



PARADISE DATACOM APPLICATION NOTE

CONTROL AND MONITOR OF DISTANT END TERMINAL USING LOCAL MODEM WEB USER INTERFACE

EVO_AN_001

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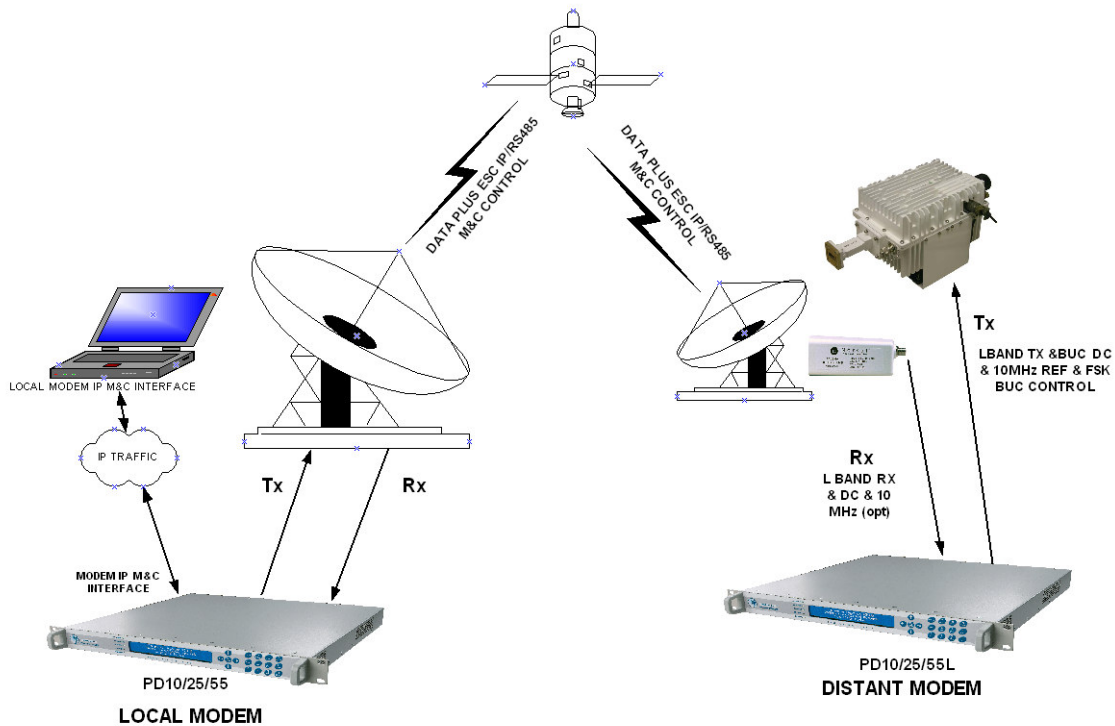
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Summary

Using the Local Modem Web User interface it is possible to monitor and control the distant site Terminal with no extra software or equipment at the distant site. This is especially useful when the distant site is fitted with FSK control to the BUC; as it allows remote control of the distant site transmit output power and frequency.

