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## **Certification Exhibit**

**FCC ID: R7PER1R1S6**

**FCC Rule Part: 15.247**

**ACS Project Number: 14-0210**

Manufacturer: Landis+Gyr Technology, Inc.  
Model: 5252 Comm Module

## **Manual**

Draft 7.30.14

**Gridstream RF  
Enhanced Series IV  
AMPY 5252B  
Endpoint User Guide**

Publication: 98-1745 Rev AA



# Draft 7.30.14

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# 1

## Endpoint Overview

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### Enhanced Series IV AMPY 5252B Endpoint



*Figure 1 - 1. Gridstream RF Enhanced Series IV AMPY 5252B Meter and Module*

### Endpoint Usage

The Gridstream RF Enhanced Series IV AMPY 5252B endpoint will be used for commercial and industrial metering applications. The communication module requires professional installation by qualified personnel.

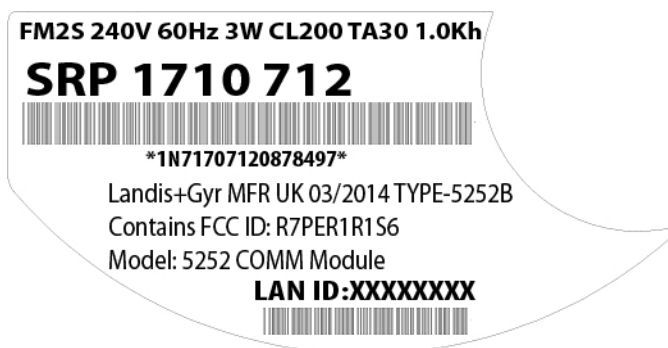
## Required Software

To work with the endpoint, you need one of the following software tools:

- Command Center version 6.2 or later.
- RadioShop version x.x or later.
- Endpoint Testing Manager version x.x or later.

## Labels

The endpoint includes the following label.



**Figure 1 - 2. Label Identification**

1. LAN ID: XXXXXXXX



NOTE: The LAN ID is a unique identifier for each endpoint. It always displays in hex. Landis+Gyr provides the LAN address. You cannot change the LAN ID of a radio.

2. Model: 5252 COMM Module
3. Meter FCC ID: U3R-5252-01 TYPE - 5252B
4. Module FCC ID: R7PER1R1S6

## Features and Functions

Using the AMPY 5252B Meter with the Gridstream RF Enhanced Communication Module, you can:

- Integrate the endpoint into the 240V, Form 25 AMPY 5252B meter.
- Communicate via serial connection between the endpoint and the meter through the meter's provided interface.
- Support all levels of meter passwords.
- Download radio firmware.

## Communicating via Meter to Endpoint Connection

The serial connection is a 26-pin header that contains:

- Full duplex serial connection. The baud rate is 9600, 8 bits, 1 stop bit, no hardware handshaking.
- Power fail indication signal from the meter that tells the endpoint to disconnect from drawing power from the meter.
- DC power line which supplies power to the module from the meter.

## Auto-Registration

Endpoint firmware version 9.04 or later and module Device Control Word (DCW) x.xx or later is required for auto-registration. After the meter/endpoint is installed in the field it will automatically register with the Head End System. No special tools are needed during installation as the normal Utility meter swap process can be utilized.

The meter automatically sends in the registration information containing items on how the meter/communication module is configured so the host can properly interpret the incoming data. Some of the items contained in this are as follows:

- Default Gridstream RF Collector destination
- Reporting interval for Register Data
- Reporting interval for Interval Data
- Meter's AMR-level security password
- Time Synchronization parameters
- GMT offset
- Periodic Register Data reporting
- Periodic LP Data reporting
- Meter configuration information

Once this information has been sent the meter/communication module starts collecting and sending based on the default configuration loaded during manufacturing.

## Retrieving Data

The communication module performs data retrieval from the meter on request (ORR) or autonomously (periodically reported).

Availability of the following features depends on meter configuration. On Request Reads (ORR) available with this communication module are:

- Register Data which includes consumption, demand and TOU values
- Load Profile or Interval Data
- Revenue Integrity Services which includes instantaneous measurements related to line voltage, current and phase angle

Availability of the following features depends on meter configuration. Options for periodically reported data with this module include:

- Register Data & Status Flags which includes consumption, demand, TOU values and meter status.



- Load Profile or Interval Data & Status Flags (Standard Tables 64 & 3) which includes interval data and meter status.

## Demand Reset

When Command Center delivers a Demand Reset command, the communication module passes the command to the meter, which performs the Demand Reset on the meter. The meter/communication module then passes the previous demand data captured by the meter to Command Center for processing.

## Time Synchronization

Time synchronization is the process of keeping the meter time synchronized with the Gridstream RF network time within a configurable limit. The communication module automatically keeps its time synchronized with the Gridstream RF network via periodic background process. The communication module reads the meter date/clock table periodically, determined by its configuration. If the time drift between the meter and communication module exceeds the configured threshold, it sends a time synchronization alert message to Command Center. Command Center schedules a time change event for the meter and sends it to the communication module. The time of the change is determined such that the meter's data integrity is maintained. At the scheduled time, the communication module executes the standard procedure to change date/time on the meter.

## Power Outage/Restoration

When an outage occurs, the meter uses an early power failure signal to alert the communication module to disconnect from the meter's power immediately. The communication module saves critical module data to non-volatile memory and creates and sends a power outage message. This message includes the following information:

- LAN ID
- Outage time
- Reboot count.

The communication module sends the message, then assists with routing other packets until the back-up energy source can no longer keep the radio alive. The time that this energy source is available varies with several factors, including amount of data packets being routed, environmental conditions and age of meter/communication module. Generally, a hold-up time of ~120 seconds is typical.

At restoration, the communication module first acquires network connectivity. With network communications restored, the communication module sends a power restoration message that includes details such as:

- LAN ID
- Outage time
- Restoration time
- Reboot count.

The communications module stores a history of up to the last five power outage and restoration event pairs. Command Center can request this data.

## Supporting Passwords

The meter/communication module supports passwords provided by the utility. See publication 98-1055 *Gridstream 2-way Endpoint Testing Manager User Guide* for information regarding loading password into module.

## Downloading Firmware

Communications module firmware can be upgraded via Command Center or ETM.

## Encrypting Data

The Gridstream RF Network currently supports use of one encryption key per network. If you enable the Gridstream RF Enhanced with encryption, Command Center must have a matching encryption key.

## Configuration Tables

The Gridstream RF Endpoint Configuration structure passes the data to configure the endpoint. It is used for both C&I and Residential applications.

This table is currently 55 bytes long. It contains information necessary to configure several services on the endpoint, such as firmware reads, autonomous data return configuration.

The endpoint receives the packet, and using the data, configures its own operation. The host maintains a record of the endpoint's configuration.

Item	Other
Packet Contents	Identifies which elements in this packet are set. Elements that are not set are ignored. There still must be a place in the packet for it, though.
Config Byte 1	Not Used
Config Byte 2	Not Used
Config Byte 3	Not Used
Config Byte 4	Not Used
Config Byte 5	Not Used
Reporting Interval LP	In Minutes.
Pump Period Register	In Minutes.
Pump Period RIS	In minutes. The period for the RIS/Vector/Voltage data pump.
Pump Period Status	In minutes. The period for the Device Status (SO3, typically) data pump
Pump Period Snap Read	Snap Reads will be delivered at a pseudo-random time, which will occur in the first X hours of each day. X is the value that is provided here. It will default to 2. The process is: this value, which is in hours, will be converted to minutes. The LAN ID will be mod-ed with this minute value, and the result will be the minute of the day that the self read is transmitted.
User ID	2 byte User ID used while running ANSI Logon Service

Item	Other
Logon User	10 byte User Name that is used while running the ANSI Logon Service
Security Password	The full 20 bytes are required.
Sustained Outage Duration	Defines the number of seconds after which an outage will be classified as sustained. If less than this amount, the outage is momentary. A value of zero will cause all outages to be considered "sustained".
Max Meter Time Drift	The number of seconds that the meter clock can drift from the radio clock, after which an alarm is triggered.
Meter Time Read Period	The number of seconds that the meter clock can drift from the radio clock, after which an alarm is triggered.
GMT Offset	The GMT Offset in 15 minute increments. Signed.

## Theory of Operation

The Gridstream RF Enhanced Series IV AMPY 5252B module is an electric endpoint with 900MHz Gridstream communications on a single PCB. This product will be integrated into the Ampy 5252 meter. The following figure shows the high-level block diagram of the module. Each functional block is described in the following sections.

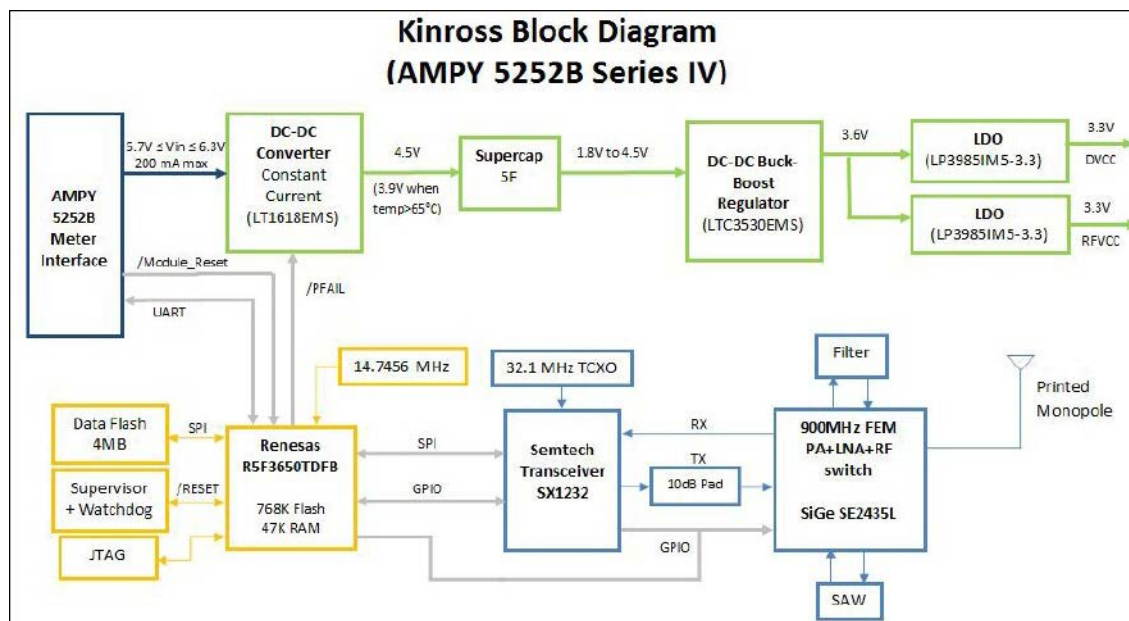


Figure 1 - 3. Block Diagram

## FCC Compliance

### FCC Class B

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Consult Landis+Gyr or an experienced radio technician for help



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**WARNING: Changes or modifications to this device not expressly approved by Landis+Gyr could void the user's authority to operate the equipment.**

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## RF Exposure

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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# 2

## Command Center Deployment/Configuration

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### Deployment

#### Auto Registration

Landis+Gyr RF radio is Plug & Play; meters equipped with Landis+Gyr endpoints arrive from the factory in operational mode, ready to be installed at a service location. Along with the meters, a Meter Manufacturer File is provided to the utility. This file contains meter number/serial number combinations; the file must be uploaded into Command Center prior to installation of endpoints in the field.

A meter installer installs the endpoint at the service location.

Once installed, the endpoint will begin the following auto-registration process:

1. The endpoint listens for RF traffic and evaluates its neighbors, searching for the best possible path to the collector. The best path is the one with the fewest hops to the Collector and through an endpoint with the highest Receive Signal Strength Indicator (RSSI) (RSSI is the receive signal strength from the node. It is a rough indicator of how strong the signal is from the radio).
2. Having identified the best path, the endpoint will transmit the following two packets:
  - **RF Registration Packet:** The RF Registration Packet identifies for the Collector the return path to the endpoint. This is achieved by each intermediary endpoint adding its LAN address to the endpoint's RF Registration Packet as it travels to the Collector. Once the RF Registration Packet is received, the endpoint will transition to Discovered in Command Center. The RF Registration will continue to be sent until the SetWAN command is received from Command Center.
  - **Init Push:** The Init Push packet contains configuration information about the meter, that allows Command Center to understand the configuration of the meter. The Init Push is transmitted until the SetWAN command is received from Command Center.
3. Once the RF Registration Packet and Init Push are received, Command Center will validate the configuration and, if validated, begin accepting readings from the endpoint. The endpoint will remain in Discovered status until the SetWAN command is received by the endpoint.
4. The SetWAN command is issued to the endpoint when Command Center receives latitude and longitude information AND the endpoint's closest neighbor has a WAN address. The SetWAN command provides the endpoint with its WAN address. The WAN address is the radio's physical location (Latitude and Longitude) expressed in degree, minutes and seconds. The SetWAN command achieves two way communication with the endpoint. The SetWAN tells the endpoint that we have received your configuration information and it is OK to stop sending it in.



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NOTE: If Installation Data is received before an Init Push has been received, the installation record will be stored awaiting the Init Push from the device.

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## Endpoint Status

Endpoints will move from one status to another during the deployment process. The following are various endpoint statuses:

- **Installed.** Endpoints in the Installed status have been deployed in the field, but Command Center has not received the RF Registration packet.
- **Discovered.** Endpoints in the Discovered status have transmitted an RF Registration Packet. The RF Registration Packet identifies for the Collector the return path to the endpoint. This is achieved by each intermediary endpoint adding its LAN address to the endpoint's RF Registration Packet as it travels to the Collector.
- **Normal.** Endpoints in the Normal status have transmitted an Init Push packet containing configuration information AND have acknowledged a SetWAN command from Command Center. The SetWAN command provides the endpoint with its WAN address. The WAN address is the radio's physical location (Latitude and Longitude) expressed in degree, minutes and seconds.
- **Lost.** Endpoints in the Lost status have reported an outage event. When the endpoint loses power, it will transmit a "Power Outage Event" to Command Center. Once power has been restored, the endpoint transmits a "Power Restore Event". The endpoint will then transition back to Normal status.
- **Configure.** Endpoints in the Configure status are endpoints that have been recently added to a new configuration group and have not yet confirmed the receipt of configuration commands.
- **Failed.** Endpoints and/or meters in the Failed status have failed a re-configuration attempt or have failed a work flow process. Work flow processing will determine if configuration changes such as time zone updates, reconfiguring of endpoints, meter change programs have been successful. Endpoints must be manually removed from the Failed status, generally by attempting the work process again.
- **Archive.** Endpoints in Archive status are no longer in use within the Mesh System, for example, damaged endpoints. Endpoints must be manually entered into Archive status.
- **Inventory.** Endpoints in Inventory status have not yet been deployed in the field. These may be recently purchased meters or meters that have been removed from the field and are awaiting redeployment.

## Meter Manufacturer Data

The Meter Manufacturer Data screen allows the user to import an XML or CSV file supplied by the meter manufacturer so the utility does not have to key in meters and endpoints by hand.

1. Click **Operations > Import > Meter Manufacturer Data** to display the Import Meter Manufacturer Data screen.

**Import Meter Manufacturer Data**

Electric
  Gas
  Grid Management

Select a file that was sent by the manufacturer.

To create a file based on a template, click one of the following links and choose "Save"

[CSV Template](#)  
[XML Template](#)

**Figure 2 - 1. Import Meter Manufacturer Data**

2. Click the **Browse** button to navigate to, and select, a file that was sent by the meter manufacturer.
3. Click the **Save** button to import the file into the database.

The Meter Manufacturer Data Import (Upload Complete) window will appear displaying the Error Summary (if applicable) and Successful Entries.

Import Meter Manufacturer Data		
Upload Complete		
Error Summary		
Meter	Endpoint	Error Description
16785263	16785263	Meter 16785263 and endpoint 16785263 already exist in the system.
Successful Entries		
Meter	Endpoint	
16785256	16785256	
16785257	16785257	
16785258	16785258	
16785259	16785259	
16785260	16785260	
16785261	16785261	
16785262	16785262	
16785264	16785264	

**Figure 2 - 2. Upload Complete Window**



NOTE: Any entries under Error Summary will be red text. The usual reason for an entry under Errors is that the endpoint already exists in the system. If file parsing errors or other file-related errors occur, contact the meter manufacturer that supplied the file.

