



ASM-016

SERVICE BULLETIN ASM-016

Product: Antenna System Monitor

Subject: Firmware 2.60 Release

Date: 2nd July 2015

Description

This Service Bulletin announces the release of baseline 2.60 firmware for the Antenna System Monitor (ASM) series products.

The version 2.60 firmware update file ("FFP") is available for download from the RFI website http://www.rfiwireless.com.au/multicoupling-monitoring/monitoring/antenna-system-monitor-asm3852.html#tab_downloads, and may be flashed into existing ASM models by following the *Maintenance – Firmware Update* process in the Graphical User Interface (GUI) or User Manual.

Product Enhancements

The version 2.60 firmware addresses the following product issues;

- i) Measurement response time for TETRA Tx measurements can be significantly slower than expected. This issue has been addressed in this release.
- ii) In some circumstances, when Tx or Rx channel alarms are configured, channel Network ID fields are corrupted. This issue has been addressed in this release.
- iii) Discrepancies in Tx Fwd Power and VSWR readings between the Status and Channel Diagnostics pages could be caused by different measurement process algorithms. This issue has been addressed in this release.

The version 2.60 firmware also provides the following new features;

- iv) Isolation Tests

An enhanced series of System Isolation Tests has been added to the ASM.

This series now includes the existing Antenna Isolation Test, a Rx Subsystem Gain/Loss Test, and a Tx Rejection Test.

This enhanced set of system tests provides additional testing of a sites RF characteristics and performance, with configurable alarm thresholds being able to be applied to each measurement to generate alarm notifications for out-of-tolerance conditions.



Overview
Status
Isolation Tests
Rx Channels 1-20
Rx Channels 21-40
Rx Channels 41-60
Rx Channels 61-80
Tx Port 1
Tx Port 2
Tx Port 3
Tx Port 4
System
Alarm Modules
Communications
History
Channel Diagnostics
Configuration
Calibration
Maintenance
About
Logout

Antenna Isolation Test

This is the existing Antenna Isolation Test as it functioned in earlier firmware revisions.

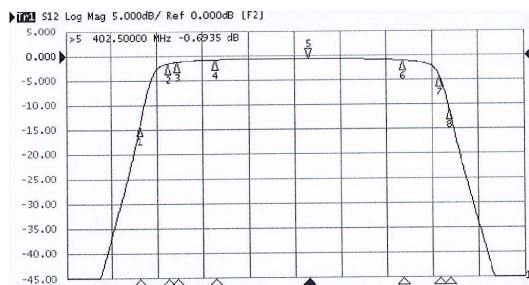
This test measures the average isolation (in dB) that is measured by the ASM using its integral low-power internal CW signal generator.

The displayed *Ant Iso* value represents the average of the isolations that exist between each of the Tx antennas that are being monitored by the ASM, and the ASMs Rx port.

In the example screen shown at left, this measured value is 20.1dB.

The RSSI signal level measured during the test is provided for information.

Rx Subsystem Gain/Loss



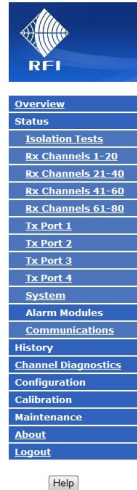
using its integral low-power internal CW signal generator. The values within the receiver passband(s) will represent the site multicoupling design's expected Rx Subsystem Gain/Loss as entered in the *Calibration – Rx Port* GUI page – and also displayed further up on the *Status – System Isolation Tests* GUI screen above ("–0.7dB" in this example for the monitored 400.0 to 405.0MHz passband).

The displayed *Rx System* values at the test frequencies above and below the monitored Rx Subsystem's frequency response indicate the preselector's response roll-off (selectivity) outside its passband. The RSSI signal levels measured during the test are provided for information.

Tx Rejection

The last test in the series is a measurement of the receiver subsystems rejection of the Tx carriers being monitored by the ASM. Typically, test frequencies representing the bottom and top of the range of Tx frequencies would be configured for the test.

This test effectively measures the response of the receiver subsystem and its rejection of the nominated Tx frequencies by using the base station transmitters as the generated source signals for the test.