Typical system block diagram



System configuration

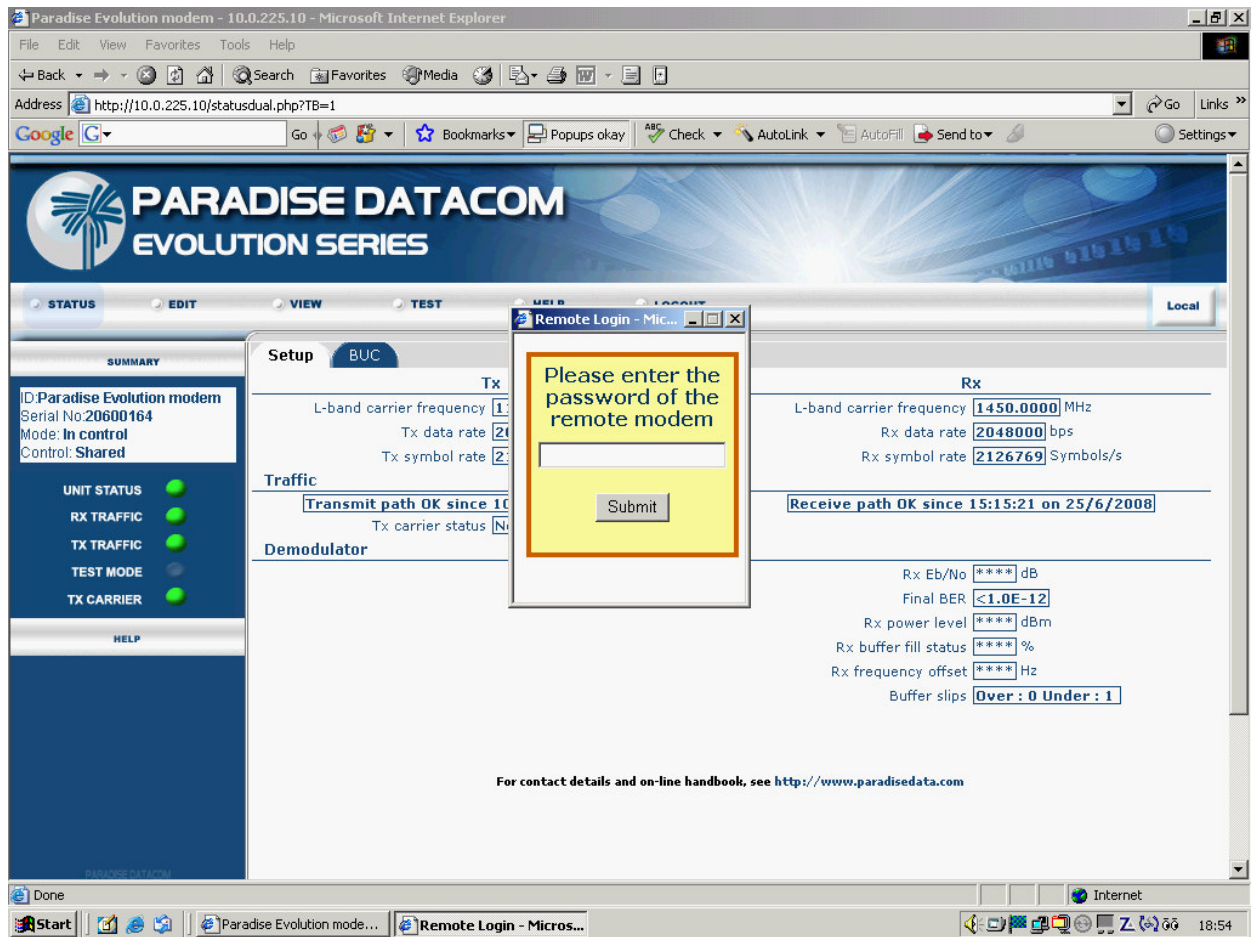
The local and distant site modems are configured to have the ESC service enabled on transmit and receive data paths, with a suitable ESC data rate selected (110 to 115200 baud) to match the link data rate. The ESC interface can be either IP or RS485 protocol. Determining which protocol to use and initial configuration of the IP based network is discussed further on in the document. The document assumes that a two way link has been made over satellite in the following descriptions.

Operation

The user gains access to the local Modem using the IP M&C interface, via an Ethernet network connection, or directly via a suitable PC. The Web User Interface (WUI) will be displayed on the PC with access all the features available on the local modem.

The user can then access the distant terminal via the satellite link by clicking on the "Local" radio button on the WUI to select the "Distant" site screen.