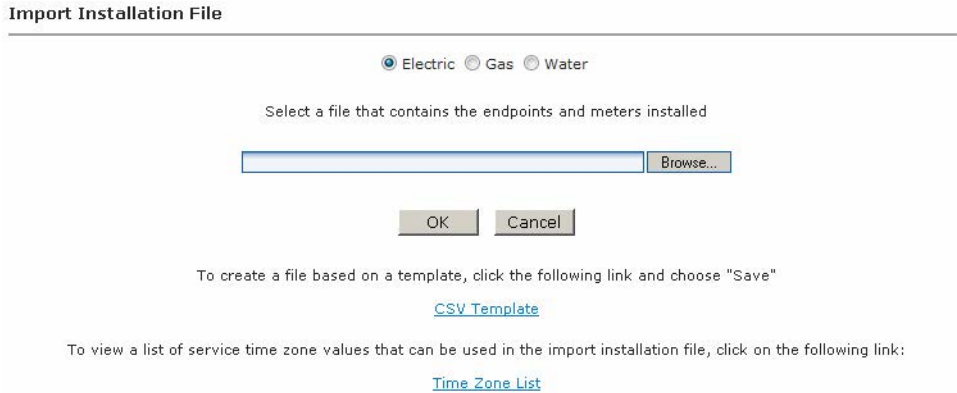
4. Successful entries will be added to inventory and will be displayed on the dashboard as Inventory status.

## Import Installation File

Meter deployment details can be imported by use of an Installation File provided by the installer. Following is the procedure for importing the installation file.

1. Click **Operations > Import > Import Installation File** to display the Import Installation File screen.





**Figure 2 - 3. Import Installation File Screen**

2. Enter the Path to the file.
- ...or...
3. Click the **Browse** button to navigate to, and select, a file containing the endpoint information.
4. Click **OK** to upload the file. The information imported via the Installation File:

**Table 2-1. Installation File Fields**

Data	Format	Format/Description
User ID*	AlphaNum (30)	Login assigned by the utility for the installer. Utility may elect to use "1" for System usage.
Installation Date*	Date MM/DD/YYYY 12/26/2009	Actual date the meter was installed. This date is used in various Command Center reports to track deployment statistics.
Installation Time*	TimeHHMMAM/PM 11:12 AM	Actual time the meter was installed. This date is used in various Command Center Reports to track deployment statistics.
Change Out meter number	AlphaNum (20)	The meter being replaced with a new meter. Meter change out information is displayed in the notes section of the endpoint information screen.
Change Out meter kWh	AlphaNum (20)	The kWh reading on the meter being replaced Meter change out kWh information is displayed in the notes section of the endpoint information screen. Variable Character.
Installed Meter Number*	AlphaNum (20)	Meter number of the new meter being installed. This meter must exist in Command Center prior to importing the Import Installation File. Must parse to Decimal format.
Installed Endpoint Serial Number*	Decimal (9)	The serial number of the new meter being installed. Note: Endpoint serial numbers must be converted from Hex to Decimal.
Installed Meter kWh	Decimal (9)	Initial reading of the new meter.
Service Latitude	Decimal (12,8)	GPS latitude.
* Indicates a required field.		

Table 2-1. Installation File Fields (Continued)

Data	Format	Format/Description
Service Longitude	Decimal (12,8)	GPS longitude.
Service Location	AlphaNum (100)	Meter service location.
Service Time Zone	See formatting below.	The service time zone may be entered to specify the correct time zone for the service location.
* Indicates a required field.		

## Import Information File CSV Format requirements



**CAUTION:** Required fields are UserID, Installed Date, InstalledTime, InstalledMeterNo, and InstalledEndpointSN. If these fields are not populated, the file will not be processed. Service Location is required if the Latitude and Longitude fields are populated. Command Center will ignore the latitude and longitude values if Service Location is not provided.

The **Import Installation File** window provides a CSV template link. Click this link to view the format requirements for the file. This template can be saved to a network location or local machine and provided to the installer.

The Installation file must be of the following format:

- The first line must be a header.
- A comma is required to separate each item even if no data exists.
- A Service location is required if the service latitude and longitude are provided.

## Time Zone

In order to report reading time correctly, the endpoint must be programmed with the appropriate time zone; this is achieved by sending commands to the endpoint that indicates the time zone in which the endpoint is installed and whether Daylight Savings Time (DST) is observed in the given time zone.

The Installation File should include the endpoint time zone. Clicking the **Time Zone List** link will open a document that displays a list of valid time zone designations by country.

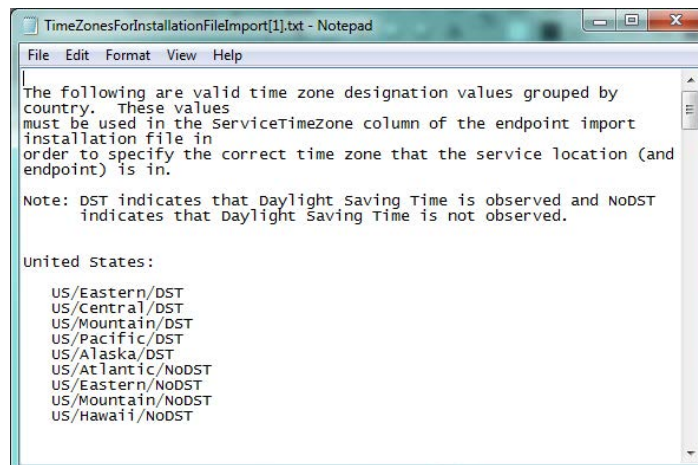


Figure 2 - 4. Time Zones

# Tracking and Deployment

## Deployment Status

Deployment Status enables users to monitor the find process when endpoints are being deployed on a system.

1. Click **Network > Deployment Status** to display the Deployment Status Report screen.

**Figure 2 - 5. RF Deployment Status Screen**

2. Choose the Selection Criteria:

A. **All**

...or...

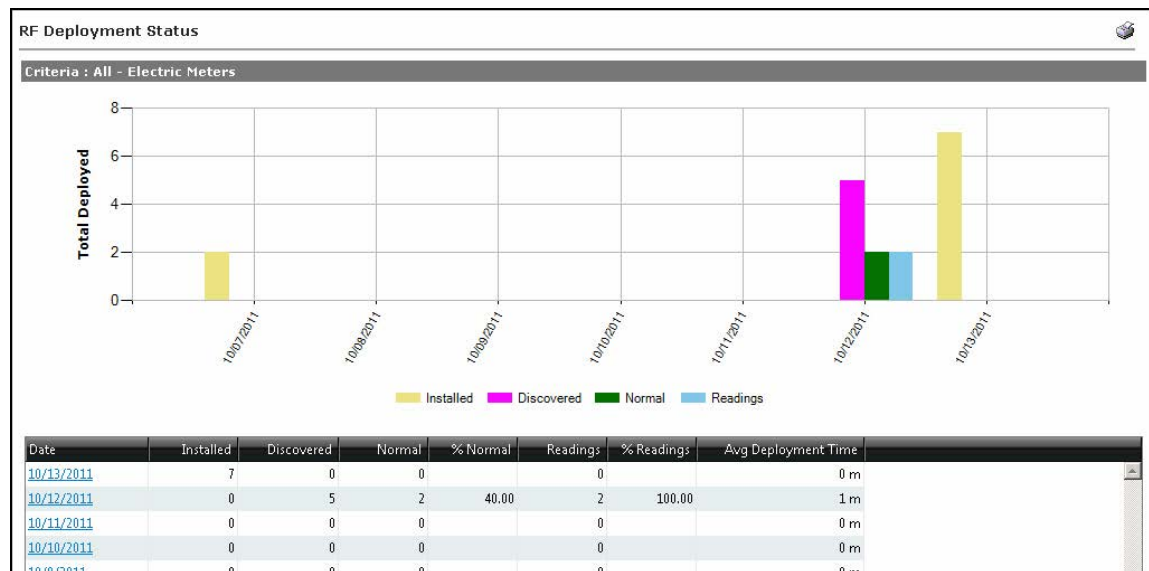
B. **Collector.** Select the desired collector from the drop-down menu.

3. Select a Date Range:

A. **Start Date.** Click the calendar icon, and then click on the desired start date.

B. **End Date.** Click the calendar icon and then click the desired end date.

4. Click the **OK** button to display the RF Deployment Status Report.



**Figure 2 - 6. RF Deployment Status Report**

The RF Deployment Status Report displays a graph representing 14 days of installation statistics and a chart. Time periods longer than 14 days may be selected, but will not be presented on the graph due

to space limitations. By clicking on a specific date, each endpoint registering that day displays installation, registered, normal and reading status for this date. Information on the report is updated as the information is received by Command Center on a rolling seven day basis. Installation information is populated from the RF Installation File Import process. Registered and Normal status updates are based on receipt of the two registration requests from the endpoints. Readings are based on the first reading received from the endpoint. Average deployment time is based on the time it takes to go from installed to normal.

5. Click on the **Date** link to display the Gridstream Meters Deployed By Day report.

RF Meters Deployed By Day

Deployment Status on 12/4/2013 for All Collectors - Electric Meters

Drag a column header here to group by that column.

Meter #	Map Loc	Collector	Install Date	Discovered D...	Normal Date	Last Reading ...	Status	Deployment...

**Figure 2 - 7. RF Meters Deployed by Day**

## RF Installation Status

The RF Installation Status Report is intended to be used by utilities during mass deployment. It can be used as an installation tool to determine how many meters have been installed over a specified time frame and of those meters how many have been discovered, how many have moved to normal status, how many are sending readings, and how many have sent readings in the past 24 hours.

Following is the procedure for viewing the RF Installation Status report:

1. From Command Center, select **Network > RF Installation Status**. The RF Installation Status window will open.

RF Installation Status

**Selection Criteria**

Collector  Electric  Gas  Water

All

**Date Range**

Start Date: 11/20/2013 End Date: 12/4/2013

OK Cancel

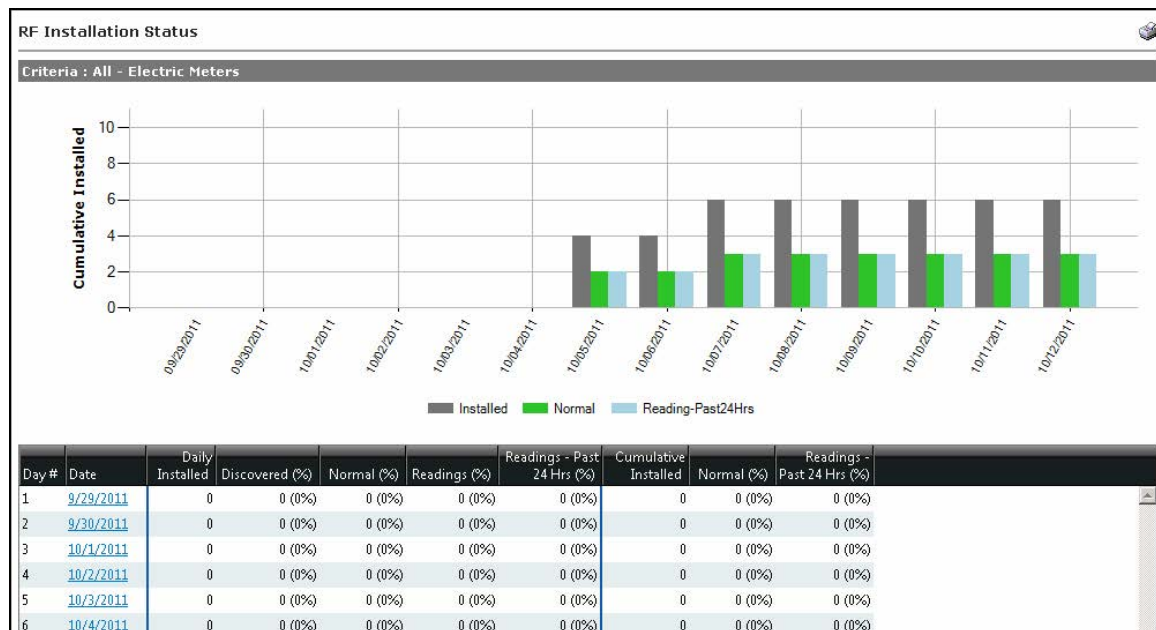
**Figure 2 - 8. RF Installation Status**

2. **Selection Criteria.** Select All to view results for all collectors in the system

...or...

Select the desired collector from the drop down box to view results for only that collector.

3. **Date Range.** Enter a Start Date and End Date. Select the Calendar icon to view a calendar and make date selections if needed.
4. Click **OK**. The RF Installation Status report will be displayed, shown in Figure 2 - 9.



**Figure 2 - 9. RF Installation Status Report**

The following information is displayed in the report:

- **Day.** This number will increment for each day the used has selected to display.
- **Date.** This will display the dates selected in generation of the report. Click the date link to view a list of all meters deployed on the selected date.
- **Daily Installed.** This will display the number of endpoints installed for that particular day. The daily installed data is imported into Command Center via the Installation File.
- **Discovered.** Of the total number of meters installed on the summary date, the total number of those that have transitioned into a Discovered state and the percentage (Discovered meters/Installed meters).
- **Normal.** Of the number of meters installed on the summary date, the total of those meters that have transitioned to a normal state at that point in time and the percentage (Normal meters/Installed meters).
- **Readings.** Of the total number of meters installed on that day, the number of those meters that have sent in a billable reading packet, and the percentage (meters that have sent a billable reading packet/total meters installed on that day).
- **Readings past 24 Hours.** Of the meters that were installed on that day, the total number of meters that sent in a billable readings packet in the last 24 hours (from the point the report was generated) and the percentage (meters that sent in a billable readings packet in the last 24 hours/total meters installed on that day).
- **Cumulative installed.** The total number of meters that have been installed up to that date.
- **Normal.** The total cumulative number of meters that have transitioned to Normal status up to that date.

The color-coded bar graph displays the following deployment information:

- Cumulative number of meters installed for each date (Grey).
- Current number of meters that have transitioned to Normal status (Green).

- Number of installed meters that have sent in a billable reading in the last 24 hours (Blue).

## Endpoint Configuration

### Packet Definitions

Creating a packet definition is necessary to reconfigure the packet payload of an endpoint. Packet definitions can contain several different user-configurable data elements.



**NOTE:** RF endpoints allow a user to return up to 6 registers. However, the more registers returned, the greater the strain on the network.

1. Click **Setup > Packet Definitions > RF Residential**

The Packet Definitions screen will be displayed.

RF Electric Grp Cmds Packet Definitions			
<input type="button" value="New"/>		<input type="checkbox"/> Show archived packet definitions	
Name	Type	Notes	Actions
Landis & Gyr Residential Packet Definition A	On Demand	kWh, Received kWh, Voltage Phase A	
Landis & Gyr RIS Read Packet Definition	On Demand	S+U voltage and phase angle data	
Landis & Gyr Self Read Packet Definition	On Demand	S+U midnight aligned self read packet	
LG RF Phase Voltage Report Packet Definition	On Demand	Special packet for use with on-demand function of the RF Phase Voltage Report	
Meter Status Flags	On Demand	Packet to Retrieve Meter Status Flags	
New Test TOU	On Demand		
RF FocusAX Default MultiSpeak OnDemand Read	On Demand	Default packet for RF FocusAX On Demand reads requested through MultiSpeak	
Test TOU	On Demand		

**Figure 2 - 10. Packet Definitions Screen**

2. In the Packet Definitions screen click the **New** button to display the **Packet Definition** window.

**Figure 2 - 11. The Packet Definition Window**

3. Enter a name in the **Packet Name** field. The name should be unique to the organization.
4. Click the **Edit Description** link to enter any desired notes for the packet definition. If any notes were entered, click the **OK** button to save them.
5. Select a **Packet Type** from the drop-down.
  - **On Demand.** Used for RF Endpoints.
  - **Daily Packet Type.** Used for PLC Endpoints
6. Select the **Meter Type** from the drop-down.
7. Select the desired data options from the **Available Data Options** window on the left side of the screen.
 

To view a description of each available data option, click once on the data element. A description of the data element will be displayed in the yellow shaded box in the lower-center area of the screen.



**NOTE:** The available data options vary depending on the type of endpoint.

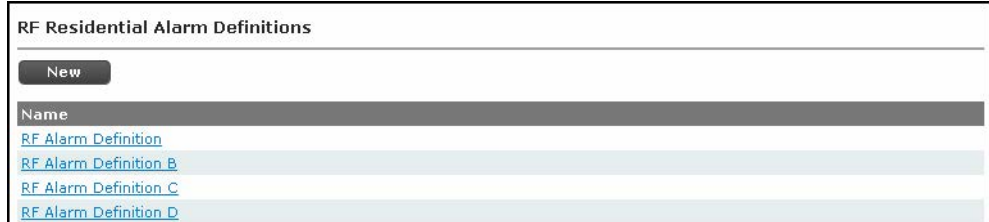
8. Click the right pointing arrow to move the data option to the Selected Data window.
 

As you select data options, monitor the Packet Capacity gauge on the right of the screen. Each selection will add to the percentage total. If your selections exceed 100 percent, a message will be displayed when you click the Save button indicating that packet capacity must be 100% or less and can contain six or fewer data items. You can remove selections from the Selected Data window by clicking to highlight the selection and then click the left pointing arrow to remove the selection.
9. After selecting all of the desired data options, click the **Save** button to save the new packet definition.

