received on the primary fiber (no light from host unit to remote unit).
Pri Errors	Multiple errors are occurring on primary fiber. Error rate has exceeded 10^{-6} (one bit error per million bits).
Sec Laser Fail	The reverse path secondary fiber laser is not sending light (no light from remote unit to host unit).

Table 27: Remote Synthesizer Alarms When Faulted

ALARM NAME	DESCRIPTION
Pri Rev Mux Lock	Reverse path primary fiber phase-locked-loop is out of lock.
Fwd Synth Lock	Forward path synthesizer is out of lock.

85

Table 27: Remote Synthesizer Alarms When Faulted (Continued)

ALARM NAME	DESCRIPTION
Pri Rev Synth Lock	Primary reverse path synthesizer is out of lock.
Ref Synth Lock	Reference synthesizer is out of lock.
Sec Rev Mux Lock	Reverse path secondary fiber phase-locked-loop is out of lock.
Sec Rev Synth Lock	Secondary reverse path synthesizer is out of lock.

Table 28: Remote Band Indicator

INDICATOR NAME	DESCRIPTION
Band	Indicates RF bandwidth and sub-band at which unit is running. If the host unit and remote unit are at different bands, a Hardware Mismatch alarm is reported (see Topic 4.4.1 on page 69).

4.5.4 Remote DC Pwr Window

The remote **DC Pwr** (DC Power) window, shown in Figure 76, contains dashboard displays pertaining to the availability of DC power in the remote unit. The displays include readings for temperature and availability of AC power because these conditions affect the DC supply.
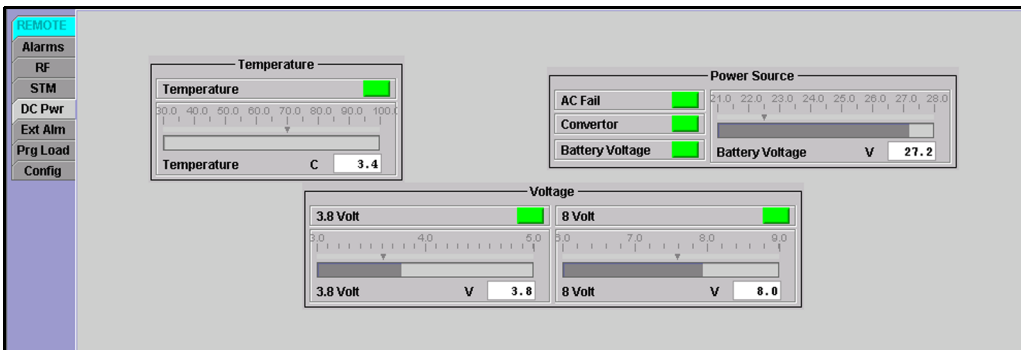

Figure 76. Remote DC Pwr Window

Table 29 describes the Temperature display. Table 31 describes the Power Source display. Table 31 describes the Voltage display.

Table 29: Remote DC Temperature Display

ALARM NAME	DESCRIPTION
Temperature (Alarm)	If red, indicates the temperature measured in the Spectrum Transport Module is too high.
Temperature (Bar)	Shows the current temperature reading in the STM.

Table 30: Remote DC Power Source Display

ALARM NAME	DESCRIPTION
AC Fail	If red, indicates no AC power to the remote unit.
Converter	If red, indicates AC converter in STM has failed.
Battery Voltage (Alarm)	Battery voltage is low. (Not displayed for UMTS band. UMTS system does not have battery backup.)
Battery Voltage	Shows current battery voltage reading. Small down arrow marks alarm threshold. (Not displayed for UMTS band.)

Table 31: Remote DC Voltage Display

ALARM NAME	DESCRIPTION
3.8 Volt (Alarm)	If red, indicates the 3.8 Volt onboard supply is too low.
3.8 Volt (Bar)	Shows current reading. Down arrow marks alarm threshold.
8 Volt (Alarm)	If red, indicates the 8 Volt onboard supply is too low.
8 Volt (Bar)	Shows current reading. Small down arrow marks alarm threshold.

4.5.5   Remote Ext Alm Window

The remote **Ext Alm** (External Alarms) window, shown in Table 77, has alarm indicators for the user external alarm inputs to the remote unit. Table 32 describes what the indicators mean when faulted.
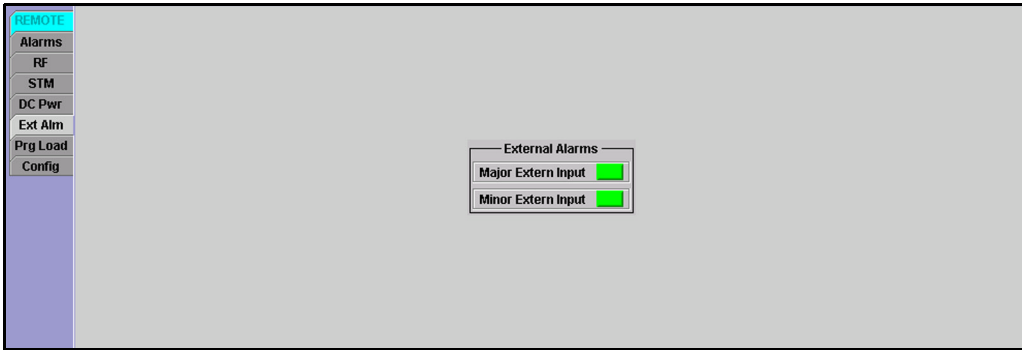
87

Figure 77. Remote Ext Alarm Window

Table 32: Remote External Alarms When Faulted

ALARM NAME	DESCRIPTION WHEN FAULTED
Major Extern Input	User major external alarm input is faulted.
Minor Extern Input	User minor external alarm input is faulted.

