

SERVICE BULLETIN APM-UEM

Product: Advanced Power Monitor

Subject: UEM (DDP) Interface

Date: 01st September 2021

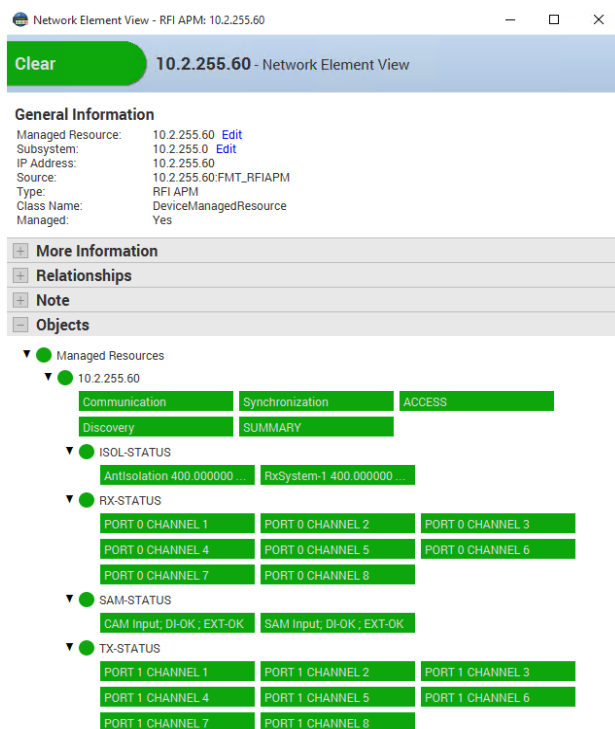
Description

This Service Bulletin overviews the use of the Motorola Unified Event Manager (UEM) to monitor the status and alarms of the Advanced Power Monitor (APM) using the Tabular SNMP format available in APM firmware version 2.8.6 and above. The integration of the APM to the UEM using a DDP file has been tested and certified by Motorola.

The APM provides the ability to non-intrusively monitor the transmit forward power, transmit antenna(s) VSWR, receive RSSI for each individual channel of each site within the network on a 24x7 basis. Systems performance measurements including Antenna Isolation, Receive System gain, and transmit carrier rejection for each site are also available for viewing and alarm monitoring and reporting.

Additional monitoring and alarming functionality can be provided using the optional Receive Systems Module (RSM) for multiple receive paths used in redundant receiver and receiver diversity systems, and up to ten (10) Site Alarm Modules (SAM) for multiple digital and analogue inputs, dry relay contact outputs, and temperature monitoring.

User-configurable alarm thresholds in the APM can place alarm thresholds around each channels' transmit and receive parameters, the system performance tests, and the RSM and SAM modules' parameters, generating SNMP northbound SNMP traps to the UEM when operation outside these values is detected. The UEM can also use southbound SNMP GET commands to interrogate the APM for the current status of each channel at each site if desired.



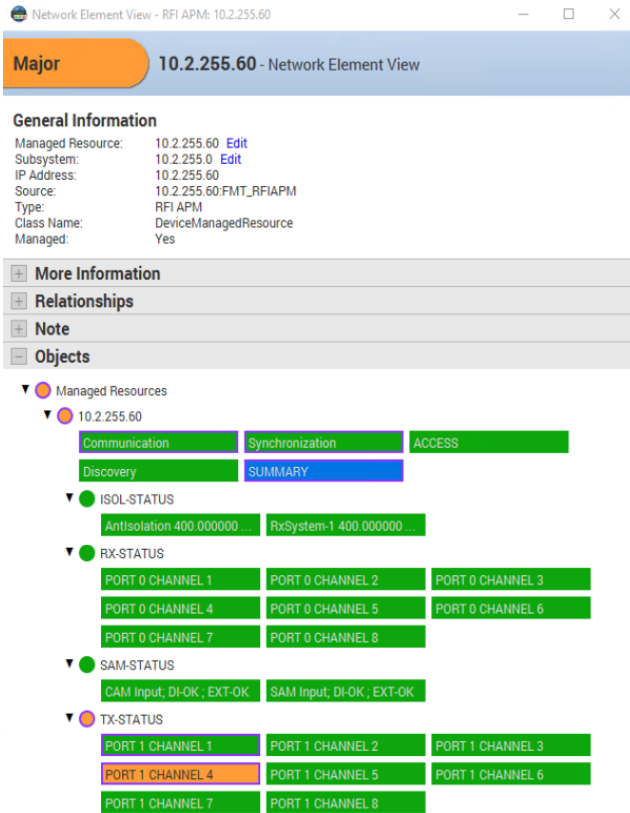
Example of an APM in the UEM Network Element View

“ RFI’s APM integration to the UEM allows customers to monitor their site transmit and receive antennas systems in the same tool that monitors the infrastructure hardware.