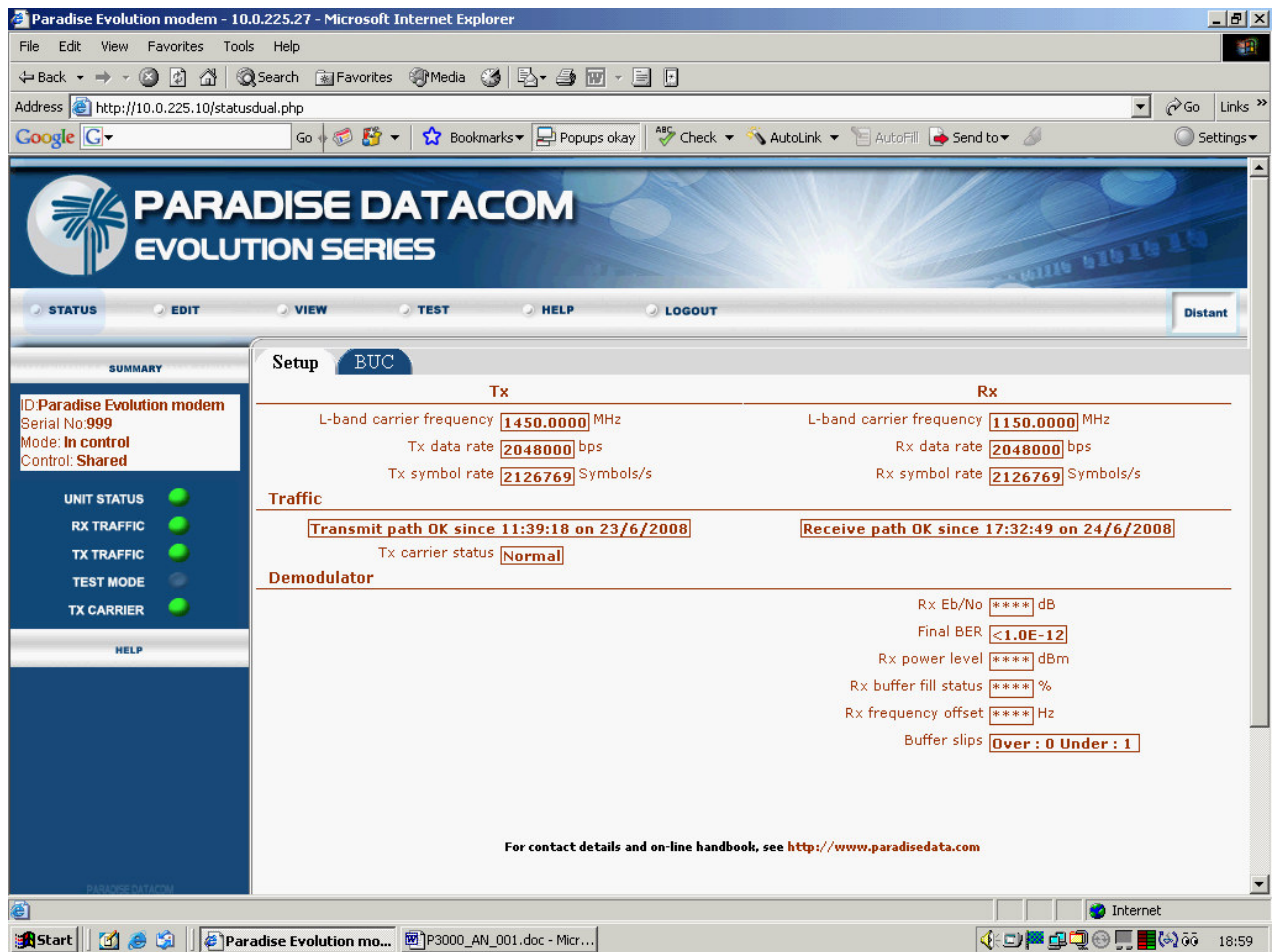
Screen 1



The first action after selecting the distant site WUI is that the user is required to enter the distant modems password, see screen 1. If this has not been changed then the default password is “paradise”.

The user will then see the distant terminal WUI, notice that the radio button on the top right of the screen now shows Distant and that the screen colours have changed from blue to brown. See screen 2.