4.5.6 Remote Prg Load Window

The remote **Prg Load** (Program Load) window, shown in Figure 78, is used to download a program file from the EMS computer to a remote unit. The program file may be a control program or a Field Programmable Gate Array (FPGA).
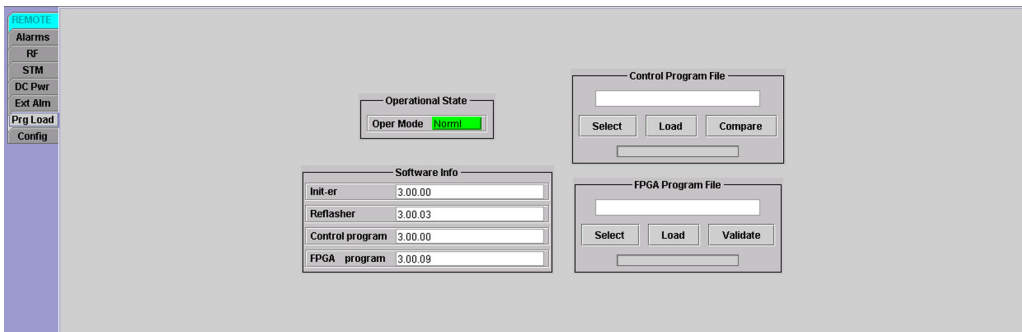

Figure 78. Remote Prg Load Window

For the download procedure, refer to Topic . Table 33 describes the components of the window.

Table 33: Prg Load Window Components

DISPLAY NAME	DESCRIPTION
Operational State	
Oper Mode	This mode is not set here, merely indicated. (The mode is set using the **Opmode** tool.) The host should be in a Normal mode when starting the download. It then changes to Program Load mode automatically.
Control Program File	
`<Unnamed Field>`	`<Name><Version>.sr` where `<Name>` = name of program being downloaded `<Version>` = major.minor.rev.build
Select	Click on this button to browse for and open the program file you want to download.
Load	Click on this button to download the selected program.
Compare	Click on this button to compare the version of the selected control program with the version of the control program already installed on the unit.
Validate	Click on this button to determine whether the FPGA on the remote unit is in a functional state in which an FPGA can be downloaded. For newer hardware, the FPGA will be reported as "not functional" if the FPGA software did not successfully download to begin with. If the FPGA is not functional, the RF system will be in alarm. NOTE: The response to this button click should be disregarded for older hardware. The older hardware can be identified by the FPGA version being "UNKNOWN" (in the **FPGA Program** field). On this older hardware, the FPGA is not downloadable.
Software Info	
Init-er	Remote Initialization Program version

89

Table 33: Prg Load Window Components (Continued)

DISPLAY NAME	DESCRIPTION
Reflasher	Remote Reprogram Program version
Control Program	Remote Control Program version
FPGA Program	Field Programmable Gate Array version. If the unit is an older type with a non-replaceable array, this field will identify the version as "UNKNOWN."

4.5.7 Remote Config Window

The remote **Config** (Configuration) window, shown in Figure 79, shows the site number of the identified host/remote pair and the site name of the remote unit. This window also identifies the EMS module type and subtype for use in identifying the system to ADC support personnel.
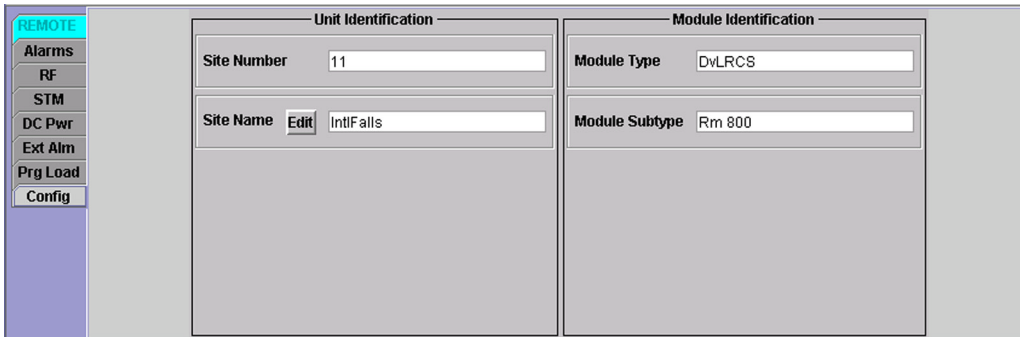

Figure 79. Remote Config Window

Clicking on the **Edit** button for **Site Name** causes a dialog window to be displayed. The dialog window can be used to enter or edit a site name for the remote unit. For further instructions on entering a site name, refer to Topic .

NOTE: The remote unit shares a site number with its paired host unit.The host/remote site number can be edited using the host **Config** window.

5 NOC-NEM INTERFACE

5 NOC-NEM INTERFACE

The EMS Network Operations Center–Network Element Manager (NOC-NEM) Interface allows you to communicate with EMS remotely using the commands specified in this section. You can also enter the same commands using the NOC-NEM window in the Maintenance Interface.

5.1   Summary of Tasks and Commands

Table 34 lists the main tasks that can be done in NOC–NEM and tells where to get instructions for each task (NE = network element).

Table 34: Main Tasks and Commands

POSSIBLE TASK	COMMAND	SEE TOPIC
List all NEs currently connected	GET CATALOG	5.5.1 on page 96
Assign a site name to an NE	SET SITENAME	5.5.3 on page 98
Determine current status of one or all NEs	GET STATUS	5.5.8 on page 106
Display a summary of alarm states	GET ALARMSUMMARY	5.5.2 on page 97
Display alarm detail for one or all NEs	GET ALARM	5.5.6 on page 101
Find what software is loaded on an NE	GET SWINFO	5.5.5 on page 100
View or set POST STATUS time interval or turn off POST STATUS messages	GET POST SET POST	5.5.11 on page 109 5.5.12 on page 109
View or set time interval for recording NE status in EMS log file	GET RECORD SET RECORD	5.5.9 on page 106 5.5.10 on page 108
Display recorded status for one or all NEs; set a time range to limit output	GET PLAYBACK SET PLAYBACK	5.5.13 on page 111 5.5.14 on page 111
Determine or define whether an alarm is shown in POST STATUS messages	GET ALARMFILTER SET ALARMFILTER	5.5.15 on page 112 5.5.16 on page 113
View or set attenuation for RF analog signal transmitted from remote unit antenna	GET THRESHOLD SET THRESHOLD	5.5.17 on page 114 5.5.18 on page 115

5.2 Setup Instructions

5.2.1 Requirements

To access the NOC-NEM interface:

- You must have either a dumb terminal or a computer with a terminal emulator program.