Status - System Isolation Tests

Customer Name -

Site Name -

Police

Mt Walker

Settings

Setting	Value
Automatic System Isolation Tests	Disabled
Automatic Test Schedule	At 02:00 every week on Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, starting 26/2/2014
Next Scheduled Test	n/a

Parameters Used

Item	Value
Internal Test Signal Level	- 15.0 dBm
Tx Reverse Coupling Loss (Nominal)	40.7 dB
Tx Feeder Loss (Nominal)	3.0 dB
Rx Subsystem Gain(Loss)	- 0.7 dB
Rx Post Gain(Loss)	0.0 dB

Test Results

Frequency	Ant Iso	Rx System	Tx Rejection	Measured
Rx 402.50000 MHz	20.1 dB			- 79.5 dBm
Rx 398.00000 MHz		-13.4 dB		- 92.2 dBm
Rx 398.75000 MHz		-2.1 dB		- 80.9 dBm
Rx 400.00000 MHz		-1.3 dB		- 80.1 dBm
Rx 402.50000 MHz		-0.6 dB		- 79.4 dBm
Rx 405.00000 MHz		-0.7 dB		- 79.5 dBm
Rx 406.00000 MHz		-5.3 dB		- 84.1 dBm
Rx 406.25000 MHz		-13.4 dB		- 92.2 dBm
Tx 462.15000 MHz - Port 1	53.1 dB	> 102.7 dB	> 156.3 dB	< -110.0 dBm
Tx 454.11250 MHz - Port 1	53.1 dB	100.3 dB	153.9 dB	-107.1 dBm
Tx 454.31250 MHz - Port 1	53.1 dB	102.4 dB	156.0 dB	-110.0 dBm
Tx 454.62500 MHz - Port 1	53.1 dB	101.0 dB	154.6 dB	-109.4 dBm
Tx 463.22500 MHz - Port 1	53.1 dB	> 104.2 dB	> 157.8 dB	< -110.0 dBm
Tx 461.17500 MHz - Port 2	53.1 dB	102.9 dB	156.5 dB	-108.3 dBm
Tx 454.05000 MHz - Port 2	53.1 dB	97.3 dB	150.9 dB	-103.3 dBm
Tx 451.88750 MHz - Port 2	53.1 dB	101.4 dB	155.0 dB	-107.0 dBm
Tx 454.25000 MHz - Port 2	53.1 dB	97.7 dB	151.3 dB	-104.9 dBm
Tx 454.53750 MHz - Port 2	53.1 dB	> 102.5 dB	> 156.1 dB	< -110.0 dBm

The next test in the series is a measurement of the receiver subsystem's frequency response. Typically, test frequencies representing the bottom, middle, and top of the receiver preselector (or TTAs) passband(s) would be configured for this test.

This test effectively measures the frequency response of the receiver subsystem at the nominated Rx frequencies performed by the ASM

The displayed *Rx System* values represent the contribution to Tx carrier rejection provided by the receiver multicoupler (or TTA) preselector, and the displayed *Tx Rejection* values represent the total site Tx-Rx isolation value (including Tx-Rx antenna isolation). RSSI signal levels measured during the test are provided for information and confirm Tx carriers presented to the base station receivers are below desired levels.

v) Report SD Memory Card identification details on Status Page

The ASMs internal SD memory card is now interrogated on startup, with its identification and serial numbers displayed on the GUI Status Page.

Setting	Value
Model	DSAPM3852K2
Unit ID	0
Firmware Version	2.6
GUI Version	2.6
Hardware Revision	3
Unit Serial Number	12039046
SD-Card IDs & Serial Number	0x73, "BG", Serial 0x16287056
Date (mm/dd/yy), Time (hh:mm:ss)	7/2/2015, 1:31:45

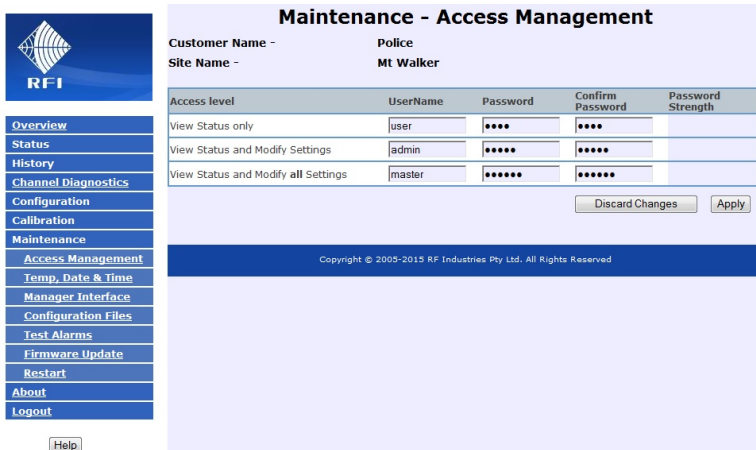
vi) Test SD-Card and report status in Alarms

A regular write/read test of the ASMs internal SD memory card is now performed and the card's status displayed in the Status – System GUI page. This status also contributes to a System Alarm being generated if this test fails to complete successfully.