## Alarm Definitions

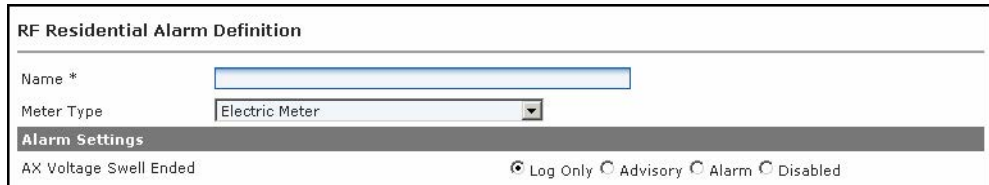
Alarm Definitions determine what type of response the given Events will trigger, including Dashboard Alerts and Email Alerts. Alarm Definitions must be created prior to Meter Configuration Groups in order to be programmed to a module.

1. Click **Setup > Alarm Definitions** and select the appropriate endpoint type to display the Alarm Definitions screen.



**Figure 2 - 12. Alarm Definitions screen**

2. Click the **New** button to display the Alarm Definition screen.



**Figure 2 - 13. Alarm Definition screen**

3. Enter an Alarm Definition name in the Name field.
4. Choose the desired setting for each event. See below for setting descriptions.

		Available Settings			
Result		Disabled	Log Only	Advisory	Alarm
Event is:	Logged in module		✓	✓	✓
	Available via request		✓	✓	✓
	Included in next			✓	
	Transmitted immediately				✓
	Flagged on Dashboard				✓
	Included in E-mail Alerts			✓	✓



**NOTE:** The default Alarm Definition settings represent the recommendation of Landis+Gyr.

5. Click the **Save** button.

An Alarm Definition can only be edited if it is not already part of an existing Configuration Group.



## Meter Configuration Groups

A Configuration Group is a type of Command Addressing Group. A meter can be a member of only one configuration group. All members of a configuration group must be assigned the same configuration settings. Configuration groups are used to drive group-based reconfigurations for multiple endpoints.

Each endpoint type is manufactured with a default configuration group.

The data transmitted by an RF module, how frequently the data is sent, and how the module responds to conditions in the field, is dictated by the endpoint's Configuration Group.

An RF Endpoint configuration consists of the following:

- **Packet Definitions** that are built for various data elements to be captured by the endpoint.
- **Alarm Definitions** that establish the priority associated with events that occur in the RF endpoints.
- **RF Network Settings** that establish the outage wait and time synchronization settings.
- A **schedule** that includes the commands and packet definitions, along with time settings and frequency settings associated with data transmission, that are stored in the endpoint.



**NOTE:** During the Auto-registration process, the module transmits an Init Push packet which indicates its configuration. This enables Command Center to associate the endpoint with the appropriate configuration group. If the configuration transmitted does not match an existing configuration in Command Center, a new configuration group may be auto-generated to which the endpoint will be assigned. For this process to occur, the Auto Generate Meter Configuration Groups setting must be enabled in System Settings.

1. Click **Setup > Groups > Meter Configuration Groups** and select the endpoint type.

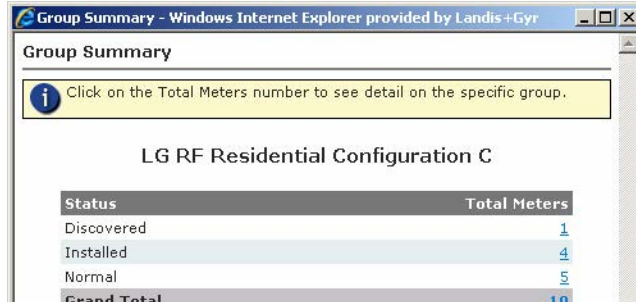
The Configuration Group screen will be displayed.

Name	Meters	Notes	Actions
LG RF Focus AL Configuration Group	0	LG Gridstream RF Focus AL Configuration Group	
LG RF Focus AL Configuration Group B	0	LG Gridstream RF Focus AL Configuration Group B	
LG RF Focus AL Configuration Group C	0	LG RF Focus AL Configuration Group C	
LG RF Gas Configuration A	6	LG RF Gas Configuration A	
LG RF Residential Configuration A	0	LG RF Residential Configuration A	
LG RF Residential Configuration B	0	LG Gridstream RF Residential Configuration B	
LG RF Residential Configuration C	1	LG RF Residential Configuration C	
LG RF Residential Configuration D	4	LG RF Residential Configuration D	

**Figure 2 - 14. Configuration Groups Window**

If you wish to view the details of an existing configuration group, perform the following steps.

- A. In the Configuration Group window click the **View Meters** icon for the Configuration Group you want to view to display the Group Summary window.

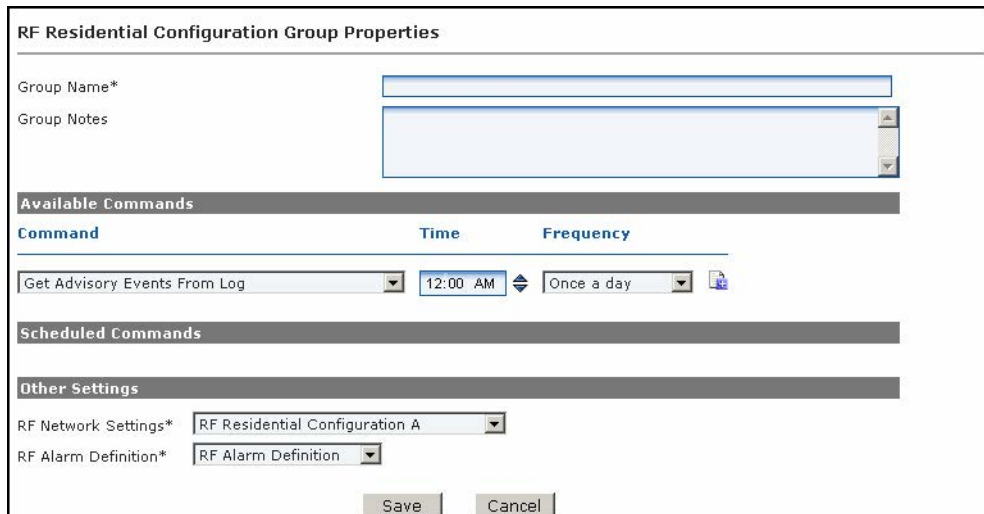


**Figure 2 - 15. Group Summary Window**

The group membership list window displays the following categories:

- **Status.** Status is the current status of the meter.
- **Total Meters.** Displays the total number of meters in each status.

- B. Click any of the meter number links to view the **Endpoint Properties** window for the selected meter.
2. In the Configuration Groups window click the **New** button to display the Configuration Group Properties window.



**Figure 2 - 16. Configuration Group Properties Window**

3. Enter a **Group Name**. The name must be unique within the organization.
4. Enter any desired **Group Notes**.
5. To set up **Scheduled Commands** use the following steps:
  - A. Select the desired packet definition from the Command drop-down.
  - B. Select the **Time** at which the reading will be taken from the meter. Adjust the time by clicking on either the hours, minutes, or AM/PM and then using the up or down arrow.
  - C. Select the **Frequency** with which the reading will be taken from the meter.  
 If either Every n minutes or Every n hours is selected, an additional field, N, will be displayed.



**Figure 2 - 17. Frequency Interval**

- Select the desired interval from the **Frequency** drop-down.
- D.** Click the **Schedule Command** icon to add the command to the Scheduled Commands list.

Scheduled Commands				
Command	Time	Frequency	Interval Length	Delayed
Interval Usage Data	N/A	Every Hour	5	<input type="checkbox"/>
Landis & Gyr Residential Packet Definition A	12:00 AM	Once Per Day	N/A	<input checked="" type="checkbox"/>

**Figure 2 - 18. Scheduled Commands**

- E.** (Gridstream endpoints only) Select the **Delayed** check-box for a command.
6. Repeat step 5 for any additional commands.
  7. Select the **Endpoint Transmit Interval** from the drop-down. This setting determines how often the endpoint will transfer its readings to Command Center.
  8. Select the appropriate RF Network Settings from the drop-down.

**Table 2-2. RF Network Settings Parameters**

Parameter	Default RF Collector Configuration	Hunt RFS Residential Configuration A	Hunt RFS S4 Configuration A	Hunt RFS Gas Configuration	RF Residential Configuration A	LG AU Residential Network Configuration A	LG RF Commercial Configuration A
Outage Wait Value*		6	6	6		30	
Tamper Threshold**	10	0	0	0	30	0	10
Time Synchronization (X, Y)†	1,1	20, 60	20, 60	20, 60	20, 360	20, 60	20, 1
*Outage Wait Value	<i>The length of time (in seconds) that an endpoint will wait during a power outage situation before sending an outage notification to Command Center.</i>						
**Tamper Threshold	<i>The number of reverse pulses of -kWh an endpoint must see within an interval before triggering a "Tamper Alert".</i>						
†Time Synchronization	<i>The number of seconds that the meter time may drift before an automated time synchronization must be performed (X), or an alert must be generated and sent to Command Center (Y).</i>						

9. Select an **RF Alarm Definition** from the drop-down.
10. Click the **Save** button to save the new configuration group.

## Add Meters to a Meter Configuration Group

Adding meters to a configuration group initiates the configuration process.

1. Click **Setup > Groups > Meter Configuration Groups** and select the endpoint type.  
The Configuration Group screen will be displayed.

RF Residential Configuration Groups			
New			
Name	Meters	Notes	Actions
LG RF Focus AL Configuration Group	0	LG Gridstream RF Focus AL Configuration Group	  
LG RF Focus AL Configuration Group B	0	LG Gridstream RF Focus AL Configuration Group B	  
LG RF Focus AL Configuration Group C	0	LG RF Focus AL Configuration Group C	  
LG RF Gas Configuration A	6	LG RF Gas Configuration A	  
LG RF Residential Configuration A	0	LG RF Residential Configuration A	  
LG RF Residential Configuration B	0	LG Gridstream RF Residential Configuration B	  
LG RF Residential Configuration C	1	LG RF Residential Configuration C	  
LG RF Residential Configuration D	4	LG RF Residential Configuration D	  

**Figure 2 - 19. Configuration Group Window**

2. Click the **Add Meters** icon for the Configuration Group to which you want to add meters in order to display the Add Meters to Group window.

**Add Meters To Group**

**Please Note:** When adding endpoints to or removing endpoints from a RFUEndpointConfig group, commands must be issued to the endpoints to reflect the changes you have made. Those commands will be issued the next time the 'Reconfigure Endpoints' process runs. Please check the 'Process Settings' screen for more information on when the 'Reconfigure Endpoints' process will run.

Current Group: **LG S+U Residential Configuration A**

Meter(s)   
Enter meter numbers separated by spaces, commas, or semicolons.

Meter File    
Each line in the file should contain a single meter number.

**Figure 2 - 20. Add Meters to Group Window**

3. Click the **Meter(s)** radio button and enter individual meter numbers separated by spaces, commas, or semi-colons.
- ...or...
4. Click the **Meter File** radio button and then the **Browse** button to browse for a .csv file containing all the necessary meter numbers.
  5. Click the **Add** button and then the **Exit** button to save the additions.

After clicking the Add button, the user will receive feedback on how many meter numbers were successfully and/or unsuccessfully added. The reason for an unsuccessful message is that the meter number does not exist.



**NOTE:** If a meter is already in a configuration group, the meter will be removed from the original and added to the new configuration group.

Draft 7.30.14

## 3

# Using Endpoint Testing Manager (ETM)

## How To Use ETM

Endpoint Testing Manager (ETM) software provides the user with the ability to verify accurate module-to-meter, meter-to-module, module-to-network, and network-to-module communications. This chapter provides detailed instructions for navigating the software.

## Access to Endpoint Test Manager

With the release of Command Center 5.0, ETM users must be authenticated into Command Center prior to accessing the ETM application and communicating with devices in the network. The designated Security Administrator for the utility is responsible for configuring the connection to the Command Center server, and for providing log in credentials (including user names and passwords) for those who will require access to the software.

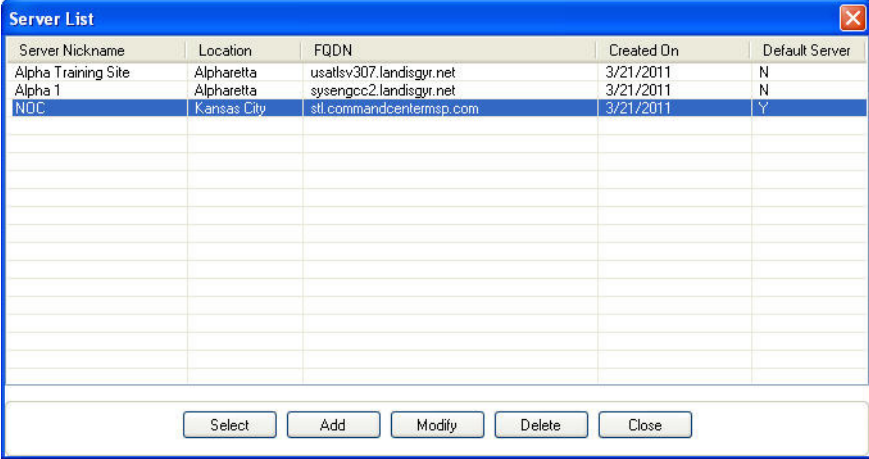
## Setting Up Access to the Command Center Server

Before launching the ETM software, a link to the Command Center server must be created. Follow the steps below to create the link to the Command Center server.

- Launch ETM software. The ETM Sign in screen will open. On an initial launch of ETM, the ETM user must be authenticated with the Command Center server. The Command Center server connection places an authentication token on the user's computer. This token is valid for a time specified by the Command Center Administrator. On succeeding launches, the Server Name field may display *Offline*, and may display *Offline* during future logins. Users may login to ETM without Command Center server connection, as long as their authentication token is valid.

**Figure 3 - 1. Endpoint Testing Manager - Sign In**

- If this launch of ETM is not connected to a server, click the **Select a new server** link. The Server List will appear.



Server Nickname	Location	FQDN	Created On	Default Server
Alpha Training Site	Alpharetta	usallsv307.landisgyr.net	3/21/2011	N
Alpha 1	Alpharetta	sysengcc2.landisgyr.net	3/21/2011	N
NDC	Kansas City	stl.commandcentermsp.com	3/21/2011	Y

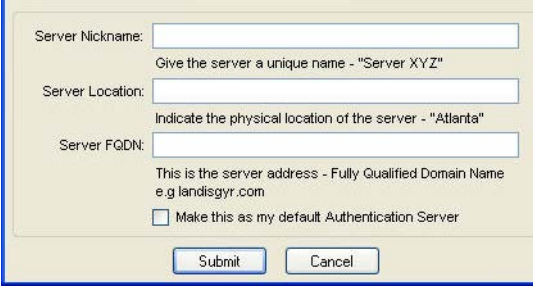
Buttons: Select, Add, Modify, Delete, Close

**Figure 3 - 2. Server List**

- Click the name of the desired server in the Server column to highlight it.
- Click Select. The Server List window will close and the selected server will be displayed on the ETM log in screen.

## Adding a New Server

Click **Add** on the Server List. The New Server window will open.



Server Nickname:   
Give the server a unique name - "Server XYZ"

Server Location:   
Indicate the physical location of the server - "Atlanta"

Server FQDN:   
This is the server address - Fully Qualified Domain Name  
e.g. landisgyr.com

Make this as my default Authentication Server

Buttons: Submit, Cancel

**Figure 3 - 3. Endpoint Testing Manager - New Server**

- **Server Nickname:** Enter a user-defined name for this server.
- **Server Location:** Enter the physical location of the server.
- **Server FQDN:** Enter the fully qualified domain name for the server. (see example in the New Server display).
- **Make this my default Authentication Server.** Enable this setting to connect to this server each time this instance of ETM starts.
- Click **Submit** to add the new server.

## Selecting an alternate existing server

An ETM instance may have multiple servers associated to it. When ETM is first started, the server that has been selected by default will be displayed on the log in screen. The user may choose a different server, if necessary.

Following is the procedure for selecting an alternate server:

From the ETM log-in screen, select the **Select a new server** link. The Server List window will appear.

- Click the name of the desired server in the Server column.
- Click **Select**. The Server List window will close and if ETM can connect to that server, the selected server will be displayed on the ETM login screen.

## Modify an existing server

If it is necessary to make modifications to an existing server, this task may be performed in the Server List window, shown previously in Figure 3 - 2.

From the ETM log-in screen, click the **Select a new server link**. In the Server List window, click the name of the server to be modified.

- Select the **Modify** button. The **New Server** window will open.
- Make desired changes.
- Click **Save** to apply changes.
- Click **Close** to close the Server List window and return to the ETM login screen.

## Delete an existing server

If it is necessary to delete an existing server, this task may be performed in the Server List window.

In the Server List window, click the name of the server to be deleted.

- Select the Delete button. The selected server will be removed from the Server List.
- Click Close to close the Server List window and return to the ETM login screen.

## Add additional servers

If it is necessary to add additional servers, this task may be performed in the Server List window.