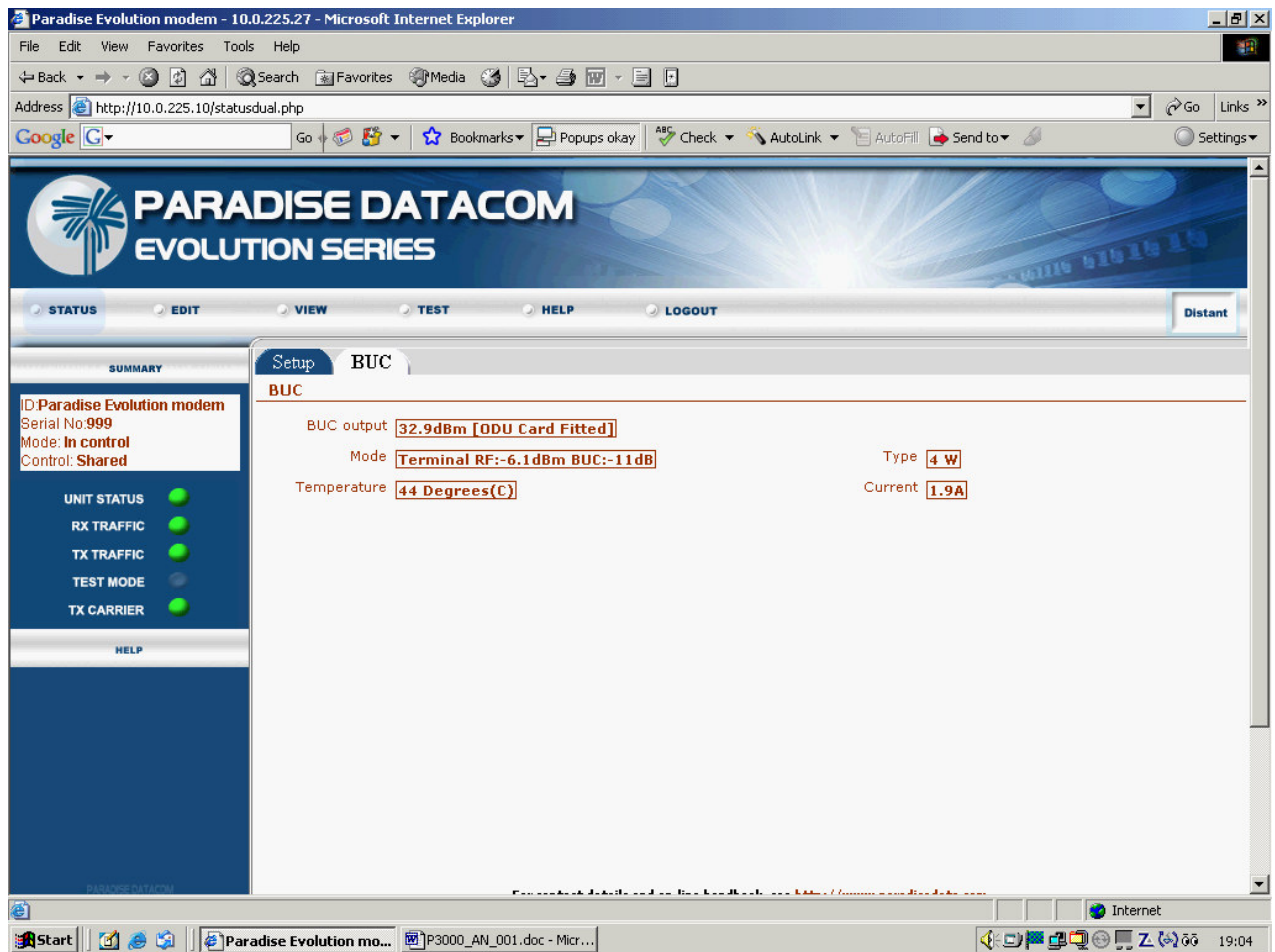
Note: Selecting the distant site WUI causes the local modem web server to connect to the distant modem via the ESC channel and collect the distant modem WUI information. The speed at which the data is collected and displayed is directly related to the ESC rate selected; if the ESC data rate is low the response time of the WUI will be slow.



Screen 2

Screen 2 shows the distant terminal WUI Status screen with the Setup status tab selected. This shows the status of the distant terminal modem. Note the change in colour of the information in the tabbed screens and that the radio button at the top right of the screen now shows "Distant".

The user can now monitor and control the status of the distant terminal using this WUI. As an example the status of the BUC can be monitored by looking at the BUC tab settings (screen 3).