Alarm Summary

Alarm	Status
Fault Summary	FAIL
Isolation Tests	OK
Rx Power	FAIL
Tx Power	OK
Tx VSWR	OK
VCO	OK
SD-Card	OK
Internal Supply Rails	OK

vii) Improved Login Access / Security



A new third level of Access Login is now provided. The default name for this new level is "master". This level of access security has been included to provide security to site-specific parameters that can render the ASM inaccessible if they were to be inadvertently changed – often then requiring a site visit to implement a Factory Defaults Reset. An example of this type of parameter is the ASMs IP address information.

In addition, sensitive information such as Email Account and Password details, used in SMTP (Email) alarm notifications, is also protected from unauthorised viewing.

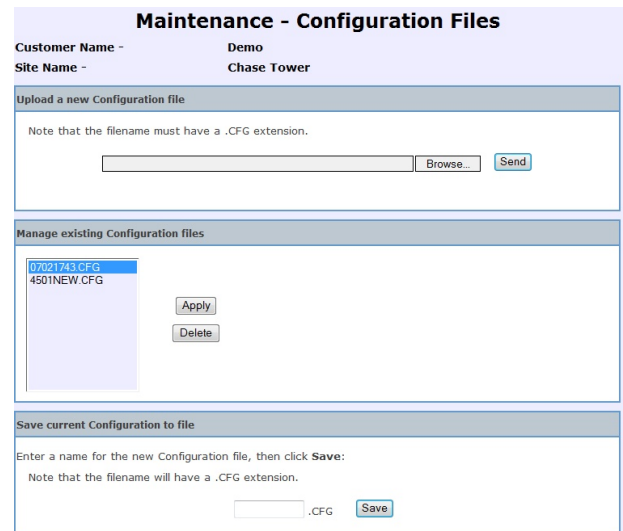
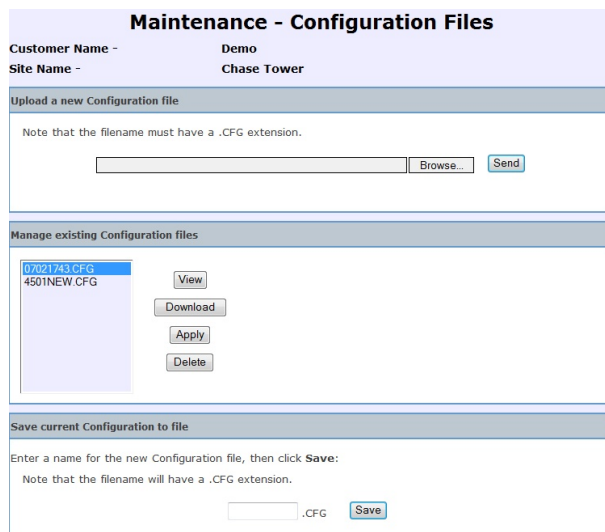
Configuration screens now only accessible under this new third access level include;

- Configuration - Communications
- Maintenance - Manager Interface
- Maintenance - Configuration Files View and Download options (see below)

In addition, when logged in under one of the three available login access levels, the creation, viewing, downloading and uploading of Configuration files is now more secure.

When logged at the second (or “admin”) level, a Configuration file can now longer be downloaded or its contents viewed, protecting the security of IP addresses, Email Account and Password details, etc from unauthorised access.

The ASM’s current configuration can still be saved internally, and new configuration files can also still be uploaded to the unit if required.

When logged at the third (or “master”) level, a Configuration file can now longer be downloaded or its contents viewed, protecting the security of IP addresses, Email Account and Password details, etc from unauthorised access.

As in earlier firmware releases, the *Maintenance – Configuration Files* GUI screen (or any other Configuration screen) is not accessible under the first (or “user”) access level.

viii) Ability to use “common” configuration files

A common configuration file can now be utilised to program a fleet of ASMs. The common file should be uploaded to the ASM unit, at which time it will appear in the list of stored configuration files within the unit. However, when the file has been selected (as per the highlighted filename in the example screen above) and the *Apply* button clicked, a *Manage Configuration Settings* popup screen will appear.