In the Server List window, click the **Add** button. The New Server window will open.

- **Server Nickname:** Enter a user-defined name for this server.
- **Server Location:** Enter the physical location of the server.
- **Server FQDN:** Enter the fully qualified domain name for the server. (see example in the New Server display)
- **Make this my default Authentication Server.** Enable this setting to connect to this server each time this instance of ETM starts.
- Click **Submit** to add the new server.
- Click **Close** to close the Server List window and return to the ETM login screen.



## After Login: Setup Cautions



**NOTE:** When ETM is first launched, view the **Connection** tab. Click the checkboxes for both **Display Scrolling Status** and **Enable Test Reports**, and then click **Save Settings**. Until changed, these settings will remain the default each time the ETM application opens.



**CAUTION:** Upon launch, ETM will attempt connection to the computer's first available serial port. If an Integrated WAN Radio (IWR) is not connected to that serial port, ETM will time out. After ETM times out, click the **Connection** tab to select the serial port connected to the IWR.

## Certificate Attributes

The current status of the Mobile Admin Tool (MAT) Certificate can be viewed in the Security display.



**Figure 3 - 4. Security Menu Options**

From the menu options, select **Security > MAT Certificate Attributes**.

The **Token Attributes** displays the current status of the MAT Certificate received from Command Center.

Title	Value
NetWork ID	220
Token Sequence Number	1409052812
Lan Address Block	FE FB FF D0
Token Expiration Time Stamp	12-29-2010 06:38:02
Keep-Alive	900
User Priority	0
Signature Expiration Time Stamp	03-08-2011 17:18:02
<b>MAT Certificate is valid for 34 Days 17 Hours 10 Minutes and 15 Seconds</b>	
<input type="button" value="Close"/>	

**Figure 3 - 5. Token Attributes**

- **NetWork ID.** The Network ID is the utility's unique Network Identifier. (For endpoints with v6.x firmware, this parameter cannot be changed in ETM)
- **Token Sequence Number.** The Certificate Sequence number uniquely identifies the certificate issued for the MAT session.
- **Lan Address Block.** The LAN Address Block displays the set of LAN Addresses that the MAT has been provided to use to communicate with endpoints. LAN Address block consists of 16 addresses, and are provided each time a certificate is requested from Command Center.
- **Token Expiration Time Stamp.** Indicates the date and time that the MAT certificate will expire. The default value is 1440 minutes (one day) and is established in Command Center Organization Information settings.

- **Keep Alive.** This value specifies the amount of time that a session between a MAT and an endpoint can be inactive before the endpoint closes the session. The default value is 15 minutes.
- **User Priority.** The user priority field allows a user of a higher or equal priority to preempt an existing MAT Certificate. Users with a lower priority cannot gain access if a higher priority is engaged with the endpoint device. This also provides a method for the system to lockout a rogue user if a problem is detected on the endpoint.
- **Signature Expiration Time Stamp.** This indicates the signature expiration for the MAT Certificate. It is set to three times the MAT Certificate expiration interval by default. This allows the MAT user to attempt to access an endpoint using the certificate and get a response back from the MAT rather than no response for a reasonable period of time before the certificate expires. A signed certificate is only required when endpoints are in ECC mode.

## Request MAT Certificate

In the event that a MAT Certificate is reaching its expiration time, a new MAT Certificate may be requested from Command Center by selecting the MAT Certificate option from the Security sub-menu.

From the Menu options, select **Security > Request MAT Certificate**. The Log-in window will open.

**Figure 3 - 6. ETM Login screen**

- **User Name:** Enter utility-provided user name.
- **Password:** Enter utility-provided password.
- **Server Name:** The Server name field will display the server to which ETM will connect by default.
- Click **OK**. If the user is successfully authenticated by Command Center, and the user has the proper privileges (Access and Certificate Authorization), Command Center will issue a MAT Certificate consistent with the level of security that the utility is using.



**NOTE:** If a user's session is nearing expiration, the user may also log out of ETM and log back in to get a new Certificate. If the ETM either has no Certificate, or the current MAT Certificate expiration is less than 50% of the original time interval, the MAT requests a new MAT Certificate.

## ETM Sign In

The ETM user and the ETM tool must 1) be known to and 2) authenticated by Command Center. The user must have been provided privileges and user credentials in order to access the ETM software. If the user has not been provided with credentials, the user must contact the utility-designated Security Administrator.

The process of authenticating with Command Center provides the user with a **Mobile Admin Tool (MAT) Certificate**. The MAT Certificate confirms and certifies ETM's identity to the endpoints.



**CAUTION: ETM login has two modes: one with and one without server access (off-line). In off-line environments, ETM users must go on-line and successfully authenticate themselves to Command Center once every seven days.**

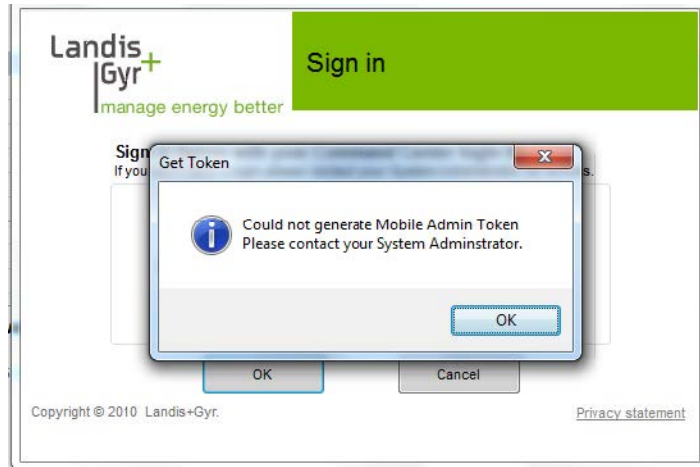
Below is the procedure for logging into ETM:

Launch ETM. The **Login to ETM** screen will open.

**Figure 3 - 7. Endpoint Test Manager - Sign In**

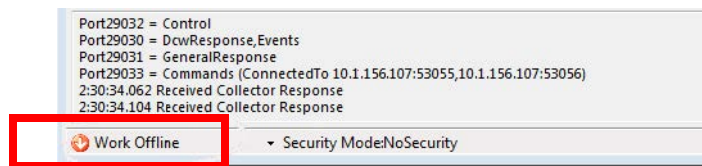
- **User Name:** Enter utility provided your User Name.
- **Password:** Enter utility provided password
- **Server Name:** The Server name field will display the server to which ETM will connect by default. If needed, click the Select a new server link to connect to a different server, as described above.
- Click **OK**. If the user is properly authenticated by Command Center and the user has the proper privileges (Access and Certificate Authorization), Command Center will issue a MAT Certificate consistent with the level of security the utility is using.

If the user name and/or password is not authenticated, a warning dialog box will appear. The user may attempt to log in a total of five times with incorrect credentials before being locked out of the system. The Security Administrator will need to clear the locked out status via Command Center.



**Figure 3 - 8. Login Validation**

Even though the user may have certificate privileges, this message indicates that certificate server is not properly set up. (Possible reasons include: the server might be down or the signing utility might not be set up). If the user clicks **OK**, ETM will launch and they will be able to communicate to meters that are not in ECC mode.



**Figure 3 - 9. Login Validation**

The authentication process provides the user with the required MAT Certificate. The length of time that the MAT certificate is valid is configured by the utility in the Organization Information settings, with the default being 1440 minutes.



**CAUTION:** If a MAT Certificate is nearing expiration, the user may log out of ETM and log back in to get a new Certificate. If the ETM instance either has no Certificate, or the current MAT Certificate expiration is less than 50% of the original time interval, the MAT requests a new MAT Certificate.

## Using the Bar-code Scanner

Please read the following information before using the barcode scanner to scan meter information.

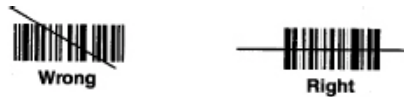


**WARNING:** The bar-code scanner contains a laser light. Do not stare directly into the beam.



**NOTE:** Ensure that the bar-code scanner beam covers the length of the bar-code.

The figure below illustrates the proper method for scanning a bar-code.



**Figure 3 - 10. Using the Bar-code Scanner**

## Navigating the Software

ETM is an easy-to-use software application that allows you to perform specific configuration, verification, and testing procedures. The application is comprised of an upper menu bar, the tabs listed below, and a Security Status line at the bottom of the display that describes the server connection and displays the connected endpoint's security status.

- Connection
- Head End Radio
- Device Test
- Firmware Download
- Module
- Reporting
- Command Scheduler
- HAN (ONLY appears when a compatible endpoint is connected)
- Universal Event Log
- Service Limiting (ONLY appears when a compatible endpoint is connected)
- Groups
- RF Gas/Water (ONLY appears when the appropriate key is added to the Settings.XML file)
- Collector (ONLY appears when ETM is connected to a Collector)

Use the upper menu bar for exiting ETM, **File > Exit**, or to display or request Security details (as specified in the following section).

**Table 3-1. Upper Menu Bar Security Details**

Field	Description
MAT Certificate Attributes	Displays details about the Mobile Admin Tool certificate received from Command Center.
Request MAT Certificate	Sends a request to Command Center for a Mobile Admin Tool Certificate. Login permissions will vary access to this feature.

ETM can also be configured to display an Activity Log at the bottom of each screen that allows the user to view communication activities between the tool and the endpoint.

## Configuring a New Gridstream IWR Radio

These parameters can be set via the **Head End Radio** tab. To configure a new Gridstream IWR radio:

1. Connect the IWR to the PC

2. Select the **Head End Radio** tab
3. Click the **Modify** button
4. Change the radio's Network ID to match the utility-specified Network ID (*for endpoints with firmware version v6.x and higher, this parameter is managed by Command Center and cannot be changed by ETM*)
5. Disable the router bit
6. Disable the timekeeper bit
7. Enable the head-end bit
8. Enable the operational bit
9. Set the baud rate to 38400
10. Enter the Latitude and Longitude in the **LPP Address** field
11. Click **Apply** to save changes.




---

NOTE: If only the CRC and baud rate are to be changed, a new Gridstream IWR can be configured using ETM's Head-end management. Command Center is used to manage the CRC for endpoints with firmware v6.x and higher.

---

## Meter Shop Best Practices Use Case - Proper IWR Configuration

This procedure describes proper configuration for IWR radios being used by any technician where the radio is on a production network.

Do not:

- Set up your IWR as a router. This will only slow down process actions as the IWR will be busy routing packets unnecessarily. On a production network this will interfere with the local mesh when the radio is turned off.
- Set up your IWR as a head-end. This will cause significant problems with the production mesh network.
- Set up your IWR set as a timekeeper. This is will pass the time of your computer to other network devices.

Using RadioShop, confirm the following settings.




---

NOTE: For information on RadioShop see RadioShop® Getting Started Guide, Landis+Gyr publication 98-1054.

---

- Control Byte 1 - 69 is correct for a mobile IWR. The best way to change Control byte 1 is by setting WAN address under configure. As you change from a Mobile IWR to Fixed IWR CB1 changes from 69 > 49.
- Control byte 2 should be HEX 48.
- Control byte 3 should be HEX 50.




---

**CAUTION: Control byte 3 is important. It prevents your radio from advertising a path to the Collector and from trying to register with Command Center every time it is powered on or reset.**

---

- Control byte 4 should be HEX 69.
- Control Byte 4 with RF Filter enabled and wide mode enabled should be HEX 29.
- Control Byte 4 with RF Filter disabled and wide mode enabled should be HEX 28.
- Max LAN Nodes could be set to 28 or 86 depending on your environment. If you are on a deployed Normal meter network, 28 would be the best setting. If you are working in a LARGE meter shop environment handling meter returns, sample testing, and First Article Testing Max LAN Nodes value 56 (hex 86) would be best.



NOTE: Series IV radios appear in Command Center by default.

## Authentication Server Connection

If the current instance of ETM is not connected to the Authentication Server, ETM will display **Work Offline** in the status bar.

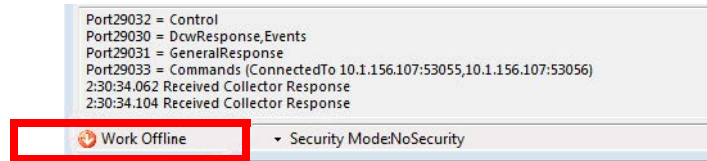


Figure 3 - 11. Login Validation

## Connecting to a Collector

On the **Connection** tab, click the **Collector Settings** button to add a Collector. The **Collector List** dialog box will appear.

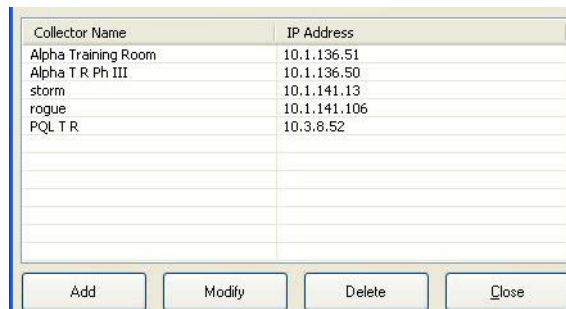


Figure 3 - 12. Collector List Dialog

1. When adding a Collector to the Collector List, click the **Add** button. The **Collector** dialog will appear.

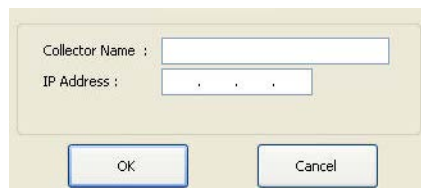


Figure 3 - 13. Collector Dialog

2. Type a unique name into the **Collector Name** field.

3. Type the Collector IP address into the IP Address field with the numbers between the periods.
4. Click the **OK** button to add the Collector.

The added Collector will appear in the **Host:** drop down box, located on the Connection tab.

5. To connect to the Collector, click **Use Collector** from the drop-down box.
6. In the **Host:** drop down box, highlight the name of the Collector you would like to connect to.
7. Click **Connect**.

When the connection is successful, the **Collector** tab will appear in the tab group, ETM will navigate to the **Device Test** tab, and your radio will be set to field mode.

Use the **Disconnect** button on the **Connection** tab to break communications with the Collector and return to standard head-end radio communications using the COM port.

## Connection Tab

The **Connection** tab allows the user to view and change the connection information for the radio or Collector connected to the meter being tested. The table below describes the fields on the **Connection** tab.

**Table 3-2. Connection Tab**

Field	Description
Connection Settings	
<connected to a radio> <Connect/Disconnect> - Use COM1 - at <baud rate> drop-down arrow	This button allows the user to Connect or Disconnect, contains a drop down menu that allow the user to choose a COM port or Collector to interface with your radio, and contains another drop down menu ( <a href="#">Figure 3 - 14.</a> ) to select connection speed for the COM port. The available baud rates are: 9,600 19,200 38,400 (default) 115,200 (for Series IV IWRs) RadioShop can identify the COM port and baud rate of the radio you are using.
<connected to a Collector> <Connect/Disconnect> - Use Collector drop-down arrow - choose Host drop-down arrow	This button provides for Connect or Disconnect, selecting the Collector to connect with, and uses a drop-down menu to list collectors available to host the connected module. When ETM is connected to a Collector, a tab labeled "Collector" appears.
Host	Allows testing meters in the field by displaying available collectors in the drop down box.
Collector Settings <button>	Allows the user to point Endpoint Testing Manager to a specific Collector using the IP address for the desired Collector.
Application Settings	
Display Scrolling Status check-box	Allows the user to choose the amount of detail displayed in the Activity Log at the bottom of each screen.
Enable Test Reports check-box	Determines whether test results are saved to the Test Reports file on your PC.