- The terminal emulator program must be directed to a serial port with a direct data link to the EMS NOC Comm port on a computer on which EMS is running.

- The terminal port must be configured to a baud rate of 9600, with one stop bit, no parity.

5.2.2 Procedure

To set up a connection, complete the following procedure:

1. Physically connect the computer to a direct data link to the EMS computer.

2. Assure that the EMS computer is running and that the EMS software is running.

3. Start the terminal emulator program.

4. Using the terminal emulator program, configure the serial port to 9600 baud, one stop bit, no parity.

5. Using the terminal emulator program, open a window to the port just configured.

6. Look for `POST STATUS` messages indicating the EMS computer is connected and running.

7. Use the terminal or terminal emulator window to enter commands and view the response messages returned in response to the commands.

8. For details on command format and to interpret the responses, refer to the following topics within this section of the manual.

5.3   Data Format

The NOC-NEM language consists of two types of character strings: "commands" and "response messages." Commands are entered by the user to request NOC–NEM to perform particular actions. Response messages are returned by NOC–NEM to indicate its response to commands.

Usually, commands and response messages occur on a one-to-one basis, with a response message returned for each command. In one case, the POST STATUS message, NOC–NEM displays a response message without being asked to do so. POST STATUS messages are displayed automatically at regular intervals if not turned off by the user.

5.3.1   Command Format

All NOC–NEM commands have common features. Below is an example of a NOC–NEM command.

```
DEMS PineIslandTower SET RECORD 30:00
```

These features include:

- The letters DEMS, which begin every command.

- Use of spaces to separate word-like components or numbers.

- Case-sensitivity, with command name (SET RECORD) in upper case.

- Parameter values such as, in this example, 30:30, denoting a record time interval of 30 minutes and 30 seconds.

All commands are entered by pressing the Enter key or equivalent key on the computer or terminal keypad. The emulation program should send "Line Feed" (LF) characters when the enter key is pressed.

5.3.2   Response Message Format

Every NOC-NEM command, when entered, evokes a response message. Below is an example of a response message for a command that was rejected for some reason.

```
1130 23-Mar-01 DEMS(35 Host.11)GracesFood GET ALARMSUMMARY \
REJECTED \
END
```

5.4   POST STATUS Message

At a regular time interval, the NOC-NEM interface queries each network element and displays the current status information for that network element. The resulting unsolicited display is called a `POST STATUS` message.

The interval at which `POST STATUS` messages are displayed can be specified by the user for a particular network element or for all network elements. NOC-NEM also displays a `POST STATUS` message whenever an alarm state occurs on any network element or whenever any network element undergoes a change in state (for example, from major-alarmed to not alarmed).

The `SET POST` command is used to define the time interval at which `POST STATUS` messages are displayed for a network element. The time interval can be set to zero to turn off the `POST STATUS` message.

5.5   Commands

This topics contains descriptions of all NOC-NEM commands.

5.5.1   GET CATALOG

This command can be used to determine which network elements are currently connected to EMS. For each, the command gives site name and site number.

To get a list of all connected network elements

1.   Enter the following:

```
DEMS ALL GET CATALOG
```

2.   Look for a response in the following format:

```
Apr 3, 2003 12:52:02 PM DEMS ALL GET CATALOG
Apr 3, 2003 12:52:02 PM: DEMS ALL GET SiteName    \
 (35)EmbarrassMinn & (34)IntlFalls & 11    \
 (37)Askov & (36)Tower & 12    \
END
END
```

3.   Interpret the response as follows:

•   Each line (after header) represents one host/remote pair.

- Host is listed first, then remote.

- Values given, in order, are: host node number and host site name, remote node number and remote site name, and site number (one per host remote pair).

Below is an example of a single line returned:

```
(37)Askov & (36)Tower & 12 \
```

In this example:

- `(37)` is the host node number, `Askov` is the host site name

- `(36)` is the remote node number, `Tower` is the remote site name

- `12` is the site number for this host/remote pair

NOTE: You cannot enter this command for a network element. If you try to, EMS will send back a `REJECTED` message such as shown below:

```
1130 23-Mar-01 DEMS GracesFood GET CATALOG \
REJECTED \
END
```

5.5.2   GET ALARMSUMMARY

This command can be used to display a summary of all alarm indicators in network elements currently known to EMS. For each alarm indicator, the possible values are `Green` (no alarm), `Yellow` (minor alarm), or `Red` (major alarm).

To get a summary of all current alarms

1. Enter the following:

```
DEMS ALL GET ALARMSUMMARY
```

2. Look for a response like this:

```
Apr 3, 2003 1:10:11 PM: DEMS ALL GET AlarmSummary \
 (35 Host.11) EmbarrassMinn Green & (34 Remote.11) Night-
falls Green \
 (37 Host.12) Askov Green & (36 Remote.12) Tower Green \
END
```

3. Interpret the response as follows:

*   Each line (after header) represents one host/remote pair.

*   Host is listed first, then remote. In the above example, the host is identified as `(35 Host.11) EmbarrassMinn`. The numeric values in parentheses are the node number and site number. Host and remote share the same site number.

*   Values given will be one of the following:

    *   `Red` = one or more major alarms exist. A major alarm places the identified unit in standby operating mode (stopping RF functions).

    *   `Yellow` = one or more minor alarms exist at the network element. A minor alarm allows the unit to continue functioning in normal mode.

    *   `Green` = no alarms exist at the network element.

NOTE: You cannot enter this command for a network element. If you try to, EMS will send back a `REJECTED` message such as shown below:

```
Apr 4, 2003 9:33:02 AM: DEMS (39 Host.13)Askov GET ALARM SUM-
MARY \
 REJECTED (SUMMARY was not found) \
END
```

5.5.3 GET SITENAME

This command can be used to determine the site name of a network element (host or remote) identified by node number. It can also be used to list the site names for all network elements currently connected to EMS.

To determine the site name of a network element

1. Enter a command in the following format

```
DEMS Node_Number GET SITENAME
```

where `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window) of the network element that you want to query. Use `Node_Number = ALL` to list all site names.