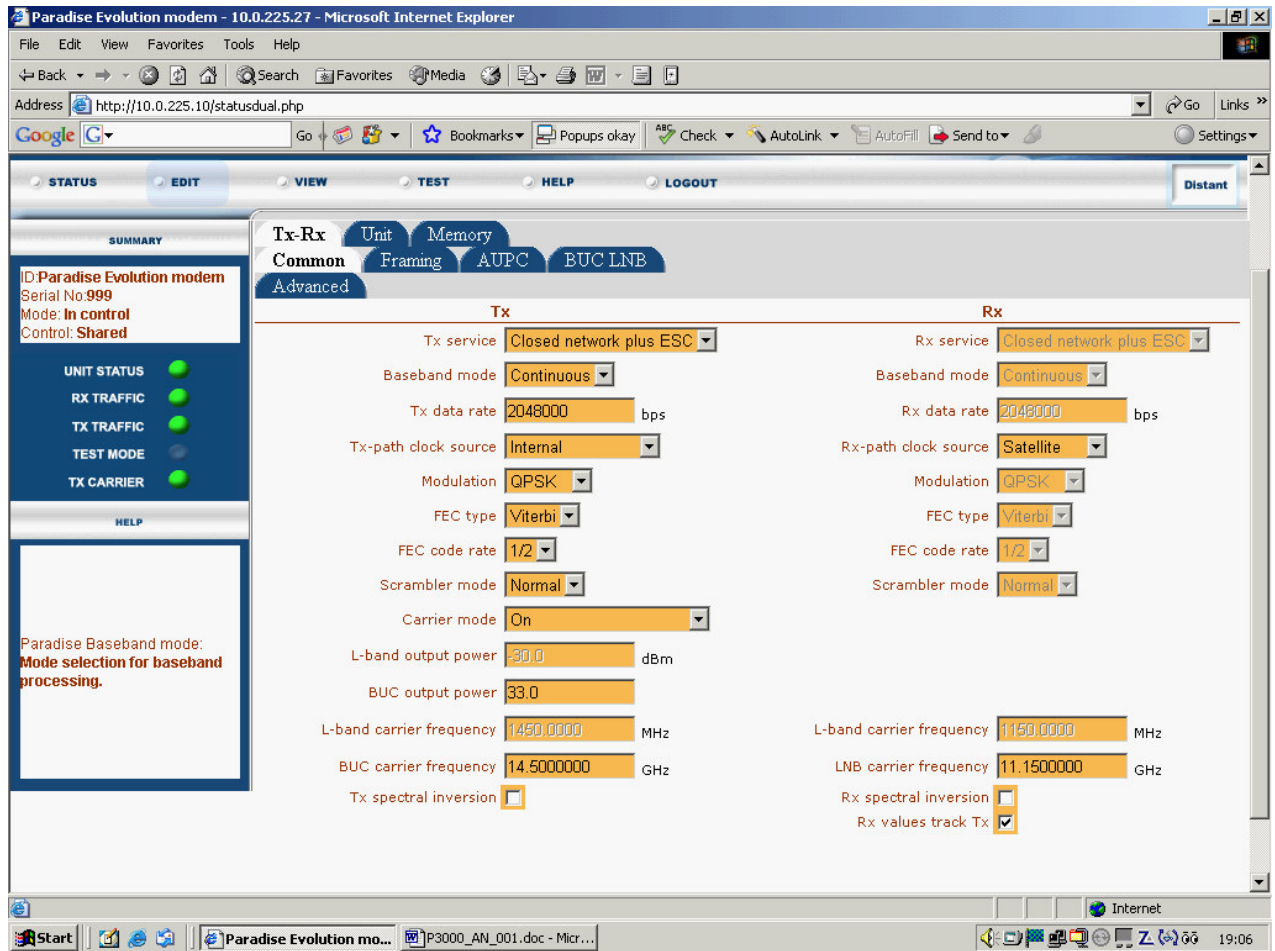
Screen 3

Screen 3 shows the distant terminal BUC status, this displays the following information;

- Terminal output power: 32.9dBm
- The transmit mode of the system: Terminal mode.
- The output power of the Remote Terminal Modem: -6.1 dBm
- The BUC attenuation setting: -11 dB.
- The BUC temperature: 44 degrees centigrade.
- The BUC power class: 4W
- The current drawn by the BUC: 1.9 A

In this instance the distant terminal has been set to transmit in “Terminal” mode, this allows the user to set the output power transmitted by the BUC at the waveguide flange. The modem output power and BUC attenuation are controlled by the distant site modem taking into account the cross site losses to set this power and also to constantly monitor it.

The user also has the ability to change the distant terminal transmit and receive frequencies and transmit output power. This is shown on the Edit, Tx-Rx, Common tab and is shown on screen 4