Table 3-2. Connection Tab (Continued)

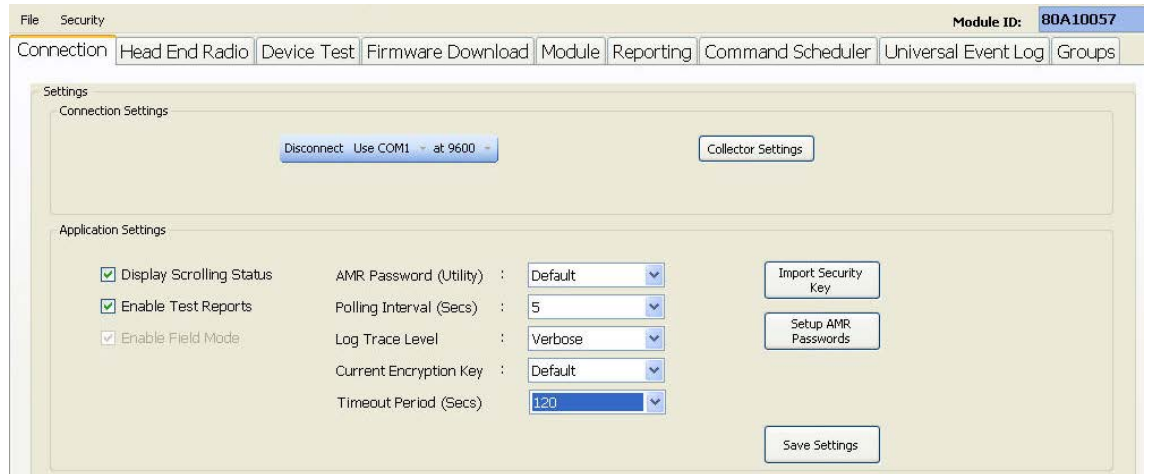
Field	Description
Enable Field Mode check-box	<b>Checking</b> this box will allow the user to change the mode of the meter being tested. <b>Unchecking</b> this box allows the user to ensure that meters are not accidentally put into field mode during a meter test and will hide the buttons on the Device Test tab.
AMR Password (Utility) drop down box	This drop down box determines which AMR password is set when the test is run and the DCW is sent to the meter. Clicking the Setup AMR Passwords button allows the user to manage the AMR passwords that are available in this drop down box.
Polling Interval (Secs) drop down box	Determines how often ETM polls the meter for data. Available intervals are: 5 seconds (default) 10 seconds 15 seconds 20 seconds 25 seconds 30 seconds This parameter is also used (and multiplied according to command choice) for meter response time-out settings, except for WECO actions.
Log Trace Level drop down box	Enables the user to specify the level of information that is logged. The choices are: Off: no logging Error: only logs critical exceptions Warning: logs all exceptions Info: logs all messages on a high level Verbose: logs all activity (default)
Current Encryption Key drop down box	Lists available Encryption Key choices.
Timeout Period (Sec) drop down box	Configures the timeout setting parameter for the WECO library.
Import Security Key <button>	Allows the user to import an encryption security key from RadioShop and tell ETM what encryption key is used to encrypt/decrypt the meters tested.
Setup AMR Passwords <button>	If the meter tested supports AMR passwords, the utility can use this feature to give the Gridstream module the same AMR password as the meter so the two can communicate.
Save Settings <button>	This button activates saving connection settings so that next time ETM is launched, the saved settings are restored.
Activity Log	
Insert Comment <button>	Allows a user to insert comments into the Activity Log. These comments will also post to the Log file.

## Baud Rate Selection

The **Baud Rate** drop-down menu sets connection communications speed.



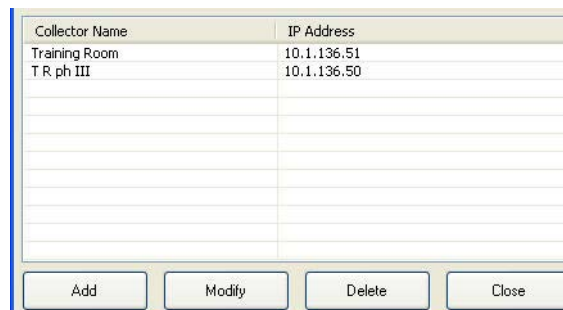
**Figure 3 - 14. Connection Baud Rate Option Select Drop-down Menu**



**Figure 3 - 15. Connection Tab Connected to a Radio**

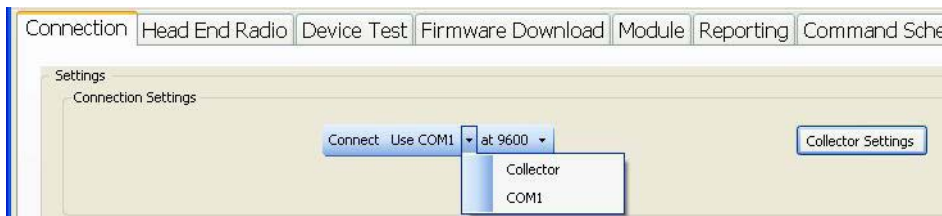
## Connecting to an Endpoint

The user can connect to an endpoint either through the computer’s COM port or through a Collector. The Collector Settings button is separate from the endpoint selection process, and enables operator entry of Collector endpoint connection parameters by using the dialog buttons to fill in or edit table information.



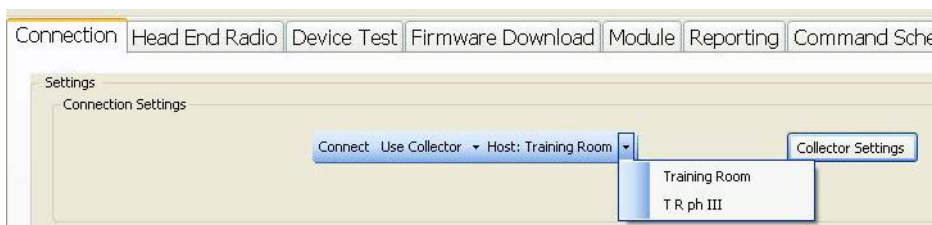
**Figure 3 - 16. Connection Tab Collector Settings dialog**

When connecting to any endpoint, the user clicks the Use... drop-down and selects either Collector or the computer’s COM port.



**Figure 3 - 17. Connection Selection drop-down**

After Collector has been selected, the endpoint drop-down populates with the previous connected endpoint’s identifier. To select a different Collector, click the drop-down arrow.



**Figure 3 - 18. Choosing a Collector**

## Head End Radio Tab

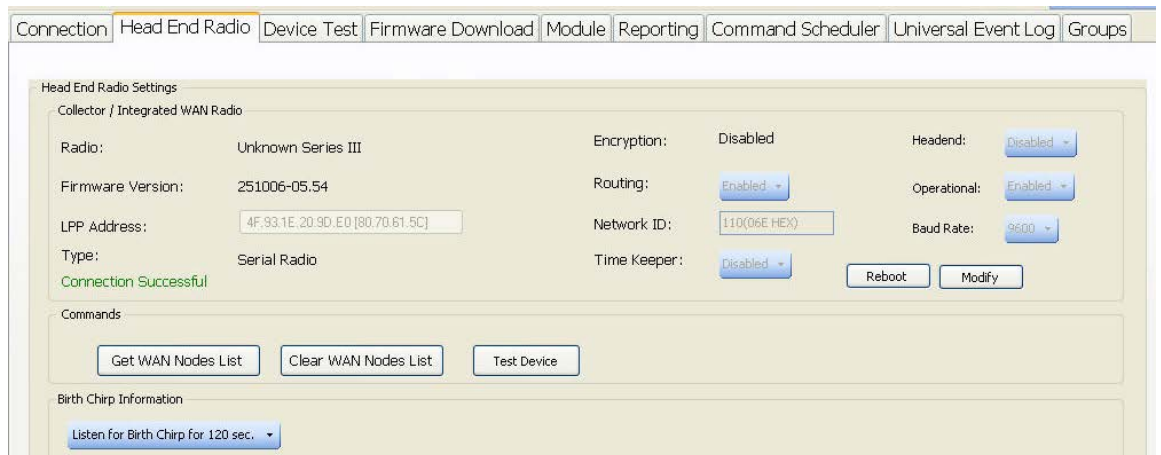
The **Head End Radio** tab displays information about the head end radio currently in use. The Head End Radio tab can also be used to configure Head End radio settings..

**Table 3-3. Head End Radio Tab**

Field	Description
<b>Collector / Integrated WAN Radio</b>	
Radio:	Displays radio type.
Encryption:	Displays whether encryption is enabled or disabled.
Head-end	Can be Enabled or Disabled.
Firmware Version:	Firmware version for the head-end radio being tested.
Routing:	Displays whether routing is enabled or disabled.
Operational:	Displays Operational Bit status as enabled or disabled.
LPP Address:	WAN and LAN address for the radio used in the test. After <b>Modify</b> is clicked, clicking in this field opens the <b>Configure WAN Address</b> dialog (Figure 3 - 20) and permits the user to specify radio WAN Address parameters. If the radio is a mobile unit, <b>Routing, Time Keeper, and Collector Bit values</b> cannot be changed.
Network ID:	Network ID for the radio being tested.
Baud Rate:	Displays the baud rate of the communications channel.
Type:	Displays whether Endpoint Testing Manager is connected to a Serial Radio or a Collector.
Time Keeper:	Enables or disables setting the radio as the timekeeper for the network

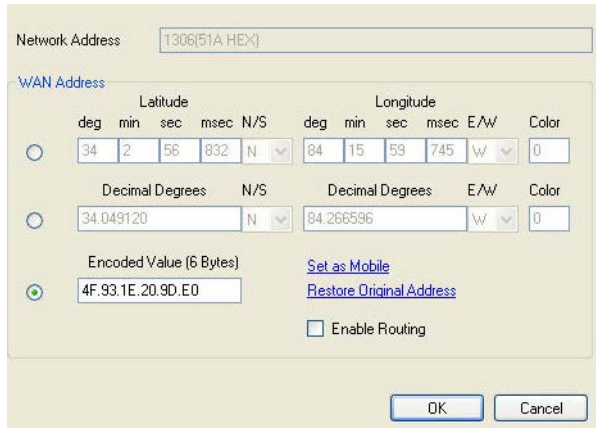
**Table 3-3. Head End Radio Tab (Continued)**

Field	Description
Reboot <button>	Clicking this button restarts the radio's main board.
Modify <button>	According to radio type, clicking this button allows the user to edit radio parameters.
<Connection Status>	Displays the connection status. The different statuses are: Connection Successful Not Supported Meter Device Failed Connection
<b>Commands</b>	
Get WAN Nodes List <button>	Queries the radio for a list of neighbors and displays these statistics in a dialog box.
Clear WAN Nodes List <button>	Deletes all entries from the current WAN Nodes List so that the radio can refresh the roster of neighbor radios.
Test Device <button>	Allows users to test the head-end radio (whether it's a serial head-end or Collector head-end radio), after connecting to the head-end using the Connection tab. This button will test the link to the connected head-end. After the connection is confirmed, the user can perform other tasks with it i.e. FW/DCW downloads.
<b>Birth Chirp Information (only available if head-end radio is in field mode)</b>	
Listen for Birth Chirp for <secs> <button>	Allows you to power up a meter and test to see if your head end radio can communicate with the meter. If so, the Network ID and mode will be displayed to ensure accurate testing. Use this button to discover a meter's CRC and operational mode.
<b>Activity Log</b>	
Insert Comment <button>	Allows a user to insert comments into the Activity Log. These time-stamped comments will also list in the Log file.
<b>Status Bar</b>	
Connected to...	Identifies Authentication Server connection and Security Mode.
MAT Certificate Countdown	Displays a time-remaining countdown for the current MAT Certificate.



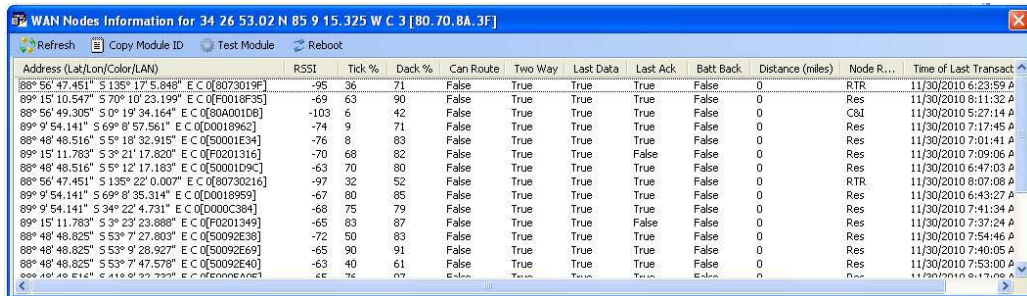
**Figure 3 - 19. Head End Radio Tab**

Clicking the **Modify** button activates access to many configuration settings and options on this tab. Entering changes and clicking **Apply** will provision the radio's configuration settings with the entered changes. The radio may also be **Rebooted** after the **Modify** button has been clicked. Clicking the **Cancel** button closes access to these settings without making any changes.



**Figure 3 - 20. Configure WAN Address Dialog**

Clicking the Get WAN Nodes List button opens a window that lists neighboring endpoints and various parameters of those endpoints.



**Figure 3 - 21. Get WAN Nodes List**

Right-clicking on any radio listed in the WAN Nodes Information table offers the choice of Copy Module ID To Clipboard (for continuing multiple reference), Test This Module (for immediate Device Test launch of that specific radio), or Reboot.

## Device Test Tab

The **Device Test** tab provides options for running a test on a meter. The table below describes the fields located in the Device Test tab. Note that many of these fields are not populated until after a test on a meter has successfully concluded.

**Table 3-4. Device Test tab**

Field	Description
Identifiers	
Scan Module ID	Scan or manually enter the module ID of the meter that is to be tested.
Scan Serial Number	Scan or manually enter the serial number of the meter to be tested.

Table 3-4. Device Test tab(Continued)


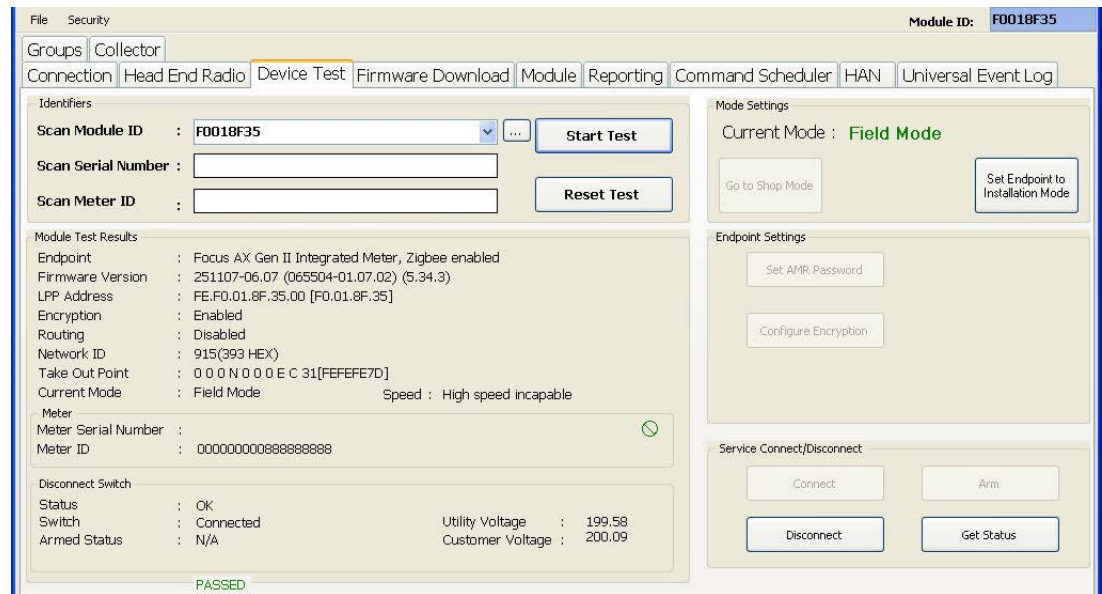
Field	Description
Scan Meter ID	Scan or manually enter the meter ID of the meter to be tested.
“Find device” <> 	Opens the <b>Find device</b> dialog for entering the Network Address and used to locate a device that is a neighbor of the head-end. This function looks at the neighboring devices of the head-end radio to see if there is one device that has the same WAN address. If found, the function pulls the module ID of that device and displays it in the <b>Scan Module ID</b> box.
Start Test <button>	Click this button to begin a meter test.
Reset Test <button>	Clicking this button resets the input fields.
Module Test Results <i>(these fields will only be populated after the tested endpoint has passed the test and communicated parameters to ETM)</i>	
Endpoint	Type of meter that is currently under test.
Firmware Version	Module, HAN, and meter firmware versions for the endpoint that has been successfully tested.
LPP Address	The WAN and LAN address for the module of the meter tested.
Encryption	Displays module encryption status as either enabled or disabled.
Routing	Displays whether module routing is enabled or disabled.
Network ID	Network ID for the connected module in both decimal and hexadecimal formats.
Take Out Point	Address for the Take Out Point associated with the tested module.
Mode Settings <Current Mode>	Displays the current mode of the module. Will be displayed as either <b>Shop, Field, or Installation</b> . <b>Shop Mode</b> is a special test mode, used while in manufacturing and diagnostic troubleshooting, that is turned off at the end of the manufacturing line. <i>(not available for Concentrators)</i> <b>Field Mode</b> is for working with installed modules, and sets the module to listen on the Network ID displayed on the Head End radio tab. <b>Installation Mode</b> is a temporary state that initiates the first network synchronization, and the auto registration process.
Meter	
Meter Serial Number	Serial number for the meter tested.
Meter ID	Meter ID for the meter tested.
Disconnect Switch <i>(only visible when the tested meter has an integrated switch)</i>	
Status	Displays the status of the disconnect switch.
Switch	Displays the switch state: either Connected or Disconnected.
Armed Status	Displays the armed state. May also display N/A, according to meter and firmware version.
Utility Voltage	Voltage that the utility is providing to the meter.
Customer Voltage	If service is connected, will be the same as the Utility Voltage. If disconnected, will be near zero.