2. Look for a response like this:

```
Apr 3, 2003 1:28:44 PM: DEMS(37 Host.13)Askov GET SiteName \
 Askov \
END
```

98

3. Interpret the response as follows: The line after the header is the site name (`Askov` in the example above). If multiple network elements are queried, there will be an END line after each network element, as shown above, with a double END line after the last network element.

Examples

```
DEMS 43 GET SITENAME

DEMS ALL GET SITENAME
```

5.5.4 SET SITENAME

This command can be used to enter a site name for a network element (host or remote) identified by either node number or current sitename. The name given must conform to certain requirements described in step 1 below. This command can also be used to change a site name; the new name will overwrite the previous name.

To enter or change a site name

1. Enter a command in the following format

```
DEMS Site_Name SET SITENAME New_Name
(or)
DEMS Node_Number SET SITENAME New_Name
```

where `Site_Name` is the site name of the network element, `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window), and `New_Name` is the new site name you want to assign.

NOTE: `New_Name` must conform to the following requirements:

- One continuous word (no spaces are allowed).

- Almost any other character is allowed except '\' (backslash).

- 32 characters or less.

- Case-sensitive (`MainTower` is not the same as `maintower`).

2. Below is an example of a command and response message (`Warroad` is the new site name assigned):

```
Apr 3, 2003 1:36:35 PM: DEMS(35 Host.11)EmbarrassMinn SET
SiteName Warroad \
END
Apr 3, 2003 1:36:35 PM DEMS (Host.11)Warroad POST Status \
      Site Name from EmbarrassMinn to Warroad \
END
```

5.5.5 GET SWINFO

This command can be used to determine which software programs and versions
are currently loaded on a network element. You can identify the network element
using either site name or node number. You can also query for all network
elements.

To determine the software loaded on a network element

1. Enter a command in the following format

```
DEMS Site_Name GET SWINFO
(or)
DEMS Node_Number GET SWINFO
```

> where `Site_Name` is the site name of the network element, `Node_Number`
> is the **Host Node** or **Remote Node** value (as displayed in the Maintenance
> interface **View Catalog** window). Use `Site_Name = ALL` to query all net-
> work elements.

2. Look for a response like this:

```
Apr 4, 2003 12:50:54 PM: DEMS (16 Remote.2)IntFalls GET
SWINFO ALL    \
 Eelpout RIniter 1.05.00.00 \
 Eelpout Rifles 1.05.00.00   \
 Eelpout 1900 Roundup 1.03.01.00   \
 Eelpout FPGA Program UNKNOWN   \
END
```

3. Interpret the response as follows:

• For each software program found there is one line of information.

• Each line contains software name and software version.

• Double ENDs indicate that all known site names have been returned.

Examples

```
DEMS 43 GET SWINFO

DEMS OwatWalMart GET SWINFO

DEMS ALL GET SWINFO
```

5.5.6 GET ALARM

This command can be used to determine the current state of a specific alarm at a network element identified by its site name or node number. You can also query for all current alarms and/or for all network elements currently known to EMS.

To query for alarms

1. Enter a command in the following format

```
DEMS Site_Name GET ALARM Alarm_Name
(or)
DEMS Node_Number GET ALARM Alarm_Name
```

where `Site_Name` is the site name of the network element, `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window), and `Alarm_Name` is the alarm name, which must be a real alarm name, correctly spelled per the tables identified below. Use `Site_Name = ALL` to query for all network elements. Use `Alarm_Name = ALL` to query for all alarms.

For a list of host unit major and minor alarms that can be queried, refer to Table 37 and Table 38, respectively. For an explanation of host alarm conditions, refer to Topic 4.4.1, Host Alarms Window, on page 69.

For a list of remote unit major and minor alarms that can be queried, refer to Table 37 and Table 38, respectively. For an explanation of host alarm conditions, refer to Topic 4.5.1, Remote Alarms Window, on page 80.

NOTE: Entries may be upper or lower case in any combination. Case is ignored.

2. Interpret the response as follows:

• A status of `Ok` (such as shown below) indicates that the alarm indicator is functioning correctly and that the alarm is not active.

```
Apr 3, 2003 2:08:02 PM: DEMS (35 Host.11)EmbarrassMinn GET
Alarm 3P8vOLT \
```

```
    3p8Volt Ok \
END
```

- A status of `FAIL` (such as shown below) indicates the alarm indicator is functioning correctly and the alarm is active.

```
1130 23-Mar-01 DEMS 48 GET ALARM 3P8volt \
3P8volt FAIL \
END
```

- A `REJECTED` message such as shown below indicates the alarm indicator is not functioning correctly.

```
1130 23-Mar-01 DEMS 48 GET ALARM 3P8volt \
REJECTED \
END
```

Examples

```
DEMS Askov GET ALARM 3P8volt

DEMS 35 GET ALARM 3P8volt

DEMS Askov GET ALARM ALL

DEMS ALL GET ALARM ALL
```

Table 35: Host Major Alarms

MAINTENANCE INTERFACE NAME	NOC-NEM NAME
Oper Mode	`Opmode`
3.3 Volt	`3p3Volt`
Pri Laser Fail	`PriLaserFail`
Pri Rx Light	`PriRXLite`
Pri Rx Errors	`PriRXErr`
Pri Fwd Mux Lock	`PriFwdMux`
RF Overdrive	`RFOver`
Hardware Mismatch	`HwUhOh`

Table 35: Host Major Alarms (Continued)

MAINTENANCE INTERFACE NAME	NOC-NEM NAME
Remote Lost	RemLost
EMS Link Status	EMSLink
Ref Synth Lock	RevSynLock
Host FPGA Fault	FPGAFault

Table 36: Host Minor Alarms

MAINTENANCE INTERFACE NAME	NOC-NEM NAME
Temperature	Temp
Sec Rx Light	SecRXLite
Sec Rx Errors	SecRXErr
Sec Rev Synth Lock	SecRevSyn
RF Underdrive	RFUnder
B Laser Fault	BLaser
B Laser Mux Fault	BLaserMux

Table 37: Remote Major Alarms

MAINTENANCE INTEFACE NAME	NOC-NEM NAME
Oper Mode	Opmode
AC Fail	PsACFail
Battery Voltage	PsBattVolt
Converter	PsCnvtr
3.8 Volt	3p8Volt
8 Volt	8Volt
Pri Laser Fail	PrilaserFail
Pri Rx Light	PriRXLite

