



Application Brief – IBUC Diagnostics

L-band Block Upconverters have evolved from “dumb” BUCs used in VSATs for best-effort communications into intelligent replacements for 70 MHz transceivers in mission-critical applications. With the exception of intelligent BUCs, like the IBUC, the customer lacks tools to determine if the BUC is operating properly. Our experience has been that there is a strong tendency to misdiagnose system failures as BUC malfunctions. The net result is needless downtime and lost revenue.

Installation

The ability to set up a link rapidly and with as few pieces of test equipment as possible has called for the incorporation of self-diagnostics into an intelligent BUC. Terrasat’s IBUC leads the industry with a complete set of diagnostic tools built into the Block Upconverter. Diagnostics are available on a standard TCP/IP interface, displayed as web pages that are embedded in the IBUC. Using a web browser, the installer establishes a connection to the BUC and is presented with several web pages including those shown in this document.

Monitoring

Monitoring of terminal performance enables local and remote operators to verify performance and may enable them to spot deteriorating links prior to an outage. In networks with QOS performance/availability guarantees and service fee rebates, this can provide vital data about link status. For smaller networks the web page display may provide adequate information without the expense of a Network Management Software (NMS) package. For larger networks the IBUC supports RS232 and RS485 protocols and is SNMP V1 compliant.

Troubleshooting

In the event of a failure at a site, it is possible to monitor the satellite modem and virtually all premise equipment – except for a dumb BUC. After the technician has eliminated every other potential cause, he must take the BUC off line and either replace it and take the suspect unit back to the lab, or set up a test bed to confirm that the BUC has indeed failed. If the technician on site could easily confirm or eliminate the BUC as the source of the failure he would save substantial time and effort. On-board diagnostics in the IBUC bring this to reality.

A few screen shots on the following pages demonstrate the IBUC web page interface.

Alarm Status Screen Shot

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IBUC Monitor & Control

Info | **Alarm** | Sensor | Tx Cfg | Interface Cfg | System Cfg | Alarm Cfg | Alarm Log

[Logout](#)

IBUC

| | |
|-------------------------------|-----|
| <i>Tx Output</i> | On |
| <i>Tx Output Low</i> | OK |
| <i>Tx Output High</i> | OK |
| <i>Tx Input Low</i> | OK |
| <i>Tx Input High</i> | OK |
| <i>Simulated Alarm</i> | OK |
| <i>Temperature (Internal)</i> | OK |
| <i>ALC Range</i> | N/A |
| <i>AGC Range</i> | N/A |
| <i>10 MHz Detector</i> | OK |
| <i>PLDRO Lock</i> | OK |

From the Alarm Status page the technician has an immediate view of potential causes of alarm conditions. He can check for unusual conditions from both internal and external sources. Common errors such as loss of 10 MHz reference or low input level are readily viewed without the need for test equipment. It is not necessary to take the unit out of service for troubleshooting and the source of the problem can be isolated very quickly.

Sensor Page Screen Shot

TERRASAT
Communications, Inc.

IBUC Monitor & Control

Info | Alarm | **Sensor** | Tx Cfg | Interface Cfg | System Cfg | Alarm Cfg | Alarm Log

[Logout](#)

IBUC

| | | |
|-------------------------------|-------|-------|
| <i>Supply Voltage</i> | 47.9 | Volts |
| <i>Current Consumption</i> | 1.7 | Amps |
| <i>Power Consumption</i> | 80.2 | Watts |
| <i>Tx Input Level</i> | -31.1 | dBm |
| <i>Tx Output Level</i> | 34.0 | dBm |
| <i>Temperature (Internal)</i> | 57° | C |
| <i>DRO Tuning Voltage</i> | 7.1 | Volts |

The Sensor page enables the technician to drill down for additional information about the condition of the IBUC. This page helps track down clues during troubleshooting.

Transmit Configuration Screen Shot

The screenshot displays the 'Transmit Configuration' page for the IBUC. The page title is 'IBUC Monitor & Control' and the sub-page title is 'IBUC'. The page includes a 'Logout' link and a 'Save Settings' button. The configuration settings are as follows:

| Parameter | Value |
|---------------------------------|------------|
| <i>Tx Output</i> | Enable |
| <i>Power Monitor Frequency</i> | 6138 MHz |
| <i>Tx State at Powerup</i> | Enable |
| <i>Tx Powerup Delay</i> | 0 Sec |
| <i>Power Read Mode</i> | Continuous |
| <i>Burst Threshold</i> | 23.0 dBm |
| <i>Burst Count</i> | 8 |
| <i>Gain Mode</i> | Open |
| <i>Attenuation</i> | 5.0 dB |
| <i>Tx Input Threshold Low</i> | -60.0 dBm |
| <i>Tx Input Threshold High</i> | -15.0 dBm |
| <i>Tx Output Threshold Low</i> | 20.0 dBm |
| <i>Tx Output Threshold High</i> | 40.0 dBm |
| <i>Current Gain Control</i> | 0.0 dB |
| <i>Gain Control Reset</i> | Select |

The Transmit Configuration page is useful in initial setup of the IBUC and subsequent remote or local reconfiguration. It provides the ability to change configuration settings such as power up state, AGC/ALC, and additional gain. And from it the customer can set alarm thresholds. Access is password protected.