Table 3-4. Device Test tab(Continued)

Field	Description
Mode Settings	
Current Mode	Current mode of the IWR connected to the meter under test. The user may change the mode as needed. <i>(If you are connected through a Collector, your IWR is always in Field Mode.)</i>
Go to <Mode> <button>	Sets the radio to Shop Mode or Field Mode
Set Endpoint to <Mode> <buttons>	Sets the endpoint to either <b>Shop Mode, Field Mode, or Installation Mode</b> (if Firmware version is 421 or above), depending on the current state. <i>With v6.x firmware, Set to Installation is the only enabled mode. Setting an endpoint to Shop mode is only enabled by a key provided by Landis+Gyr.</i>
Endpoint Settings	
Set AMR Password <button>	This button allows you to set the AMR password for endpoints being tested.
Configure Encryption <button>	This button opens a dialog used to enable or disable encryption on the meter tested.
Disable Routing <button>	This button disables routing through the meter being tested.
Service Connect/Disconnect <i>(only visible when the tested meter has an integrated switch)</i>	
Connect <button>	Closes the switch (energizes).
Arm <button>	Prepares the switch to be closed.
Disconnect <button>	Opens the switch (deenergizes).
Get Status <button>	Populates the Disconnect Switch section.
Activity Log	
Insert Comment <button>	Allows a user to insert comments into the Activity Log. These time-stamped comments will also appear in the Log file.

**Table 3-5. “Find Device” Dialog Parameter Details**

Field	Description
Network Address	The ID number, in decimal and hex formats, of the network that the radio under test is currently connected to.
WAN Address	
Latitude	The latitude of the radio, expressed in: deg – Degrees min – Minutes sec – Seconds msec – Milliseconds N/S – North or South
Longitude	The longitude of the radio, expressed in: deg – Degrees min – Minutes sec – Seconds msec – Milliseconds N/S – North or South
Color	The parameter that differentiates multiple radios installed at one location (that is, sharing one WAN address).
Decimal Degrees	The WAN address of the radio, expressed in decimal degrees.
Encoded Value (six bytes)	The same WAN address as that specified by the Latitude, Longitude, and Color values.



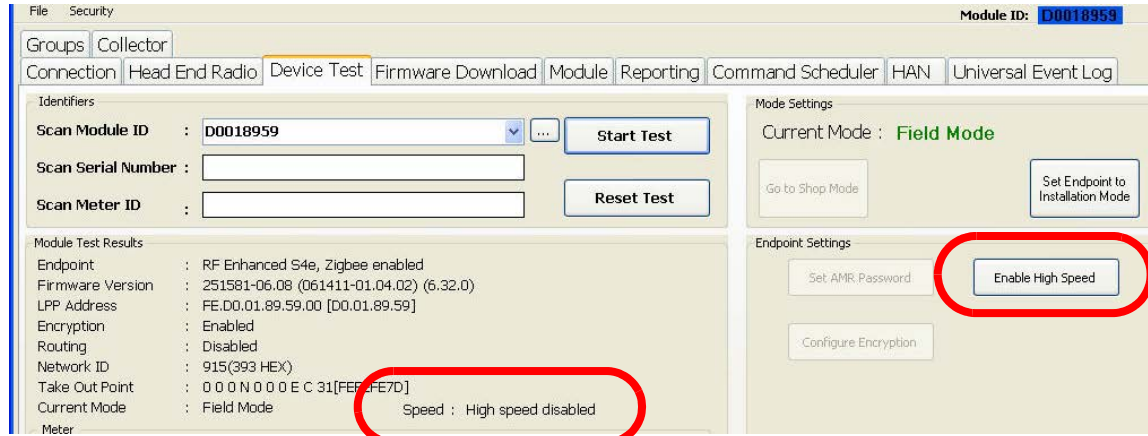
**Figure 3 - 22. Device Test Tab with Endpoint and Service Settings active**

## High Speed (115200 bps) Enable

**High Speed** operation (also referred to as **Wide Channel Mode**) refers to configuring communications for 115200 bits-per-second data transmission.



For high speed-capable endpoints an indication will appear on ETM's Device Test tab when the endpoint is connected, as seen in the following figure. Endpoints that do not support high speed functionality will display **High speed incapable** in the Speed: call out. The user has the option to enable high speed operation in a compatible endpoint by clicking the Enable High Speed button in the Endpoint Settings section of the Device Test tab.



**Figure 3 - 23. High Speed Status**

After High Speed is enabled, the Speed: call out will display **High speed enabled** and the Enable High Speed button label will change to “Disable High Speed.” Clicking the Disable High Speed button will reset the endpoint to function in standard (“Narrow Channel”) mode.



**NOTE:** If an endpoint is put into high speed (or “wide channel”) mode, then any other radios that are running firmware earlier than v5.56 will not be able to communicate with the high speed endpoint directly. Endpoints that function in standard (“narrow channel”) mode can only communicate with radios operating in high speed mode as long as the standard mode radios are running firmware v5.56 or higher.

## Multiple Meter Test Mode

Once enabled, the Multiple Meter Test Mode supports a single ETM instance testing a large number of meters in one session.

### Enabling Multiple Meter Test Mode

To enable Multiple Meter Test Mode, you must use Windows Notepad (or your preferred text editor) to add a special key (provided by your Landis+Gyr Program Advisor) to the Settings.XML file located at:

- C:\ProgramData\Landis+Gyr\Gridstream\Tool Settings\Settings.XML on Vista or Win7 systems.
- C:\Documents and Settings\All Users\Application Data\Landis+Gyr\Gridstream\Tool Settings\Settings.XML on WinXP systems.



**NOTE:** The Landis+Gyr program advisor can provide the key required to activate the Multiple Meter Test Mode feature.

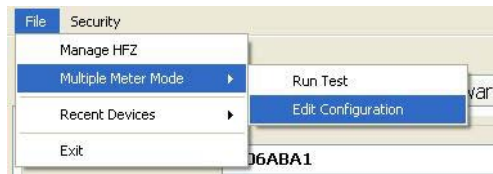
```

<boolean>false</boolean>
<boolean>false</boolean>
<boolean>false</boolean>
<boolean>false</boolean>
<boolean>false</boolean>
<boolean>false</boolean>
<boolean>false</boolean>
</ManufacturingTables>
<EnableFieldUsage>false</EnableFieldUsage>
<PasswordIndex>Default</PasswordIndex>
<TimeoutInSecs>120</TimeoutInSecs>
<LocalRadioTimeoutInSecs>30</LocalRadioTimeoutInSecs>
<UseBirthChirp>Y</UseBirthChirp>
<AMRTimeout>120</AMRTimeout>
<ExportFilePath>C:\Cellnet\2-Way Testing Manager\Export Files</ExportFilePath>
<UseSingleChannel>true</UseSingleChannel>
<DCWPath>.\PrivateDCWs</DCWPath>
<TraceLevelSetting>Error</TraceLevelSetting>
<KeyFilename>.\MasterEncryptionKey.xml</KeyFilename>
<Password>XXXXXXXX</Password>
<UseDefaultMobileDeviceAddress>false</UseDefaultMobileDeviceAddress>
<BirthChirpSleepSecs>45</BirthChirpSleepSecs>
<IsTOP>false</IsTOP>
<LogFileSizeLimit>1000</LogFileSizeLimit>
<KeyName>Default</KeyName>
<UseComputedSingleChannel>true</UseComputedSingleChannel>
<UseStaticSingleChannel>true</UseStaticSingleChannel>
<DemandResetKey>XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX</DemandResetKey>
<MultipleMeterTestModeKey>XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX</MultipleMeterTestModeKey>
<BEPKey>XXXX</BEPKey>
</Settings>

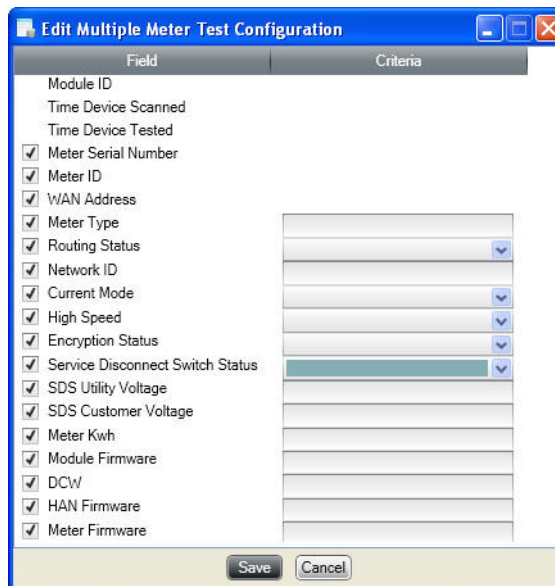
```

**Figure 3 - 24. Settings.XML File Detail**

## Editing Multiple Meter Test Configuration



**Figure 3 - 25. Accessing Multiple Meter Test Configuration**



**Figure 3 - 26. Edit Multiple Meter Test Configuration Dialog**

The **Edit Multiple Meter Mode Test Configuration** dialog allows users to select the fields that will appear on the **Multiple Device Test Results** screen. The Edit Multiple Meter Mode Test Configuration dialog also supports data filtering by allowing users to specify values to test against for a selected field.

For example, if the user wants testing to confirm that the module firmware version is 07.06, this parameter can be specified in the **Module Firmware** field of the Edit Multiple Meter Mode Test Configuration dialog. When the test is run, ETM will read the module firmware version from the meter and compare it with the user-specified value. If these values do not match, an error will display.

Clicking **File | Multiple Meter Mode | Run Test** will open the **Multiple Device Test Results** screen. Meters to be tested are entered using the **Add** button at the lower left of that screen.

Module ID	Test Status	Time Device Scanned	Time Device Tested	Meter Serial Number	Meter ID	Module Firmware	Meter Firmware	DCW	Meter Type	Encryption Status	Routing Status
80702433	Fail	10/5/2011 1:04:56 PM	10/5/2011 1:05:23 PM								
D000C37E	Pass	10/5/2011 1:05:11 PM	10/5/2011 1:06:15 PM	106315671	106315671000000000	5.58	6.32.0	5.8	RF Enhanced S4e	Disabled	Disabled
50092E34	Testing	10/5/2011 1:11:06 PM									
F0201757	New	10/5/2011 1:11:25 PM									
F0201766	New	10/5/2011 1:11:31 PM									
5006ABA1	New	10/5/2011 1:11:41 PM									
D000C380	New	10/5/2011 1:11:48 PM									

**Figure 3 - 27. Multiple Device Test Results Screen**

When the Multiple Device Test screen opens, ETM waits for a device ID to be entered so that it can begin testing. Testing can be halted by clicking the Stop button. After a Module ID is added, testing begins on the first device in the list, continuing through the entire list.

Devices that pass testing will populate the columns with data selected on the Edit Multiple Meter Test Configuration dialog. Modules that fail testing will display Fail in a red-highlighted cell in the Test Status column. If the user hovers their cursor over the Fail indication, the reason for the failure will appear.

The user can Retry testing on the selected module by clicking that button. Pressing the Ctrl+A keys selects all modules in the list.

When testing is not active, the user can use the buttons at lower right to Clear WAN Nodes in the test, and Close the Multiple Device Test screen.

After testing concludes, a log file is created and placed under the Multiple Meter Testing folder in the ETM installation directory.

## Firmware Download Tab

The **Firmware Download** tab allows you to view the current firmware on the module and download a new firmware.

For Modular Focus AX meters running 5.13 module firmware and above, ETM now supports metrology firmware download over the air. This action functions in a manner similar to Module/HAN firmware download.

For Integrated Focus AX meters, only the **Module Firmware** option appears. The metrology firmware upgrade occurs automatically within the build.

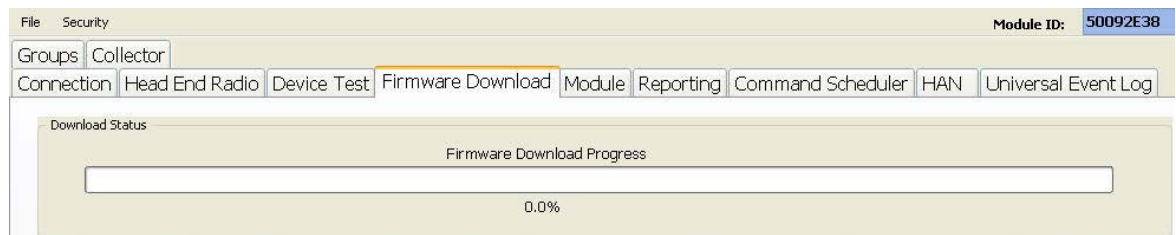
The table below describes the fields on the Firmware Download tab.

**Table 3-6. Firmware Download Tab**

Field	Description
Download Status	
Firmware Download Progress	Displays the percentage status of a firmware download after the Start Download button is clicked.
Module: Version <Firmware Version Number>	
Upgrade To: Drop Down Box	Displays the module firmware upgrade versions that are available to and supported by the endpoint tested. The current firmware version is displayed in the title of the field. For example, Module: Version 251581-06.08
Download Delay Rate (In Secs) Drop Down Box	Specifies the delay (in seconds) between sending firmware packets. For large files, you can break up the firmware information that is sent between the radio and the module and ensure that network bandwidth is not overwhelmed.
Start Download <button>	Clicking this button will begin downloading the firmware version specified in the Upgrade To: drop down box to the module.
Meter: Version <Firmware Version Number>	
Upgrade To: Drop Down Box	Displays the meter upgrade firmware versions that are supported by the endpoint tested, and a list of the minimum and maximum meter firmware versions that the connected meter must be running in order to download the metrology firmware. The current firmware version is displayed in the title of the field. For example, Meter: Version 5.34.3
Download Delay Rate (In Secs) Drop Down Box	Specifies the delay (in seconds) between sending firmware packets as described in Module <F/W Version #> above.
Start Download <button>	Clicking this button will begin downloading the firmware version specified in the Upgrade To: drop down box.
Activity Log	
Insert Comment <button>	Allows a user to insert comments into the Activity Log. These time-stamped comments will also post to the Log file.



**NOTE:** Field visibility on the Firmware Download tab will vary according to current module firmware version. There may be limits on firmware administration access with endpoints running module firmware previous to v6.x.



**Figure 3 - 28. Firmware Download Tab Connected to an Endpoint with v6.x Firmware**

## Battery End Point Firmware Download

No meter specifics will be displayed on this tab when ETM is connected to a battery end point. Module version will be displayed, and firmware unique to the connected (battery end point) module will be found on the drop-down menu.

Select the firmware for download by highlighting and click the Start Download button to launch the event.

## Module Tab



NOTE: Due to the differences in meter setup with integrated Focus AX meters, only the **Module Firmware** option appears on the **Module** tab when ETM connects to an integrated Focus AX meter. Metrology firmware upgrades occur automatically within the build; other fields on this screen are not necessary for endpoint configuration.

The **Module** tab is comprised of the DCW Information, Timing, Current Time, Set Time, and Command fields. The fields on this tab are only enabled if a meter has been run with a status of Passed.

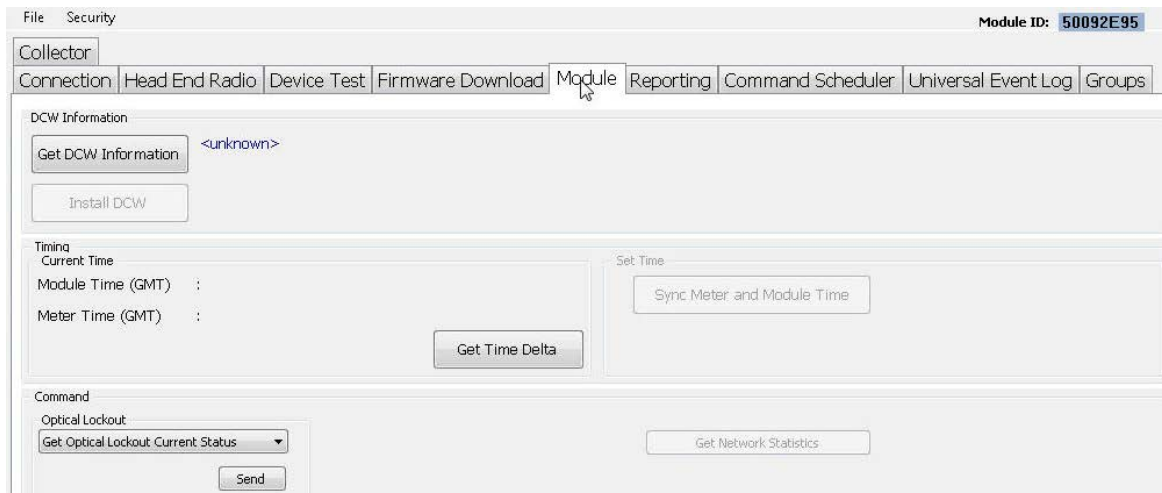
The table below describes the fields on the Module tab.