Table 37: Remote Major Alarms (Continued)

MAINTENANCE INTEFACE NAME	NOC-NEM NAME
Pri Errors	`PriErrs`
Pri Rev Mux Lock	`PriRevMux`
Fwd Synth Lock	`FwdSynLock`
Pri Rev Synth Lock	`PriRevSyn`
Ref Synth Lock	`RefSynLock`
System VSWR	`Vswr`
LPA Detect	`LpaDetect`
LPA Diable	`LpaDisable`
LPA DC Fail	`LpaDCFail`
LPA Loop Failed	`LpaLoopFail`
LPA Low Power	`LpaLoPwr`
LPA Over Power	`LpaOvrPwr`
LPA VSWR	`LpaVswr`
Major Extern Input	`MajExtin`
RF Power	`RFPwr`
Hardware Mismatch	`HwUhOh`
Host Lost	`HstLost`
EMS Link Status	`EMSLink`

Table 38: Remote Minor Alarms

MAINTENANCE INTERFACE NAME	NOC-NEM NAME
Temperature	`Temp`
Sec Laser Fail	`SecLaserFail`
Sec Rev Mux Lock	`SecRevMux`

Table 38: Remote Minor Alarms (Continued)

MAINTENANCE INTERFACE NAME	NOC-NEM NAME
Sec Rev Synth Lock	`SecRevSyn`
LPA Fan	`LpaFan`
LPA High Temp	`LpaTemp`
Minor Extern Alarm	`Nonexisting`

5.5.7 GET DATA

This command can be used to display the current values for a named parameter on an identified network element or for all network elements. You can identify the network element using site name or node number.

To query for current parameter values

1. Enter a command in the following format

```
DEMS Site_Name GET DATA Parameter_Name
(or)
DEMS Node_Number GET DATA Parameter_Name
```

where `Site_Name` is the site name of the network element, `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window), `Parameter_Name` is the software name of the parameter being queried. Use `Site_Name = ALL` to query for all network elements. Use `Parameter_Name = ALL` to query for all parameters.

The following host unit parameter names can be entered: `Temp`, `8Volt`, `3p8Volt`. The following remote unit parameter names can be entered: `PsBattVolt`, `Temp`, `8Volt`, `3p8Volt`, `RFOutPwr`, `RFRflPwr`, and `CurrVSWR`.

2. Look for a response like this:

```
1130 23-Mar-01 DEMS 48 GET DATA DCVoltLvl \
DCVoltLvl 25.8 \
END
```

3. Interpret the response as follows: The second line returned identifies the parameter and gives its current value (`25.8` in the example shown).

```
DEMS MainTower GET DATA 3P3Volt

DEMS MainTower GET DATA ALL

DEMS ALL GET DATA ALL
```

5.5.8 GET STATUS

This command can be used to determine the status of a network element identified with a site name or node number. The information returned includes all parameter values and all alarm values.

To obtain a status display

1. Enter a command in the following format

```
DEMS Site_Name GET STATUS
(or)
DEMS Node_Number GET STATUS
```

> where `Site_Name` is the site name of the network element and `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window). Use `Site_Name = ALL` to query for all network elements.

2. Look for a response consisting of all alarm names, each paired with the current alarm value, plus all parameter names, each paired with the current value for that parameter.

Examples

```
DEMS WasecaAmoco GET STATUS

DEMS 37 GET STATUS

DEMS ALL GET STATUS
```

5.5.9 GET RECORD

This command can be used to determine the current time interval (in minutes and seconds) being observed by NOC–NEM in recording network element status. Once per this interval, NOC–NEM queries the network element to obtain status

information, and writes the status information to the system log file. The status information includes all parameter values and all alarm states.

The time interval for any network element can be changed using a `SET RECORD` command. EMS also writes a status report into the log file whenever any alarm changes in state (for example, from `Green` to `Red`). An entry remains in this file until the age of the entry in days is the "trim time" value plus one. "Trim time" is a user-set value (for more information, refer to Topic 3.5 on page 32).

The log file is the source of the information displayed in response to `GET PLAYBACK` commands. By default EMS writes to the log file for each network element periodically per a system default period or optionally per the period defined by a user using a `SET RECORD` command.

NOTE: The SET RECORD time interval can be set to zero, causing no records to be kept. If no records are kept, then the `POST MESSAGE` and `GET PLAY-BACK` functions will yield no information because there will be no information available to be retrieved.

To determine the current intervals for creating records

1. Enter a command in the following format

```
DEMS Site_Name GET RECORD
(or)
DEMS Node_Number GET RECORD
```

> where `Site_Name` is the site name of the network element and `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window). Use `Site_Name = ALL` to query all network elements at the same time.

2. Look for a response like this

```
1130 23-Mar-01 DEMS(37 Host.12)GracesFood GET RECORD \
10:00
END
```

> where `10:00` indicates a recording time interval of ten minutes and zero seconds.

Examples

```
DEMS WasecaWalMart GET RECORD
```

```
DEMS ALL GET RECORD
```

5.5.10 SET RECORD

This command can be used to set the time interval (minutes and seconds) at which NOC-NEM will query for network element status and write the information to a log file. (For a more thorough explanation, see the description for the `GET RECORD` command, above.) The log file is the source of the information returned in response to `GET PLAYBACK` commands.

NOTE: You can set the `SET RECORD` time interval to zero, causing no records to be kept. If no records are kept, `POST MESSAGE` and `GET PLAYBACK` will provide no information because no information will be available to be retrieved.

To set the record interval

1. Enter a command in the following format

```
DEMS Site_Name SET RECORD mm:ss
(or)
DEMS Node_Number SET RECORD mm:ss
```

where `Site_Name` is the site name of the network element, `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window), and `mm:ss` is the desired setting in minutes and seconds. Use `Site_Name = ALL` to set all network elements at the same time.

2. Look for a response like this

```
1130 23-Mar-01 DEMS(37 Host.12)GracesFood SET RECORD \
30:00
END
```

which indicates that the time interval has been set (in the example, to 30 minutes and zero seconds).