Maintenance - Configuration Files

Customer Name - Demo
Site Name - Chase Tower

Upload a new Configuration file

Note that the filename must have a .CFG extension.

Manage Configuration Settings

Several configuration file settings could potentially make undesirable changes or even make the unit un-contactable. Enable the application of the following items only if you know they are actually intended.

☐ Site Name
☐ Customer Name
☐ Login Usernames and Passwords
☐ Ethernet Access

Save current Configuration to file

Enter a name for the new Configuration file, then click **Save**:

Note that the filename will have a .CFG extension.

.CFG

Select any of the site-specific fields from the configuration file that you do want to have applied to the ASM, and then click *Apply*.

Follow the prompts and the selected configuration file, with the selected site-specific data fields' contents, will be applied into the ASM. In this manner, one common configuration file can be applied to multiple ASMs, with the site-specific data fields then edited individually. This new feature can save significant programming configuration time across an ASM fleet.

- ix) Overview page now displays the number of enabled channels

The number of enabled (i.e. "active") channels in each of the Systems Isolation Tests, Rx Channels, and Tx Channels screens is now displayed on the Overview page for information purposes to assist in auditing the current programmed configuration of the unit.

System Overview			
Customer Name - Demo		Site Name - Chase Tower	
Group	Tx Antenna Reference	Channel Count	Alarm Status
Isolation Tests		16	OK
Rx Channels 1-20		20	FAIL
Rx Channels 21-40		20	OK
Rx Channels 41-60		20	OK
Rx Channels 61-80		20	OK
Tx Port 1	LTR-TRBO TX1	5	OK
Tx Port 2	LTR-TRBO TX2	5	OK
Tx Port 3	CONV TX3 -NA	0	OK
Tx Port 4	RFI Test	3	OK
System			FAIL

- x) Retrieving a Configuration from a 'K1' hardware version ASM via Telnet

To recover a configuration from an early K1 model of ASM using a Telnet session the following process may be used. Use a terminal emulation program (such as TeraTerm™, etc) that supports Telnet and Xmodem. The ASM uses its IP address and the standard Telnet port number of 23 for its CLI.

When the ASM has restarted after the upgrade, reconnect the Telnet session to the ASM unit, activate the terminal emulator's *logging* function, then use the following sequence of commands;

```
LOGIN ADMIN ADMIN <Enter>
CONFIG SAVE TERMINAL <Enter>
```

When the transfer has completed, de-activate the terminal emulator's *logging* function, and edit the captured data file to remove any unwanted lines at the start and end of the file.

Note: The commands may be entered in upper or lower case, but the parameter "TERMINAL" in the above listed commands must be in upper case.

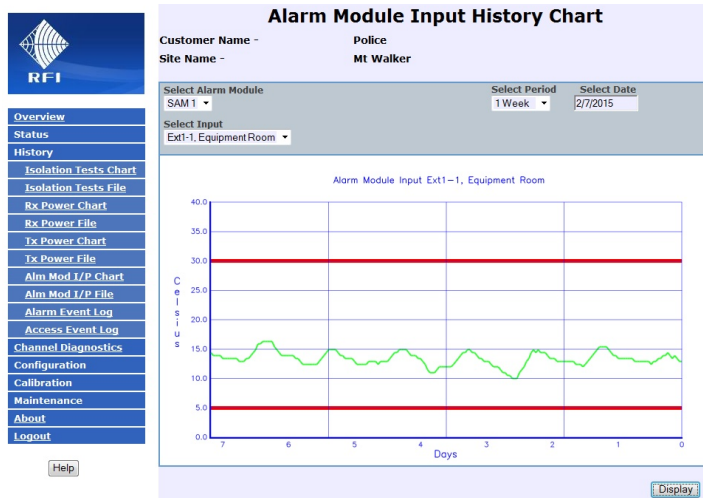
The file that has been created should be saved with a "*.cfg" file extension, and is in the standard ASM configuration file format. This file may then be uploaded into a replacement ASM via the GUI *Maintenance – Configuration Files* page.