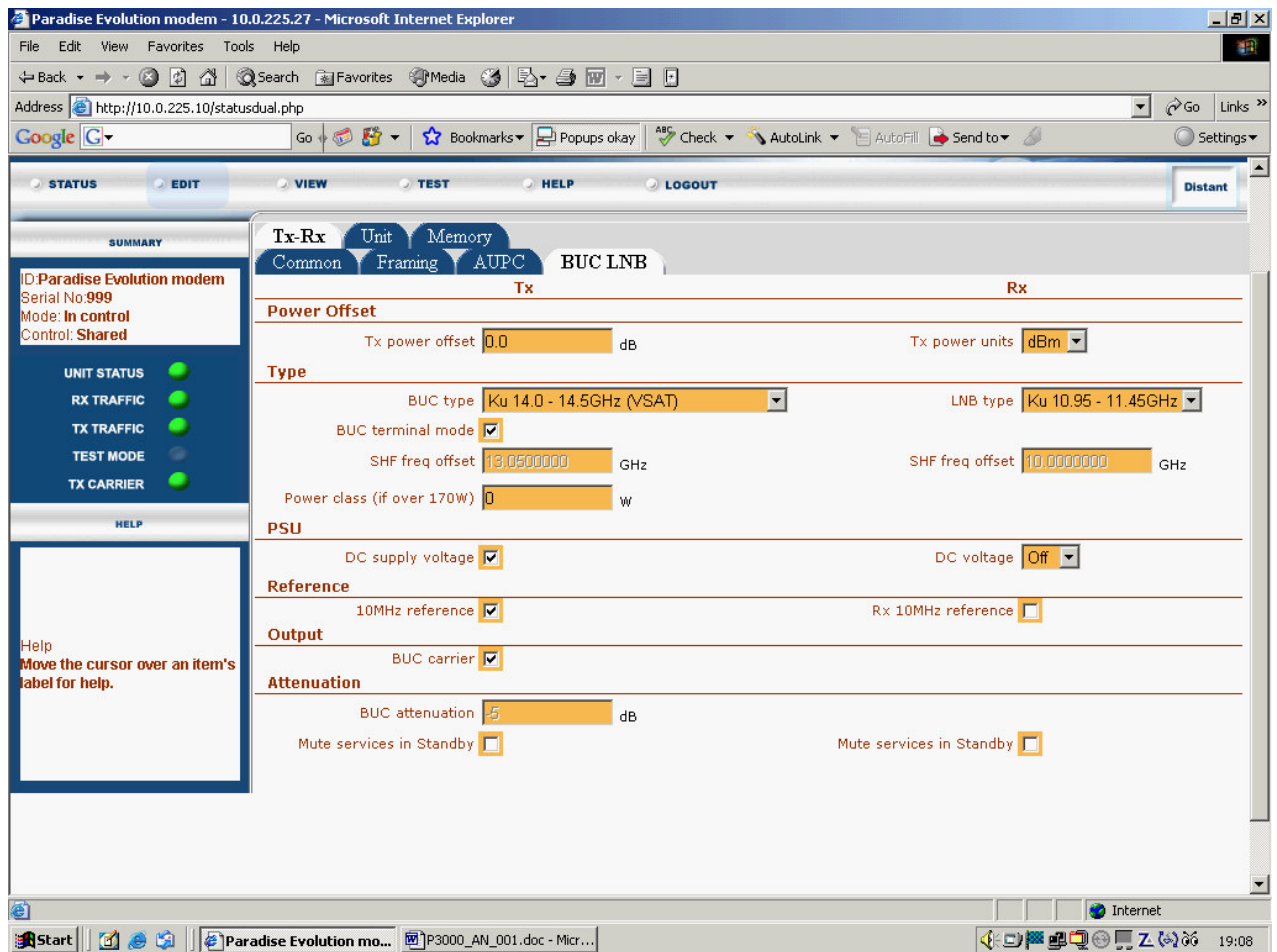


Screen 4

On this screen the user can quickly change transmit and receive parameters of the distant terminal. Note that the screen shows the SHF transmit and receive frequencies of the terminal as a BUC and LNB have been selected.

- The BUC carrier frequency is 14.5 GHz.
- The LNB receive frequency is 11.15 GHz.

The receive portion of the screen (right hand side) has most of the selection menus “greyed” out. This is because the distant modem has been set to have the receive parameters track the transmit path (Rx values track Tx radio button selected, bottom right of screen). This allows the user to quickly configure the modem receive path using the previously set transmit parameters. Note also that the BUC carrier power has been set to +33 dBm. This is the target power that the Terminal will try to achieve, looking back at screen 3 the actual output power is reported as 32.9 dBm. This is 0.1 dB away from target value and within the output power target window. The user may see this value change over time as the distant modem constantly changes the modem output power or BUC attenuator setting to achieve this value.



Screen 5

Screen 5 shows the distant terminal BUC/LNB status in the Edit, Tx-Rx, BUC/LNB tab. This allows the user to initially select the correct BUC and LNB type and set the services supplied from the modem (DC and 10 MHz). The user can also enter losses between BUC and Antenna feedhorn / OMT to allow the true output power or EIRP to be displayed.

This screen shows that the BUC has had “Terminal” modem selected. If “Terminal” mode was deselected then the menu would change allowing the user access to the BUC attenuation setting and on the Common, Tx-Rx tab the modem output power would be accessible and the BUC output power greyed out.