Examples

```
DEMS MainTower SET RECORD 20:00

DEMS ALL SET RECORD 30:00
```

5.5.11 GET POST

This command can be used to determine the current time interval (in minutes and seconds) that NOC–NEM is using for POST MESSAGE displays. The query can be made for a specific network element or for all network elements. Once per the time interval specified, NOC–NEM queries the network element to obtain its current status information and then displays the information unsolicited on the NOC-NEM screen. The information includes all parameter values and all alarm states for the queried network element.

To determine the current posting time interval

1. Enter a command in the following format

```
DEMS Site_Name GET POST
(or)
DEMS Node_Number GET POST
```

 where Site_Name is the site name of the network element, Node_Number is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window). Use Site_Name = ALL to get all network elements at the same time.

2. Look for a response like this

```
1130 23-Mar-01 DEMS(37 Host.15)SteeleCenter GET POST 15:00 \
15:00
END
```

 where 15:00 in the second line indicates that the current posting time interval is 15 minutes and zero seconds.

Examples

```
DEMS WasecaPrison GET POST

DEMS ALL GET POST
```

5.5.12 SET POST

This command can be used to specify the time interval for POST MESSAGE displays, either for a specific network element or for all network elements. At the time interval specified, EMS will query the network element to obtain its current status information and will display the information unsolicited on the NOC–NEM screen.

You can also use this command to turn off the POST MESSAGE display, for a specific network element or for all network elements, by setting the time interval to zero.

To set the POST MESSAGE period for a network element

1. Enter a command in the following format

```
DEMS Site_Name SET POST mm:ss
(or)
DEMS Node_Number SET POST mm:ss
```

   where Site_Name is the site name of the network element, Node_Number is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window), and mm:ss is the desired setting in minutes and seconds. Use Site_Name = ALL to set all network elements at the same time.

2. Look for a response like this

```
1130 23-Mar-01 DEMS(35 Host.11)SteeleCenter SET POST 15:00 \
15:00 \
END
```

   where the value 15:00 in the example indicates that the posting interval has been set to 15 minutes and zero seconds.

Examples

```
DEMS WasecaWallMart SET POST 15:00

DEMS ALL SET POST 25:00
```

To turn off the POST STATUS message

1. Enter a command in the following format

```
DEMS Site_Name SET POST 00:00
(or)
DEMS Node_Number SET POST 15:00
```

2. Look for a response like the previous example with all network elements set to the time period 15:00.

5.5.13 GET PLAYBACK

This command can be used to display status information extracted from the EMS log file. The command output can be requested for a particular network element or for all network elements reported in the file. Each set of values is the result of one query to the network element, and includes all parameter values and all alarm states obtained from that query. To limit the content of the playback to a particular time period, enter a `SET PLAYBACK` command before entering this command. The output will otherwise be the total content of the log file for the queried NE or NEs.

To get the playback for a network element

1. Enter a command in the following format

```
DEMS Site_Name GET PLAYBACK
(or)
DEMS Node_Number GET PLAYBACK
```

   where `Site_Name` is the site name of the network element for which information is being requested, and `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window),. Use `Site_Name = ALL` to query for all network elements.

2. Look for a response containing the same information sets as contained in a `POST MESSAGE` display with a header and `END` marker for each information set.

Examples

```
DEMS WasecaWallMart GET PLAYBACK

DEMS ALL GET PLAYBACK
```

5.5.14 SET PLAYBACK

This command can be used to limit the output of the `GET PLAYBACK` command to a particular time period identified by a start time and end time.

To set a playback time limit for a network element

1. Enter a command in the following format

```
DEMS Site_Name SET PLAYBACK Start_Time_Date End_Time_Date
(or)
DEMS Node_Number SET PLAYBACK Start_Time_Date End_Time_Date
```

where `Site_Name` is the site name of the network element, `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window), and `Start_Time_Date` `End_Time_Date` are in the format `HHSS DD-MON-YR` (see examples below). Use `Site_Name = ALL` to apply the same time interval to all network elements.

NOTE: `End_Time_Date` must be later in time (closer to the current time and date) than `Start_Time_Date`.

2. Look for a response containing the same information sets as contained in a `POST STATUS` message with a header and `END` marker for each information set.

Examples

```
DEMS MainTower SET PLAYBACK 1130 23-Mar-01 1130 24-Mar-01

DEMS 33 SET PLAYBACK 1130 23-Mar-01 1130 24-Mar-01

DEMS ALL SET PLAYBACK 1130 23-Mar-01 1130 23-Mar-01
```

5.5.15 GET ALARMFILTER

This command can be used to determine which alarms are being reported in `POST STATUS` messages. You can request this information for a particular alarm or for all alarms, and for a particular NE or for all NEs, in the same command.

To determine which alarms are being reported

1. Enter a command in the following format

```
DEMS Site_Name GET ALARMFILTER Alarm_Name
(or)
DEMS Node_Number GET ALARMFILTER Alarm_Name
```

where `Site_Name` is the site name of the network element, `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window), and `Alarm_Name` identifies the alarm you

112

want to query. Use `Site_Name = ALL` to query for all network elements. Use `Alarm_Name = ALL` to query for all alarms.

2. Look for a response like this

```
1130 23-Mar-01 DEMS MainTower GET ALARMFILTER PriRXLite \
PriRXLite ON \
END
```

where `ON` indicates that the alarm is being reported and `OFF` indicates that it is not being reported in POST STATUS messages.

Examples

```
DEMS WasecaPower GET ALARMFILTER PriRXLite

DEMS 13 GET ALARMFILTER ALL

DEMS ALL GET ALARMFILTER ALL
```

5.5.16 SET ALARMFILTER

This command can be used to turn alarms on and off for display in POST STATUS messages. You can do this for a particular alarm or for all alarms, and for a particular network element or for all network elements, in the same command.

To turn alarm reporting on or off

1. Enter a command in the following format

```
DEMS Site_Name SET ALARMFILTER Alarm_Name Off_Or_On
(or)
DEMS Node_Number SET ALARMFILTER Alarm_Name Off_Or_On
```

where `Site_Name` is the site name of the network element, `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window), `Alarm_Name` identifies the alarm, and `Off_Or_On` is the desired state, either `Off` (not reported) or `On` (reported). Use `Site_Name = ALL` to affect all network elements. Use `Alarm_Name = ALL` to affect all alarms.