..... Status is visible channel by channel in the Network Element View along with overall System Summary

... This added functionality does not interfere or enhance existing GenWatch® monitoring but does improve visibility of the APMs under the UEM as a single pane of glass..... ”

Note: A separate APM applet is available from Genesis for monitoring APMs within GenWatch®



Example Network Element View of a site's APM – with a Tx alarm

The opportunity to have such intuitive real-time data available may also be used to save the high cost of after-hours call-outs or special maintenance activities (such as hiring helicopters for remote site access).

It may be decided to tolerate known levels of site performance degradation - until cost-effective business hours' works, subcontractor (i.e. rigger) availability, or fair-weather access can be realized for maintenance works to be completed.

The availability of a network site's detailed RF performance information in the UEM, in real-time, can greatly assist the cost-effective provision of effective maintenance services for a mission-critical network, particularly when major outages caused by multiple simultaneous network faults (such as may be caused by major weather events) may require the prioritization of the maintenance resources available at the time.

An alarm condition measured by the APM is reported to the UEM and displayed in the *Network Element View*.

In this example, a Transmitter VSWR condition on one channel causes the individual channel's indicator in the Tx-Status section to be highlighted - showing where the fault is present. The Summary indicator is also highlighted in this example, as the APM is also configured to add Transmitter VSWR alarms into its Summary alarm state.

The *Alarm Details* screen shows the source of the alarm and the reported values – in this example *Tx PWR= OK (35.3)*, *VSWR=FAIL (1.91)*.

This detail advises not only reveals the cause of the reported alarm, but the severity of the condition. This real-time information allows network management personnel to decide the impact of the fault on the customer's Grade of Service (GoS) from the network. A decision can then be made on the urgency that may be allocated to the fault.

In this example a VSWR of this value may not be deemed a critical network fault (perhaps if it is known this site has significant coverage overlap from adjoining sites) and its response priority may be decided accordingly – while being able to continue monitoring the fault for any further degradation, and a change in response prioritization able to be actioned at any time accordingly.



Example Alarm Details of a site



Configuring the APM for UEM monitoring

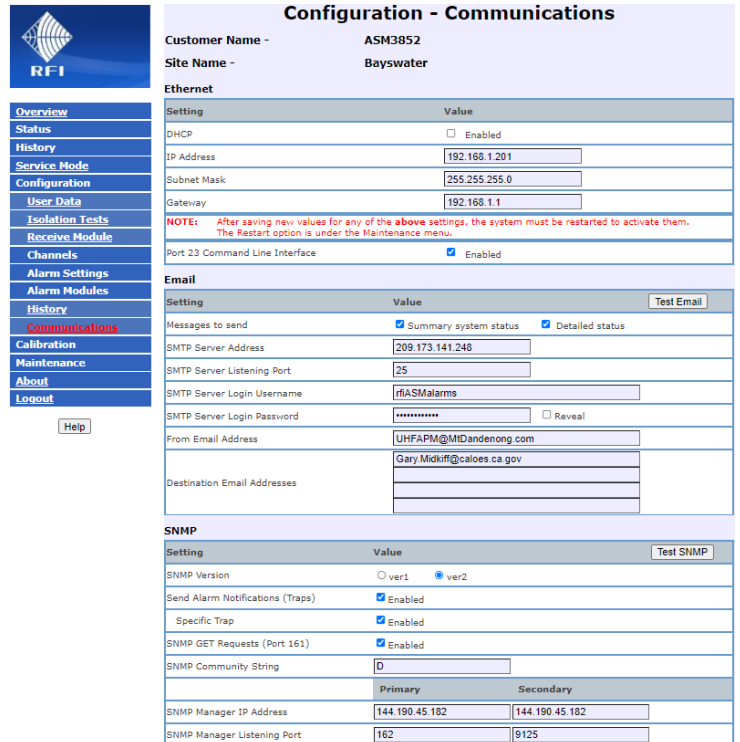
SNMP Configuration

SNMP connection between the APM to the UEM is via Ethernet.

To configure the UEM to monitor APMs, a DDP file is created and loaded into the UEM using the *Motorola Fault Management (FM) Toolkit* software. For support in this process, please contact your local Motorola support representative.

To configure APMs to interface to the UEM, SNMP operation is configured in the APM's *Configuration / Communications* webserver GUI page.

In the SNMP field of this page, SNMP v1 or v2 may be selected. The Send Alarm Notifications and Specific Traps fields should be selected. The Specific Traps field sets the use of the Tabular OID format used by the UEM. The Community String, SNMP Manager IP Address(es) and Port(s) fields also need to be populated.



Configuration - Communications

Customer Name - ASM3852
Site Name - Bayswater

Ethernet

Setting	Value
DHCP	<input type="checkbox"/> Enabled
IP Address	192.168.1.201
Subnet Mask	255.255.255.0
Gateway	192.168.1.1

NOTE: After saving new values for any of the above settings, the system must be restarted to activate them. The Restart option is under the Maintenance menu.

