EXTREF Switching Option

Switching between Internal & External Reference Sources

These instructions assume that the user's equipment is running firmware revision 91 or later. There are in fact two parts to this option, which can be enabled in the factory independently. To determine what options are installed in an AnaCom, Inc. device, running firmware revision 70 or later, use the command **OPTIONS** in a connected terminal display. There are two possible options we are concerned with in this document: EXTREF_USER and EXTREF_AUTO, which are described below.

Terminal Commands

Below is a listing of commands that can be entered via an ASCII Command Line or Terminal Interface to configure this option. These commands are entered using an ASCII command/terminal display. Using Supervisor, a terminal display can be raised by clicking on the **Show/Hide Terminal** button that is in the menu bar of the Supervisor's main window.

OPTIONS

Below are the available options that can be present in a device where an External Reference Switching option has been installed:

EXTREF_USER

If this option is enabled, the user has the ability to switch between a factory-installed 10 MHz Internal Reference, and an External Reference source present on the TX IF cable connected to the device.

This is done by using the **EXTREF** command to select the External Reference ON or OFF. When EXTREF is set to ON, the unit powers down the Internal Reference so that the BUC will not have two references connected to the L-Band Converter at the same time, which will increase the phase noise in the output.

EXTREF_AUTO

If this option is enabled, the unit has the ability to switch automatically between a factory-installed 10 MHz Internal Reference and an External Reference source if one is present on the TX IF cable connected to the device.

Example:

```
COMMAND> OPTIONS
OPTIONS FW_UPDATE EXTREF_USER EXTREF_AUTO
```

EXTREF [ON | OFF | AUTO]

This command, if given with no arguments, will give the current configuration for the External Reference.

If the USER mode is enabled, then the user can give the arguments ON and OFF. ON will select the External Reference, and OFF will return reference source selection to the Internal Reference.

If the AUTO mode is enabled, then when selected by the user, the ODU will select the External Reference when present, and select the Internal Reference only when it is not present.

Note: when AUTO mode is active, and there is no External Reference present, the Internal Reference will be selected for use and by default a MINOR alarm indicating the lack of an External Reference will be raised. A MINOR alarm is for notification to the user, it does not cause a Protection Switch to act on the alarm.

Examples:

1. The user has set the External Reference switch to ON, meaning that we are expecting to use an External Reference:

```
COMMAND> EXTREF
EXTREF ON
```

2. In this example, we are instructing the ODU to activate the Internal Reference, but in reporting status, the device notes that an External Reference is still present:

```
COMMAND> EXTREF OFF
COMMAND> EXTREF
EXTREF OFF (external reference detected)
```

3. In this example the unit is switched to AUTO mode, and in reporting status, the device tells us that we have switched back to using the External Reference source, and when not present the system is configured to generate a MINOR alarm:

```
COMMAND> EXTREF AUTO
COMMAND> EXTREF
EXTREF ON (AUTO) EXTREF alarm enabled as MINOR
```

Note: when the Internal Reference has been manually chosen by the user, and if there is a sensor that detects the presence of an External Reference, the user will be notified of this conflict. The Monitor tab display in Supervisor, revision 10.1.23 or later, will show this as a MINOR alarm called "Reference Conflict."

AUTO Mode Alarm Settings

By default, when EXTREF AUTO has been selected, the lack of an External Reference will be flagged as a MINOR alarm. If the user desires however, this can be disabled, or elevated to a MAJOR alarm.

Examples:

```
COMMAND> EXTREF AUTO ALARM_OFF
COMMAND> EXTREF AUTO ALARM_MAJOR
COMMAND> EXTREF AUTO ALARM_MINOR     - default setting
```