2. Look for a response like this

```
1130 23-Mar-01 DEMS MainTower SET ALARMFILTER 3P3Volt OFF\
3P3Volt OFF \
```

113

```
DEMS OwatWalMart SET ALARMFILTER 3P3Volt Off

DEMS 11 SET ALARMFILTER 3P3Volt Off

DEMS All SET ALARMFILTER ALL Off
```

5.5.17 GET THRESHOLD

This command can be used to determine the current value for remote forward attenuation.

To determine thresholds

1. Enter a command in the following format:

```
DEMS Site_Name GET THRESHOLD RemoteFwdAtt
(or)
DEMS Node_Number GET THRESHOLD RemoteFwdAtt
```

> where `Site_Name` is the site name of the network element, `Node_Number` is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window), and `RemoteFwdAtt` is the parameter name for remote forward attenuation. An `ALL` command can also be entered; it returns the attenuation setting, plus the current operating mode and band (for reference in setting attenuation).

2. Look for a response like this

```
1130 23-Mar-01 DEMS(33 HOST.19)Ellsworth GET THRESHOLD
RemoteFwdAtt \
RemoteFwdAtt 1 \
END
```

> where the second line gives the current threshold (in this case, `1`).

If an ALL command is entered, the response includes the operating mode and band for reference in setting the mode.

Examples

```
DEMS JanesvilleCivic GET THRESHOLD ALL

DEMS 33 GET THRESHOLD RemoteFwdAtt
```

114

5.5.18 SET THRESHOLD

This command can be used to set the remote unit forward path attenuation. This setting affects the strength of the forward path RF analog signal transmitted from the remote unit antenna.

To set an alarm threshold

1. Enter a command in the following format

```
DEMS Site_Name SET THRESHOLD RemoteFwdAtt Threshold_Value
```
(or)
```
DEMS Node_Number SET THRESHOLD RemoteFwdAtt Threshold_Value
```

where Site_Name is the site name of the network element, Node_Number is the **Host Node** or **Remote Node** value (as displayed in the Maintenance interface **View Catalog** window), RemoteFwdAtt is the parameter name and Threshold_Value is the desired value. Threshold_Value must be a numeric entry in an integer or decimal format such as shown in the examples below. Use Site_Name = ALL to set all network elements to the same value.

NOTE: For exact threshold names, see the preceding command.

2. Look for a response like this

```
1130 23-Mar-01 DEMS MainTower SET THRESHOLD RemoteFwdAtt 22\
RemoteFwdAtt 22 \
END
```

where the second line gives the resulting attenuation setting.

Examples

```
DEMS WattsvilleCivic SET THRESHOLD HostFwdAtt 22

DEMS ALL SET THRESHOLD HostFwdAtt 22
```

Element Management System (EMS) 4.0 User Manual

GLOSSARY

Alarm: A physical or functional state affecting the ability of a host/remote pair to function normally. Reported by the host/remote pair to EMS to notify the user that such a state exists.

A-bis interface: Interface used in Digivance SDR systems to connect a BTS server to an upstream device. In EMS, it is a packet-switching interface using Voice Over Internet Protocol.

Attenuation: By definition, a function that lessens the strength of a signal. In EMS, attenuation can be used to adjust the strength of the forward path analog signal transmitted from the remote unit antenna.An increment of +/- 1 in the attenuation parameter value results in a +/- 1 dBm adjustment in the signal level.

Base Transceiver Station: Signal processing station at base of a tower or at some other location with access to an RF antenna. In a Digivance SDR system, BTS is a software application on the BTS server, and signals are received not from an antenna but from an upstream device.

BTS: See Base Transceiver Station.

CAN (Control Area Network): A daisy-chain network of host/remote pairs controlled by a single EMS system. This network is formed by linking network cards each in a different BTS server.

Cataloging: EMS does this when it looks for host/remote pairs and builds a list of them for display to the user upon request.

Command: ASCII character string typed in by a user and sent to EMS using the NOC–NEM Interface. See also, NOC-NEM Interface.

Composite RF signal: Logical RF signal sent from Digivance host unit to remote unit, or vice versa; multiplex of up to eight logical RF channels of digitized RF spectrum data.

Dashboard Display: EMS graphical display containing bar graphs for system readings and LED-like indicators (red, green, yellow) that depict alarm states returned from the host/remote pair.

EMS: ADC Digivance Element Management System, the software application documented in this manual.

EMS/Host/Remote Port: Serial port (usually COM3) used by the EMS computer to interface with a host/remote pair. Information passed through this port displays in the Maintenance Interface. See also, Maintenance Interface.

EMS NOC Port: Serial port used by the EMS computer to interface with a remote terminal or with a computer running a terminal emulator program. A

direct data link connection to this port allows a remote user to use the NOC–NEM Interface. See also, NOC-NEM Interface.

Fault: Physical or functional failure in a host/remote pair serious enough to cause an alarm.

Forward Path: Signal path in the direction from the BTS to the cell phone.

FPGA: Field Programmable Gate Array. Bit map defining a gate array. Provides operating logic for network elements.

Gain Setting: In a Digivance SDR system, a number value applied to a logical RF channel to cause RF signals in that channel to be either amplified or attenuated. Gain settings are entered using the host SDR Config window. Each unit increment results in a gain or attenuation of approximately 1 dBm from the previous setting.

GSM: Global System for Mobile Communication. One of the RF modulation types supported by the Digivance SDR system.

Host Network Card: ADC card installed on BTS server and connected to EMS computer. This card provides the link between EMS and the Host PCIx Card and between EMS and other Host Network Cards on other BTS servers in same CAN.

Host PCIx Card: ADC card that handles the transfer and multiplexing of logical RF spectrum data between the BTS server SDR application and the Digivance remote unit.

Host/Remote Pair: Basic Digivance equipment configuration consisting of a host unit and remote unit.

Host Unit: Digivance network element that receives an RF signal from the BTS and converts it to an optical signal to its paired remote unit. In a Digivance SDR system, the host unit is the Host PCIx Card in the BTS server.

Linear Power Amplifier: (LPA) One of the two modules of the remote unit. Its job is to provide a large power gain to forward path signals.