ESC protocol choice

The user now has the choice of two different protocol options when setting the ESC service. Both options will allow two way M&C communication to occur, with messages being transmitted and return acknowledgements received. The differences between the two options are shown below

- **IP over ESC:** In normal operation this requires a constant data return path; loss of communication with the distant end terminal will cause the M&C to fail. Recovery from this situation is possible as long as the user has configured the local and distant end modems correctly (see following pages). This system works best with ESC rates of 4.8kbps and above. It has the advantage that the user can hook into the distant terminal M&C Ethernet port and communicate with other equipment.
- **RS485 over ESC:** This also requires a return path to operate, but it is possible to regain control of the distant terminal by sending a one way message using the distant end recovery process. The RS485 link will run at data rates down to 300 bps and is suitable for low data rate links.

Controlling the distant end terminal

It is important to note that when the distant terminal parameters are changed the user must make certain that the local terminal can reconnect to regain the link otherwise the distant terminal M&C connection will be lost.

The user must plan the process carefully, we recommend that changes are made on the distant end terminal first and then changes made on the local end terminal allowing the recovery of the link After changes have been made the user will have to refresh the WUI screen to ensure that the correct data is shown after the link has been recovered.

Screen 5 shows that the user has access to the BUC output status. It is possible to set this to OFF. If this is selected the Satellite link will be broken and contact lost with the Remote Terminal. The user then has the possibility of forcing the distant terminal Transmit back On again and also selecting the output power that it comes back at.

The most important point to understand is that it is possible to recover the remote terminal (using IP or RS485 ESC protocol) if changes to the transmit path have resulted in the return path failing. It is NOT possible to recover the distant end terminal if changes have been made to the receive path causing the forward path link to fail.

Distant end recovery

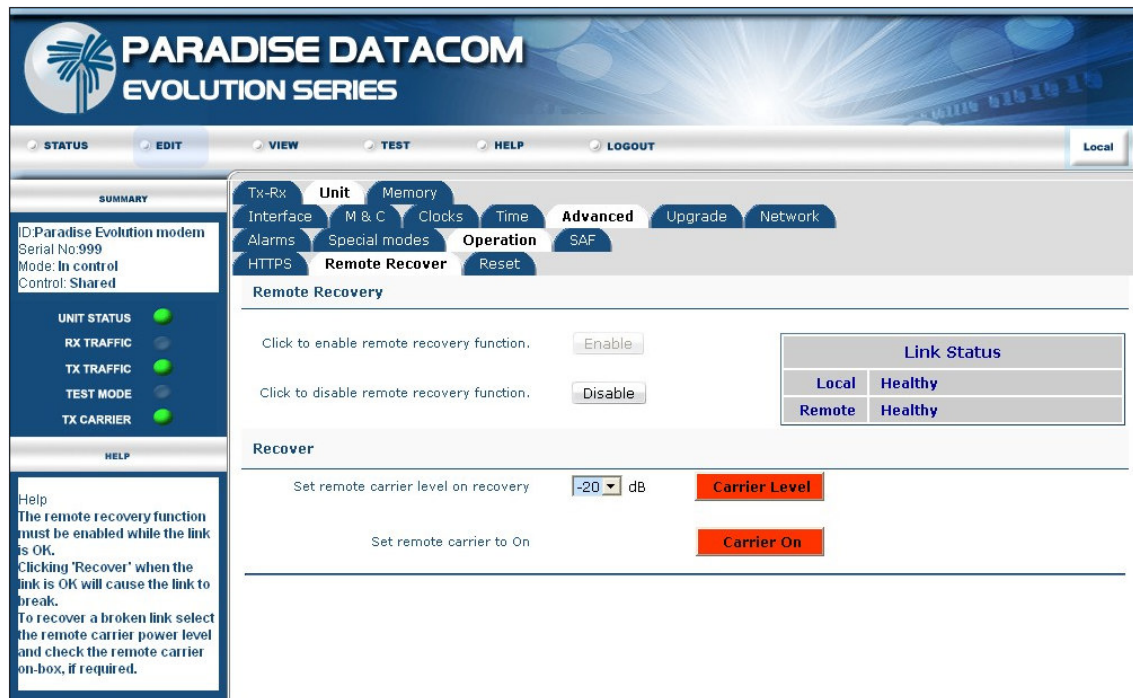
Distant End recovery mode

Using either the IP or RS485 ESC messaging system it is possible to recover the link if changes have been made to the distant end transmit path causing the link to fail, or if the distant end transmit path has been switched off. When this occurs the user will see an error message screen informing him that the distant end link has failed and then after about 45 seconds the WUI will display the standard status screen with the text in blue and “Local” displayed in the upper right corner of the active screen.