**Table 3-7. Module Tab**

Field	Description
DCW Information	
Get DCW Information <button>	Provides the most current DCW information of the endpoint tested.
Install DCW <button>	Allows you to load a DCW on the endpoint tested. The DCW available for download will be limited to the latest specified DCW for the firmware version on the meter.
Timing	
Module Time (GMT)	Displays the current module time.
Meter Time (GMT)	Displays the current meter time.
Get Time Delta <button>	Generates a report that displays the difference between the module time and the meter time. Closing the report enables the Sync Meter and Module button
Set Time	
Sync Meter and Module Time <button>	On connected meters with applicable firmware, this button is enabled after the Get Time Delta button is clicked and the resulting report is closed. Once enabled, clicking this button synchronizes meter time with module time. After Meter and Module Time are synchronized, "Time Sync Completed" will display in the Set Time box.
Command	

**Table 3-7. Module Tab (Continued)**

Field	Description
Optical Lockout	When connected to compatible meters with applicable firmware, allows the user/tester to configure the meter's Optical Lockout parameter. This setting includes options to: Get current status Lock the port indefinitely Unlock the port for <user-specified> minutes Unlock the port indefinitely There is also a button to Send the command to the connected meter. When the time parameter command is used, a data entry field appears for entering the Minutes parameter.
Activity Log	
Insert Comment <button>	Allows a user to insert comments into the Activity Log. These time-stamped comments will also post to the Log file.

**Figure 3 - 29. Module Tab**

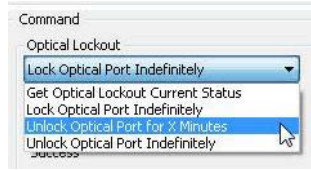
## Optical Lockout

For compatible endpoints (FOCUS AX with metrology version 5.36 or higher, etc.), a section that appears on ETM's Module tab is active, as seen in the previous figure. (Endpoints that do not support this feature will display this function, but it will be "grayed out" to represent connection to an incompatible endpoint).

This setting includes options to:

- Get current status
- Lock the port indefinitely
- Unlock the port for <user-specified> minutes
- Unlock the port indefinitely

After a choice has been selected from the drop-down menu, the Send button executes the command. An illustration for the available Optical Lockout functions appears below.



**Figure 3 - 30. Optical Lockout Drop-down Menu**

For the “**X Minutes**” selection, a data entry field appears for the user to enter the desired value, after which pressing the Send button, as with the other options, executes the command.

## Reporting Tab

The **Reporting** tab is comprised of the Meter Information, ANSI Tables and Reports fields. The fields on this tab are only enabled if a meter test has been run and has a status of Passed.

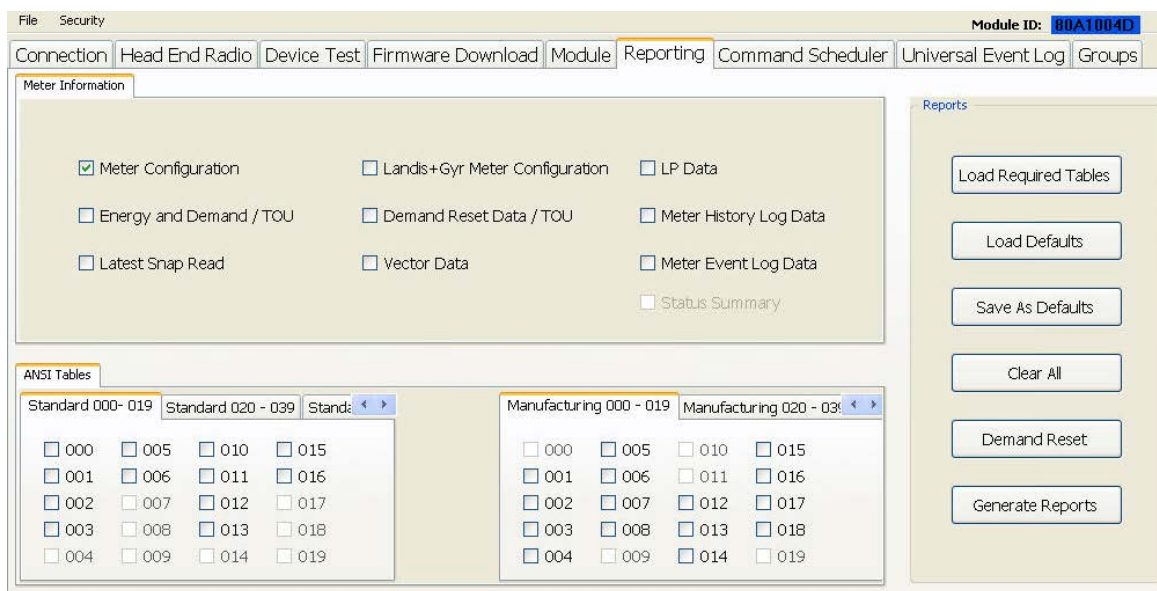
The table below describes the fields on the Reporting tab.

**Table 3-8. Reporting Tab**

Field	Description
Meter Information	
Meter Configuration Check-box	Loads tables to display meter specific configuration parameters (e.g. load profile, interval length, channel selection).
“Landis+Gyr Meter Configuration” Check-box	Loads information about proprietary configuration parameters (time sync configuration, etc.).
LP Data Check-box	Loads tables that display the last two blocks of load profile data (interval data).
Energy and Demand / TOU Check-box	Loads Time-Of-Use tables for meter register data.
Demand Reset Data / TOU Check-box	Loads Time-Of-Use tables for meter demand data.
Meter History Log Data Check-box	Loads tables that displays the meter history.
Latest Snap Read Check-box	Loads tables for meter time-of-use data.
Vector Data Check-box	Loads tables containing instantaneous meter data.
Meter Event Log Data Check-box	Loads tables that display the meter events that have occurred.
Status Summary Check-box	Loads a table that displays disconnect switch status and meter time sync information.
ANSI Tables	
Standard 000 - 099	Selecting specific check-boxes will load the corresponding ANSI Standard tables.
Manufacturing 000 - 099	Selecting specific check-boxes will load the corresponding ANSI Manufacturing tables.

**Table 3-8. Reporting Tab (Continued)**

Field	Description
Reports	
Load Required Tables <button>	Loads the tables that are required to run a report.
Load Defaults <button>	Loads any tables that have been saved as default.
Save As Defaults <button>	Clicking this button will save currently selected tables as defaults that will be brought up at a later time by clicking the Load Defaults button.
Clear All <button>	Clears any check-boxes that are selected.
Demand Reset <button>	Launches the function. See details in the Demand Reset heading below.
Generate Reports <button>	Generates reports for the tables selected.
Activity Log	
Insert Comment <button>	Allows a user to insert comments into the Activity Log. These time-stamped comments will also post to the Log file.



**Figure 3 - 31. Reporting Tab**

## Demand Reset

**Demand Reset** is a function performed on the meter. The meter stores peak demand information. A demand peak is determined by taking the kWh (kilo-watt hours) used over a configured demand window and converting it to kW (kilo-watts). This is done by multiplying the kWh by 60 and dividing that number by the window length. This information is used to bill the utility customer.

Demand Reset is determined by taking the difference of the peak demand value between the current time and the time of the last Demand Reset.

The purpose of the Demand Reset is to capture peak demand values and the times at which those values were recorded since the last time the Demand Reset procedure was executed. The Demand Reset takes a snapshot of the current instantaneous values, along with the demand readings, and



stores that information in a holding place on the endpoint. As part of this process, the five highest demand readings are reset to zero.



**NOTE:** The program administrator can provide the key required to enable and configure Demand Reset features.

The Demand Reset action can only be activated after the Meter Configuration report has been retrieved. Select (click the checkbox beside) the Meter Configuration report option and click the Generate Report button. Once this report is obtained, the Demand Reset button will be enabled.

## Enabling Demand Reset

To enable the Demand Reset feature, you must use Windows Notepad (or your preferred text editor) to add a special key (provided by your Landis+Gyr Program Advisor) to the Settings.XML file located at:

- C:\ProgramData\Landis+Gyr\Gridstream\Tool Settings\Settings.XML on computers using either the Vista or Win7 operating systems.
- C:\Documents and Settings\All Users\Application Data\Landis+Gyr\Gridstream\Tool Settings\Settings.XML on computers using the WinXP operating system.

## Demand Reset Lockout

The Demand Reset feature is limited by the lockout window parameter. The lockout window is a safety feature to ensure that Demand Reset data will not be lost by accidentally executing too many demand resets.

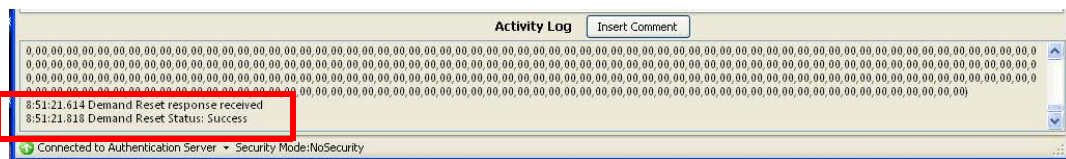
Some meters have a meter-enforced lockout period. During this lockout period, the meter will return an error code and no Demand Reset will be performed.

By default, the Demand Reset lockout window is set to 24 hours. If a different value is preferred, locate the Demand Reset Lockout parameter in the Settings file mentioned above and change the number to set the hour value for the desired Demand Reset lockout window parameter.

## Performing a Demand Reset

Clicking the Demand Reset button on the Reports tab launches a Demand Reset action. The Activity Log will display **Waiting for Demand Reset Response**, followed by progressive communication events.

For a successful action, **Demand Reset response received** and then **Demand Reset Status: Success** will display in the ETM Activity Log.



**Figure 3 - 32. Demand Reset Status: Success**

Simultaneously, a Demand Reset report will display. This report is similar to the Demand Reset Data/TOU report output, except that it shows the status of the Demand Reset operation as

highlighted below. The Demand Reset report also lists the previous number of demand resets reported by the meter. A portion of that report is shown below.

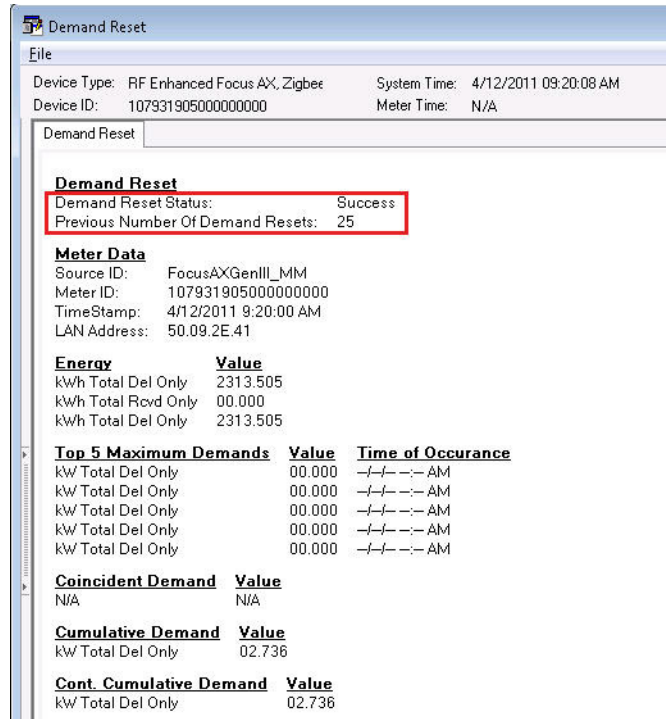


Figure 3 - 33. Demand Reset Report

The Demand Reset Report’s File menu offers options to Print a hard copy or to Save the report in XML or HTML formats, along with a Page Setup choice.

Demand Reset Restriction

A Demand Reset Action may only be performed once every 24 hours.

## Command Scheduler Tab

The Command Scheduler tab, as shown in Figure 3 - 34, is comprised of the Event Mask, Command Schedule, and Activity Log fields.



**CAUTION: When an endpoint is hosted by Command Center, all schedules are managed by Command Center. Endpoint Testing Manager should not be used to make changes to this command schedule.**

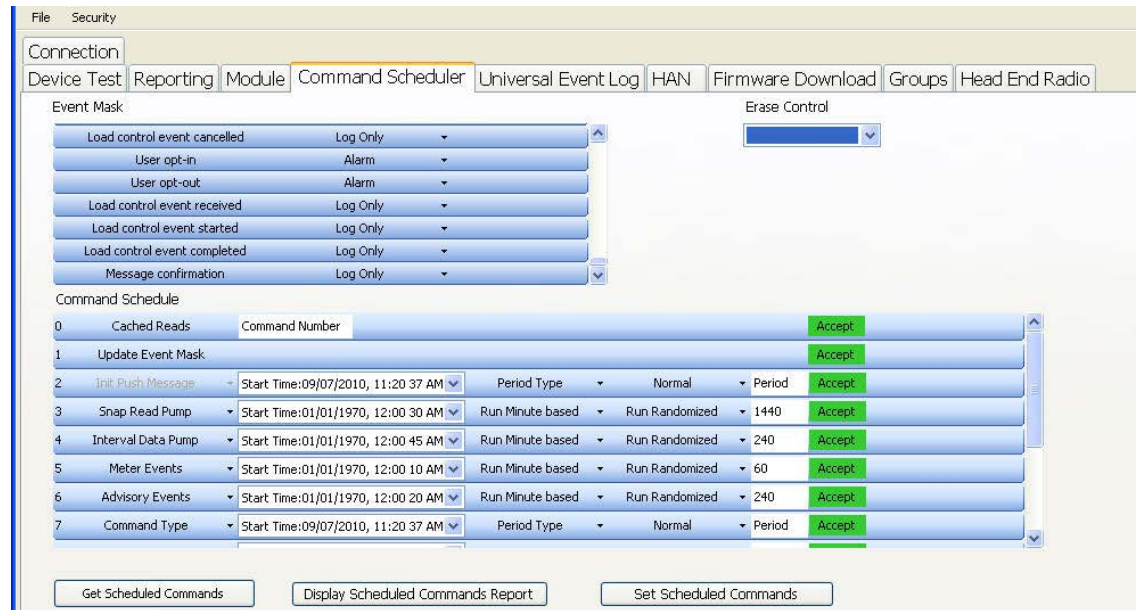
The table below describes the fields on the Command Scheduler tab.

**Table 3-9. Command Scheduler Tab**

Field	Description
Event Mask: over 100 choices are available for notification scheduling. Choices for event masking include: Disabled, Log Only, Advisory, and Alarm.	
Erase Control	
EraseZero	Always the best choice for this screen. This option makes no changes to existing parameters.
EraseAll	Never to be used unless a start-from-zero meter commissioning action is in-process.
EraseCommands	Clears commands that have been entered into the Command section of the Command Scheduler tab.
Command Schedule	
<Command Type> Cached Reads / Passthru PDU command / Interval Data Pump / Snap Read Pump / Advisory Events / Init Push Message / Meter Events / Radio Virtual Memory Read (Short) / WAN Node Information Read / Predefined Memory Read	Command chosen by the user for implementation and notification.
Start Time	Displays the user-selected date and time for launching the specified command.
<Period Type> Run Minute based / Run Day based	User-programmed test parameter types for command launch intervals.
<Test Interval Setting> Cached Read / Run Randomized / Normal	User-programmed test parameter intervals for command launch.
Period display	The user-defined data field that displays the test interval.
Accept / Cancel	Clicking this button sets the changed parameter for the command being configured or cancels the change.
<Buttons>	
Get Scheduled Commands	Polls the meter to refresh the scheduled commands.
Display Scheduled Commands Report	Displays a report of the scheduled commands.
Set Scheduled Commands	Loads all new commands into the meter. The user MUST click Get Scheduled Commands to verify that the new commands have loaded. Confirmation does not appear in the Activity Log.

**Table 3-9. Command Scheduler Tab (Continued)**

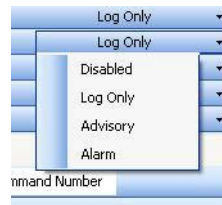
Field	Description
Activity Log	
Insert Comment <button>	Allows a user to insert comments into the Activity Log. These time-stamped comments will also post to the Log file.



**Figure 3 - 34. Command Scheduler Tab**

## Event Mask

The Event Mask interface of the **Command Scheduler** tab supports user notification for specified events. These events include Primary Power Down, Primary Power Up, Procedure invoked, Table Written To, Event log cleared, Rate Change, and many others. There are over 90 Event Mask choices available for notification. To view currently-loaded meter commands and their status, click the **Get Scheduled Commands** button.



**Figure 3 - 35. Command Scheduler Event Mask Notification Options**

**Table 3-10. Event Mask Events**

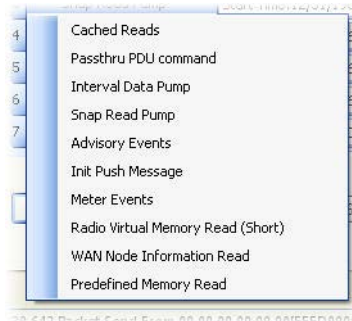
Event Mask Field	Description
Disabled	No notification when the specified event occurs; the event is not stored and will not be reported.