BTS server: Network server using the Linux operating system. In a Digivance SDR network, the BTS server runs the SDR software and contains the ADC Host Network Card and Host PCIx Card.

Log File: EMS history file written into by NOC–NEM every time a POST STATUS message or alarm message is generated. Its content can be retrieved for analysis when needed.

Logical RF Channel: is a bandwidth multiplex of eight RF voice channels. Each voice channel uses about 300 KHz of bandwidth; the logical channel uses about 30 MHz.

LPA: See Linear Power Amplifier.

Maintenance Interface: (MI) The EMS graphical user interface.

MI: See Maintenance Interface.

Network Element: Term used in this manual to refer to either a Digivance host unit or Digivance remote unit.

NOC: Acronym for Network Operations Center.

NOC–NEM Interface: Acronym for Network Operations Center–Network Element Manager Interface. The EMS character interface, available as a window within the Maintenance Interface, or remotely using a terminal or a computer with a terminal emulator program.

Normal Mode: One of the four operating modes of host/remote pair unit. In this mode the host/remote pair are transporting RF signals normally.

Operating Mode: Any of the four basic operating modes of a host/remote pair. For mode descriptions, see Normal, Program Load, Standby, and Test.

PCIx Bus: Data bus using PCIx interface (used in BTS server in Digivance SDR system).

POST STATUS Message: ASCII character string displayed periodically in the NOC–NEM Interface to provide a status update for all host/remote pairs currently known to EMS.

Power Amplifier: (PA) See Linear Power Amplifier.

Primary Fiber: Optical fiber between the host unit and remote unit carrying the primary forward (host Port 1) or primary reverse (host Port 2) RF spectrum in digital form. This may also be an optic free space link. See also, Secondary Fiber.

Program Load Mode: One of the four operating modes of the host unit. This mode occurs automatically when a user downloads a program to a host unit or remote unit in a host/remote pair.

Radio Frequency: (RF) Radio-type frequency modulation signal received at the BTS and transmitted from the remote unit to the cell phone.

Reverse Path: Signal path in the direction from the cell phone to the BTS.

Remote Unit: Digivance network element that receives an optical signal from its paired host unit, converts the optical signal to RF, and transmits the RF signal to cell phones in a local coverage area.

Response Message: ASCII character string sent in response to a user command in the NOC–NEM Interface. See also, NOC-NEM Interface.

RF Signal Level: Measured power of the forward path and reverse path RF signals as measured in the host/remote pair and reported in EMS.

SDR (Software Defined Radio): Software application programmed to process RF signals. It performs the same functions as a hardware Base Transceiver Station (BST). Compared to that, however, it has the advantage that new modulation types can be added using software upgrades (without requiring expensive changeouts of hardware).

Secondary Fiber: Optical fiber between the host unit and remote unit (in addition to primary fibers), present in diversity gain Digivance models only. When present, the secondary fiber carries the secondary reverse path signal from a secondary antenna.

Spectrum Transport Module (STM): One of the two modules in the remote unit. Its job is to transport the RF spectrum between the antenna and host unit using optical signals over fiber or an optics free space link.

Standby Mode: One of the four operating modes of the host unit. In this mode, RF transport is disabled and power consumption is minimized. Standby mode occurs only due to a user request and can be turned off by the user to return the host unit to a Normal operating mode.

Synthesizer: Host/remote function that synthesizes an RF signal. There are four synthesizers: primary forward, primary reverse, secondary reverse, and reference.

STM: See Spectrum Transport Module.

Test Mode: One of the four operating modes of the host unit. In this mode, RF transport continues regardless of errors that would otherwise stop transport. Test mode is used when turning up the host unit or remote unit to force it to transport RF signals for test purposes.

Threshold: Value that defines when a reported state in the host/remote pair is considered to be in alarm.

Trim Time: Number of days that EMS will allow an entry to remain in the log file before being deleted. Trim time can be changed using the **Preferences** window.

Voice Channel: RF bandwidth of about 300 KHz carrying the equivalent of one phone conversation. In the Digivance SDR system, up to eight voice channels are multiplexed into a logical RF channel.

Voice Over Internet Protocol: Packet-switching internet protocol used to send voice information such as telephone conversations over the internet.

VOIP: See Voice Over Internet Protocol.

INDEX

Element Management System (EMS) 4.0

Index

Installing Java Runtime System 20
J
j2re-1_3_1-win.exe file 20
Java Runtime System 20
L
Linear Power Amplifier alarms 43
Load 89
Log file
    changing name 32
    defining trim time 32
    directory 59
    selecting directory 32
Logical RF Channel 79
Logical RF channels 46
LPA
    alarms 43
    alarms when faulted 84
    what to do when disabled 82
LPA DC Fail 81, 84, 104
LPA Detect 81, 84, 104
LPA Diable 104
LPA Disable 81, 84
LPA Fan 82, 84
LPA High Temp 105
LPA Loop Failed 81, 104
LPA Loop Faulted 84
LPA Low Power 81, 84, 104
LPA Over Power 81, 104
LPA Temp 82, 84
LPA VSWR 84, 104
LpaDCFail 104
LpaDetect 104
LpaDisable 104
LpaLoopFail 104
LpaLoPwr 104
LpaOvrPwr 104
LpaVswr 104
M
Maintenance Interface
    introduction 10
    master list of tasks 27

sample screen 10
MajExtin 104
Major alarm, system effect 39, 67
Major Contact Output 103
Major Extern Input 81, 104
Master list of tasks 27
Minor alarm, system effect 39, 67
Minor Extern Alarm 82
Modem Initialization field 34
Modulation Type 46, 79
N
Network elements in SDR application 3
NOC Baud 58
NOC Comm Port 15, 58
    defining for use 30
NOC-NEM
    command format 95
    data names of host major alarms
        102
    data names of host minor alarms
        103
    data names of remote major alarms
        103
    data names of remote minor alarms
        104
    requirements 94
    response message format 95
    set-up procedure 94
    using to check alarm history text 40
NOC-NEM Terminal
    in Window menu 63
NOC-NEM window
    how to access 64
Normal mode 62
NotNamed/NotNamed 60
O
Oper Mode 69, 80, 84, 89, 102, 103
Operating mode
    setting 48
    table listing five types 62
    use of to restore LPA when disabled