Port 23 Command Line Interface Enabled

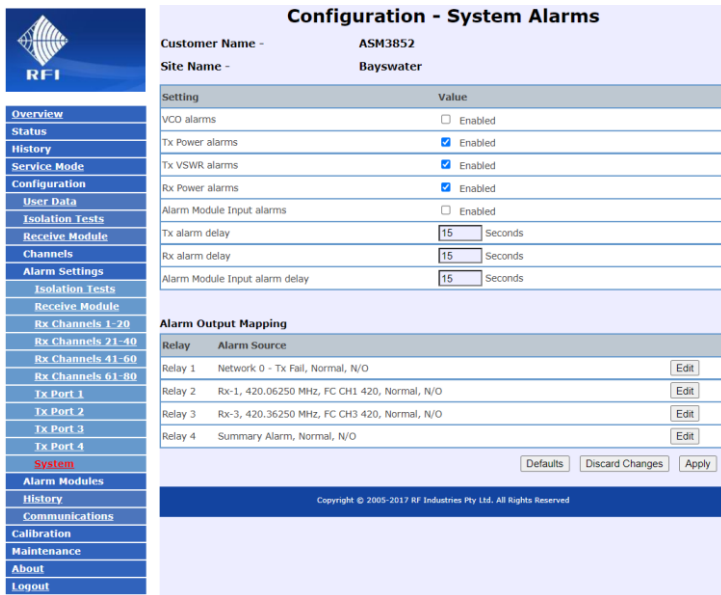
Email

Setting	Value
Messages to send	<input checked="" type="checkbox"/> Summary system status <input checked="" type="checkbox"/> Detailed status
SMTP Server Address	209.173.141.248
SMTP Server Listening Port	25
SMTP Server Login Username	rfiASMalarms
SMTP Server Login Password	***** <input type="checkbox"/> Reveal
From Email Address	UHFAPM@MIDandenong.com
Destination Email Addresses	Gary.Midkiff@caloes.ca.gov

SNMP

Setting	Value
SNMP Version	<input type="radio"/> ver1 <input checked="" type="radio"/> ver2
Send Alarm Notifications (Traps)	<input checked="" type="checkbox"/> Enabled
Specific Trap	<input checked="" type="checkbox"/> Enabled
SNMP GET Requests (Port 161)	<input checked="" type="checkbox"/> Enabled
SNMP Community String	D
SNMP Manager IP Address	Primary: 144.190.45.182 Secondary: 144.190.45.182
SNMP Manager Listening Port	162 9125

Example of the APM Configuration / Communications webserver page



Configuration - System Alarms

Customer Name - ASM3852
Site Name - Bayswater

Setting	Value
VCO alarms	<input type="checkbox"/> Enabled
Tx Power alarms	<input checked="" type="checkbox"/> Enabled
Tx VSWR alarms	<input checked="" type="checkbox"/> Enabled
Rx Power alarms	<input checked="" type="checkbox"/> Enabled
Alarm Module Input alarms	<input type="checkbox"/> Enabled
Tx alarm delay	15 Seconds
Rx alarm delay	15 Seconds
Alarm Module Input alarm delay	15 Seconds

Alarm Output Mapping

Relay	Alarm Source
Relay 1	Network 0 - Tx Fail, Normal, N/O <input type="button" value="Edit"/>
Relay 2	Rx-1, 420.06250 MHz, FC CH1 420, Normal, N/O <input type="button" value="Edit"/>
Relay 3	Rx-3, 420.36250 MHz, FC CH3 420, Normal, N/O <input type="button" value="Edit"/>
Relay 4	Summary Alarm, Normal, N/O <input type="button" value="Edit"/>

Defaults Discard Changes Apply

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Example of the APM Configuration / Alarm Settings / System webserver page

Alarm Configuration

The configuration of the APM is outlined in detail in the *APM Users Manual* which is available for downloading from the RFI website at rfi-motorola.com.

Importantly, there are several settings in the APM configuration that users should note;

In the *Configuration / Alarm Settings / System* webserver GUI page, the Tx, Rx and Alarm Module Input alarm delay fields indicate the persistence time that an alarm must be present (or cleared) before an alarm is indicated (and an SNMP trap sent). This could be considered as an alarm event transition debounce time.

In the example shown, an alarm condition would need to be present for 15 seconds before the corresponding front panel LED, relay activation, or SNMP trap was sent. This is noted here to advise why an alarm condition may not be reflected in the UEM immediately.

APM SNMP Overview

SNMP MIB and DDP Files

The Antenna System Monitor (APM) SNMP Interface is defined by the following MIB files:

RF-INDUSTRIES-MIB.txt
RFI-AXM-ALARM-MIB.txt

The RFI-AXM-ALARM-MIB file provides details of the various objects (OIDs) within every trap that is sent whenever an alarm status change occurs. Updated MIB files are available for download from rfi-motorola.com or rfi.com.au.

An example UEM DDP file for the APM is available from RFI on request, but a project-specific one must be created for each project and the example file cannot be used without editing.

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