**Table 3-10. Event Mask Events (Continued)**

Event Mask Field	Description
Log Only	The event will be stored in the event log; it will not be reported in alarm/alert messages; only an on-request read of the event log will retrieve these events.
Advisory	An advisory message is generated when the specified event occurs; the event will be stored in the event log and will only be reported the next time a periodic push is transmitted; the periodic push will track the last event pushed to the host and will only send events that have not yet been pushed.
Alarm	The event will be stored in the event log and an immediate alert message will be transmitted.

## Command Schedule

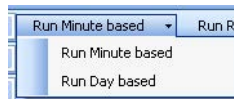
The Command Schedule interface provides the user with the ability to schedule up to 12 specific commands, stipulate parameters for the scheduled commands, and set the Erase Control (this value must be set before sending any command). Drop-down arrows next to each parameter allow these commands to be programmed for specific dates and times and set to function in varying ways.



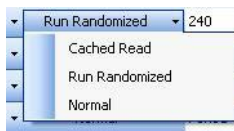
**Figure 3 - 36. Some Command Scheduler Command Types**



**Figure 3 - 37. Command Scheduler Calendar**



**Figure 3 - 38. Command Scheduler Test Interval Types**



**Figure 3 - 39. Command Scheduler Test Interval Settings**



NOTE: Some test interval options do not apply to all command choices

## Universal Event Log Tab

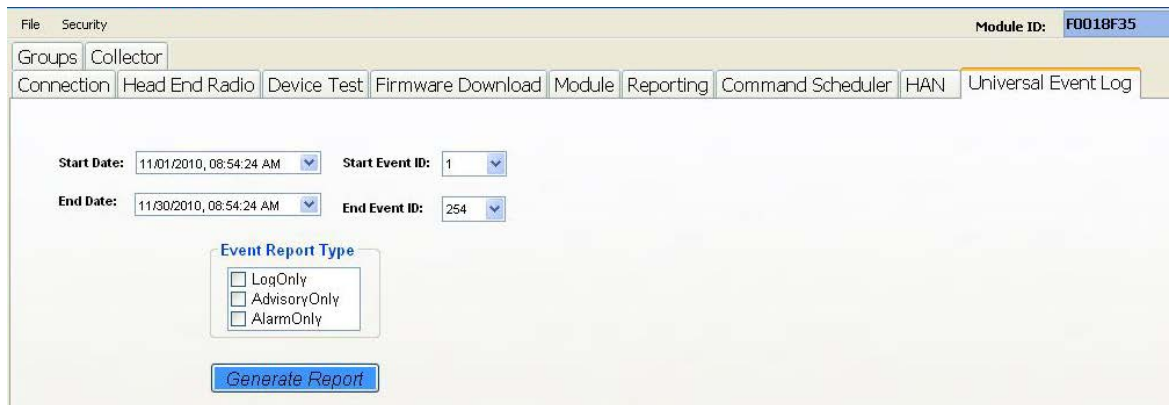
The Universal Event Log tab, shown in Figure 3 - 41, is only enabled on meters with version 422-J or higher software. This tab enables user-programmable log activities that result from meter events. This feature is not supported by endpoints with firmware versions prior to 422-J. Endpoints with earlier firmware will return the message below when the Universal Event Log tab is clicked.



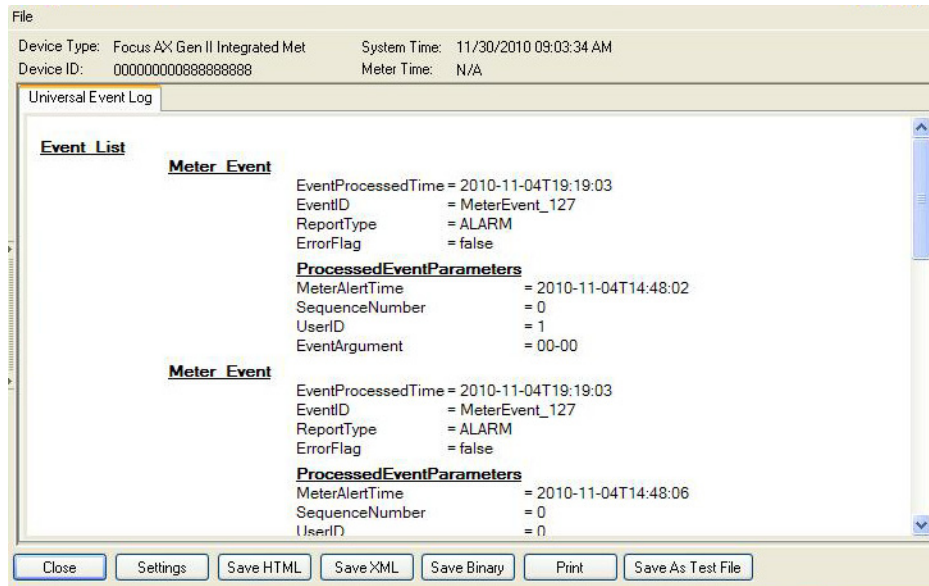
**Figure 3 - 40. Universal Event Log Tab Support Message**

**Table 3-11. Universal Event Log Tab**

Field	Description
Start Date	The user-programmable start date parameter.
Start Event ID	This parameter can be set from 1 to 254.
End Date	The user-programmable end date parameter.
End Event ID	This parameter can be set from 1 to 254.
Event Report Type	Set by the user to specify either Log Only, Advisory Only, or Alarm Only Report Types for meter events.
Generate Report <button>	Generates a report based on meter events, with options for setting up report appearance and saving these reports.
Activity Log	
Insert Comment <button>	Allows a user to insert comments into the Activity Log. These time-stamped comments will also list in the Log file.



**Figure 3 - 41. Universal Event Log Tab**



**Figure 3 - 42. Generate Report Data View**

## Service Limiting Tab



NOTE: The Service Limiting option is only available for Focus AX meters.

Service Limiting functionality allows the utility to place a limit on the power used on certain accounts during a time period when they cannot disconnect power completely. As an example, to avoid customer hazard during freezing weather, some localities prohibit utilities from completely disconnecting service.

When ETM connects to an endpoint, the application will verify whether or not Service Limiting is available with the connected endpoint. Service Limiting can only be enabled after Landis+Gyr supplies a proprietary key to the endpoint. If ETM has the required validation, the Service Limiting tab will appear.

**Figure 3 - 43. Service Limiting**

From the Service Limiting tab, the user has the ability to read the Service Limiting Program for which the endpoint is currently configured, modify the existing program, and create a report of the service limiting program.



**NOTE:** During the meter testing process, if the endpoint is not capable of remote connect/disconnect, the Service Limiting tab will be visible, but disabled.

## Service Limiting Modes

The following modes are available for service limiting programs:

- **Manual or Comm Only.** This mode provides the user with the ability to create a Service Limiting Program that will configure the endpoint's switch so that the switch will only be operated via communications from either an AMR device or software application.
- **Service Limiter.** If "Service Limiter" is selected, the switch will also open when a configured load threshold is exceeded at the end of the sample interval. In Service Limiter mode, the trigger is an average value measured over a configured interval.

## Read Program

Read Program allows the user to view the current Service Limiting control settings of the meter being tested:

Select the Read Program button. The Service Limiting screen will refresh, displaying the endpoint's Service Limiting Program.



**NOTE:** If the meter has no service limiting program applied, the result will be Manual or Comm Only.



#### Program Information.

- Program Name. The program name identifies the service limiting program.
- Notes. This is an optional field that allows for providing further information about the new program.
- Mode.
  - Manual or Comm Only.
  - Service Limiter

## Service Limiting options

Service Limiting parameters will vary depending on the mode selected.

### A. Manual or Comm Only.

#### Closure prevention.

- Prevent Switch Closure if load side voltage is detected. When selected, the meter will reject commands to close the service disconnect switch when load side voltage exceeds the configured percentage of nominal voltage.
- If the closure prevention is enabled and the configured threshold is set to 25% of nominal voltage (in this case, 240V), the meter will reject a command to close if it detects a load side voltage in excess of 60V.




---

NOTE: The recommended closure prevention setting is 25 - 40%

---

- Threshold Percent of Nominal Voltage. Enter the desired threshold. Legal Values: 0 to 60% of Nominal Voltage when enabled. A value of 0 will disable the check.

### B. Service Limiter

If “Service Limiter” is selected, the switch will also open when a configured load threshold is exceeded at the end of the sample interval. In Service Limiter mode, the trigger is an average value measured over a configured interval.

#### Closure prevention

- Prevent Switch Closure if load side voltage is detected. When selected, the meter will reject commands to close the service disconnect switch when load side voltage exceeds the configured percentage of nominal voltage.
- If the closure prevention is enabled and the configured threshold set to 25% of nominal voltage (in this case, 240V), the meter will reject a command to close if it detects in excess of 60V of load side voltage.




---

NOTE: The recommended closure prevention setting is 25 - 40%

---

- Threshold Percent of Nominal Voltage. Enter the desired threshold. Legal Values: 0 to 60% of Nominal Voltage when enabled. A value of 0 will disable the check.

### Fused Settings

- Amps at Nominal Voltage. This setting is a number between 0 and 60 that sets a threshold beyond which the switch will be opened.

- Cumulative Demand same as Demand Interval [checked]. If this box is checked, this automatically sets the interval to the same interval used elsewhere in Command Center for automatic meter reads.
- Cumulative Demand same... box [not checked]. If this box is not checked, the user must select an interval from the Interval button drop-down menu. The options are: 1, 5, 10, 15, 30, and 60 minutes.

#### Open Options

- Open Time. If instantaneous power (measured in watts) reaches a (programmable) threshold value, the switch will open for a configurable period of time, generally 0 - 30 minutes.
- After Open Time Expires. Select the operation to be performed when the Open Time has expired. The switch can either be Closed, or the switch will Arm itself. When Armed, the switch will remain Open until the Reconnect button is pressed.
- Limited Repeated Triggers. Limit Repeated Triggers, when enabled, causes the service disconnect switch to remain Open for an extended period if a number of Soft Fuse operations occur within a time window.

For example, if a meter is programmed to allow no more than two operations within a 24-hour period, after the switch was triggered for the third time in 24 hours, the meter would remain open for 24 hours. At the end of that time, it would perform the operation it was configured to perform when the Open Time expired. Legal Values: 1 to 48 operations within a 1 to 24-hour window.

## Create a Service Limiting Program

New Service Limiting Programs may be created and saved to file for future application to meters. Following is the procedure for creating a new service limiting program.

1. Enter the following Program Information:
  - **Program Name:** The program name identifies the Service Limiting program. Best practice for naming is to provide a functionality descriptive of the program. The name field is limited to fifty characters and must be unique to the organization. This field must be changed when creating a new Service Limiting program, or the existing Service Limiting program will be overwritten when the file is saved.
  - **Notes:** This is an optional file that allows for including up to 255 characters of additional information about the new Service Limiting program.
  - **Mode:** Select from the following modes:
    - Manual or Comm Only
    - Service Limiter
2. Configure the Service Limiting parameters. Refer to the descriptions above.
3. Click the Save icon to save the Service Limiting program to a file.



**Figure 3 - 44. Service Limiting Program Information - Save Icon**

4. A pre-defined program location folder will open.
5. Enter a unique name for the new Service Limiting program.
6. Click Save.

The new Service Limiting Program has now been saved, and will be available for sending to an endpoint.

## Send an existing Service Limiting Program to an Endpoint

The user may choose from previously created Service Limiting programs for sending to the device.



**NOTE:** Best practice for configuring service limiting in the endpoint is to use Command Center functionality. Using ETM to alter the service limiting program may cause the endpoint's configuration to be incorrectly reflected in Command Center.

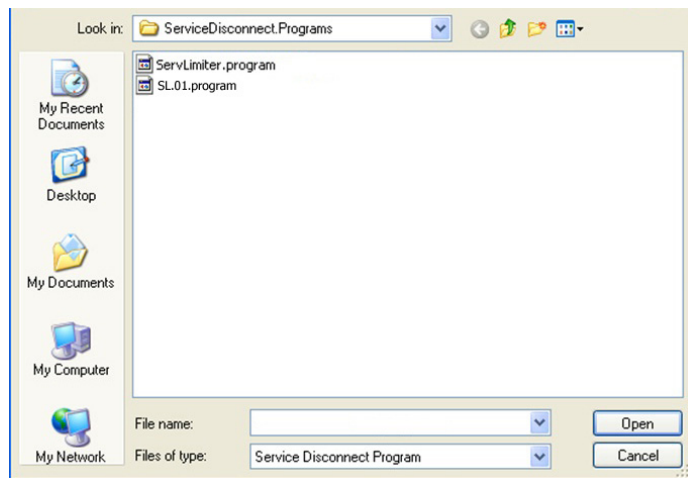
Following is the procedure for sending an existing program to the device:

1. Select the **Open** icon.



**Figure 3 - 45. Service Limiting Program Information - Open Icon**

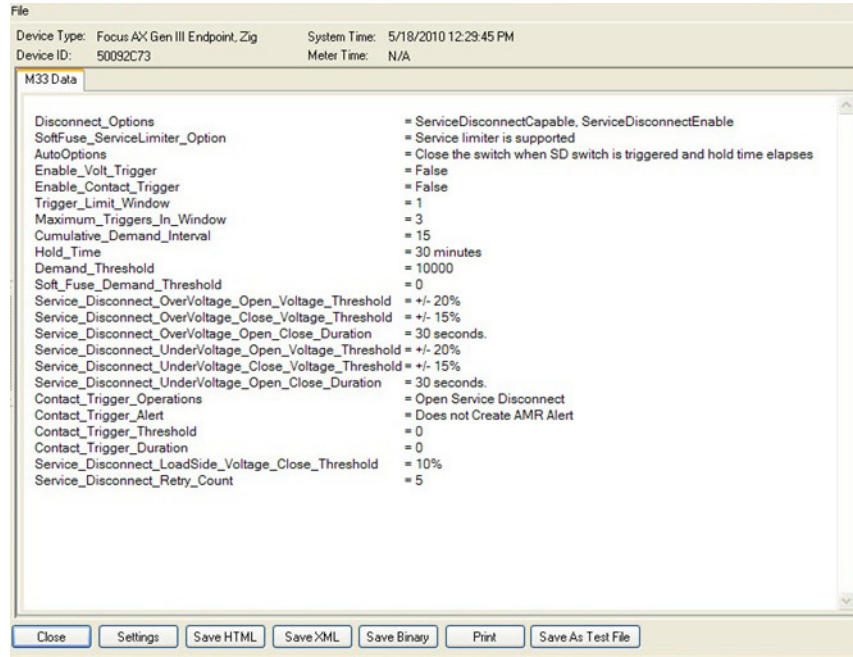
2. The Service Programs folder will open



**Figure 3 - 46. Service Limiting Programs**

3. Select the desired Service Limiting program file and click Open.

4. The Service Limiting programs tab will now display the selected program.
5. Click Modify Program.
6. The selected Service Limiting Program will be sent to the endpoint, and the M33 report will appear.



**Figure 3 - 47. Service Limiting M33 Report**

The M33 report displays the current Service Limiting configuration settings applied to the endpoint. This report may also be generated by clicking the Generate Report button.

## Groups Tab

The Groups tab is only enabled on meters with version 422 or higher firmware. This tab allows organizing meters into groups so as to enable actions and activities that are group-based.



**NOTE:** A meter can belong to no more than eight groups.



**Figure 3 - 48. Groups Tab**

Draft 7.30.14

## 4

## Specifications

## Enhanced Series IV AMPY 5252B Specs

Table 4-1. Specifications

Category	Specification	Value or Range		
		Form	Voltage	Class
Compatible Meters	AMPY Supported Meter Forms	Form	Voltage	Class
		2S	240	200
Electrical	Voltage	6V (from the meter's power supply)		
	Power	Max: 350mA Typical: 295mA		
RF 900 MHz	Output Power	+26 dBm +/-1 dBm		
	Adjacent Channel Power	39 dBc Nominal (9600 bps)		
	Transmit Frequency	902.2 to 927.9 MHz ISM unlicensed (FCC Part 15)		
	Communication Protocol	Gridstream Protocol for Command Center		
	Receive Sensitivity	-100 dBm minimum		
Standards Compliance	FCC Title 47 CFR Part 15	Radiated and Conducted Emissions (incl. intentional radiators)		
	IEC 61000 4-2,3,4,5,11,12	Electromagnetic Compatibility		
	ANSI C12.19	Compatible with Utility Industry End Device Tables		
	ANSI C12.20	National Standard for Electricity Meters - 0.2 and 0.5 Accuracy Classes		
	ANSI C12.1	Code for Electricity Metering		
	ANSI C37.90.1 (1989)	Standard Surge Withstand Capability (SWC) Tests		
	ANSI C12.22	Transport of ANSI C12.19 Over Network Transmissions		
Environmental	General Environmental	Outdoor, rain-protected, sunlight-exposed		
	Operating Temperature Range	-30° to +70° C (under meter cover)		
	Humidity	0 to 85% relative humidity, non-condensing		