The process of recovering the distant end terminal is the same for IP or RS485 ESC links. For IP ESC links the user must have previously configured the local and distant end modems.

IP ESC distant end recovery configuration.

With the link operational the user can configure the distant end modem by navigating to the Edit, Unit, Advanced, Operation, Remote recover tab. The user will see the following screen



Screen 6

The top half of the screen relates to the configuration process. In the screenshot the system has been configured and shows a healthy link. To initiate the process the user must select the Enable button. This causes the local modem to write a small configuration file onto the distant end modem.

IP distant end recovery: Force carrier ON and output level control.

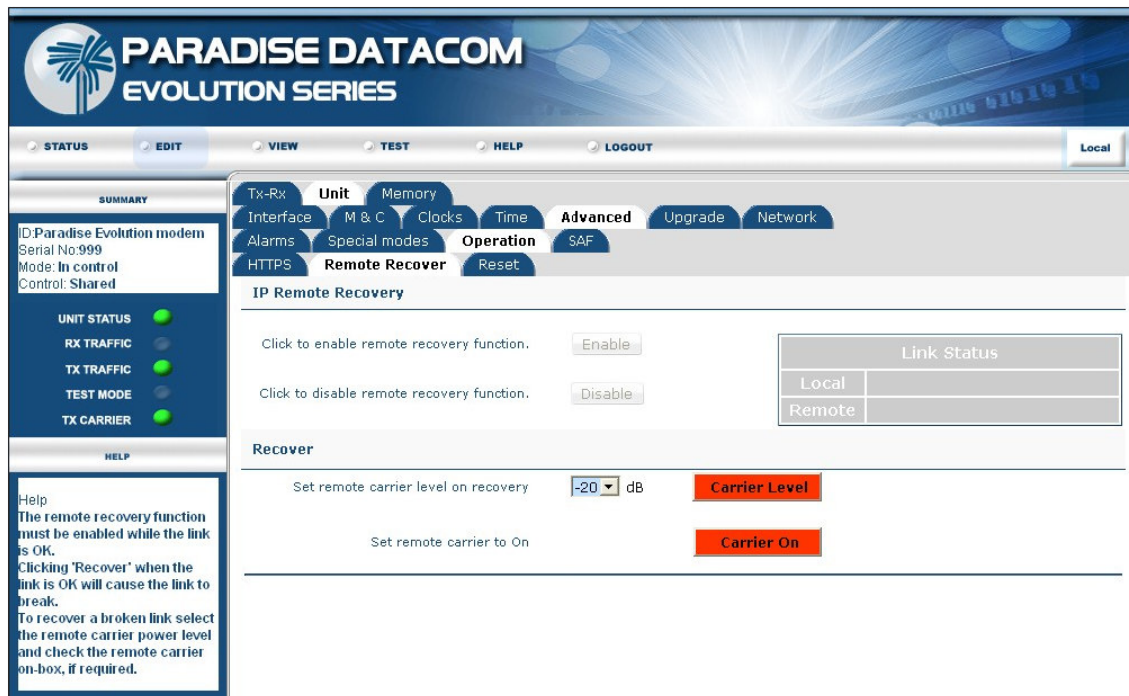
To switch the distant end BUC transmit back ON after it has been switched off the user must navigate to the; Edit, Unit, Advanced, Operation, Remote Recover tab screen and use the “Carrier ON” control. This will send out the appropriate message to the distant end BUC using the ESC channel and the transmit signal will be switched back ON. The user also has

the option of selecting the appropriate Terminal output power level during the recovery process, screen shot 6 shows this feature.

RS485 distant end recovery: Force carrier ON and output level control.

RS485 distant end recovery is a simpler method compared to the IP procedure. As the RS485 process does not require 2 way communications the user does not have to pre-configure the link, as in the IP based system.

The user must navigate to the Remote Recover tab (Edit, Unit, Advanced, Operation, Remote recover). From this screen the user then selects “Carrier On” and if required “Carrier Level”. The distant end transmit path will be switched on and the link will then be restored. The screenshot below shows the remote recover screen when the RS485 ESC option has been selected.



Screen 7

As the RS485 process does not require the link to be pre-configured the IP Remote Recovery section has been greyed out.