xi) History Chart support added for CAM/SAM Temperature/Analogue/Digital Inputs

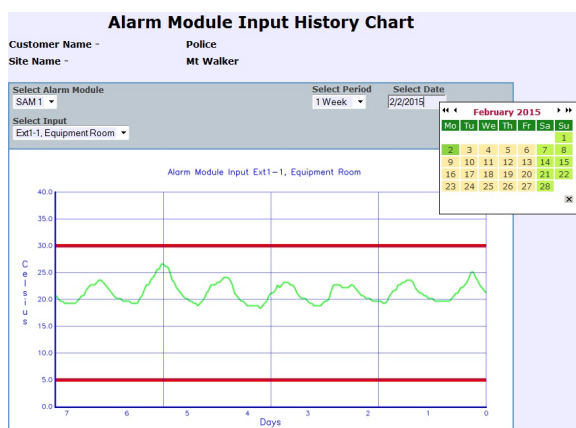
The logged data for CAM/SAM Inputs is now available for viewing in the History Charts selections.

Viewing of this data can assist in appreciating a site's operating environment, with room or battery temperature, solar array or battery voltages, door entry switches, and other monitored equipment now being able to be viewed to assess changing circumstances across hours of the day, peak times across a period, or seasonally.

This data may assist in determining the suitability of the equipment operating environment, battery health, charging success, or backup power capacity.



xii) Random History Period selection



The date that a History Graph's data is viewed across is now also selectable.

The Select Date field will provide a calendar that can be used to determine the date from which the selected period of the History Chart will apply.

As an example, the Site Temperature displayed in the History Chart above (for Winter) is shown for a different period in the History Chart - as shown on the left (for Summer).

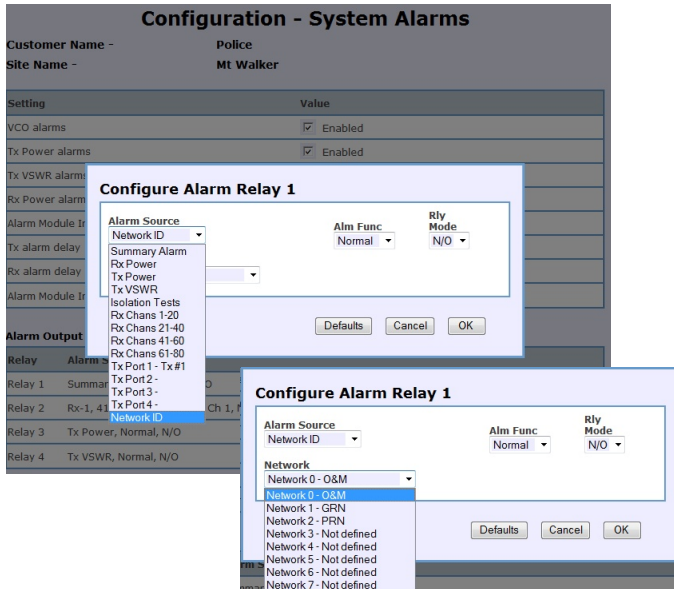
The differences in the equipment site's room temperature in different seasons

can be viewed and compared to understand the ambient temperatures that the equipment is being subjected to.

By choosing mid-winter and mid-summer dates, and a suitable sampling period (i.e. 4 weeks), the coldest and hottest equipment operating circumstances could be seen.

Similarly, other data could be viewed to compared channel solar charging efficiency, battery capacity and voltage, heavy channel traffic usage patterns, periods when recurring alarms are notified, etc

- xiii) Network IDs alarms can be assigned to CAM/SAM and ASM Relay Output



Network ID alarms can now be mapped to any of the CAM/SAM or ASM relay outputs. The selection of an alarm source is now available from any source and alarm type within the ASM, providing significant flexibility for the ASM to be used in a diverse range of monitoring, reporting and control applications.

Typical applications include hot/standby base station control, main/standby antenna change-over (ACO) relay control, mains fail/UPS control, automatic or remote generator start, remote base station keying for remote PMI testing or coverage performance testing, reporting of alarm conditions to existing microwave supervisory or other existing hardware monitoring equipment plus many, many more

- xiv) Rx Channel “Activity Detection” can be assigned to CAM/SAM digital input functions

Rx channel monitoring has been added to the “and” PTT logic capability of the CAM/SAM Modules.

If a control line is detected on the allocated digital input line of the CAM/SAM module ‘and’ a corresponding Rx Level is not detected (above the configured threshold level) on the selected Rx Channel, then an alarm will be generated.

This feature can be used in point-to-point and point-to-multipoint link or voting shelf systems to check for correct operation of equipment receivers. This feature could also be configured to provide control functionality within such systems, with alarms being generated for incorrect reception and transmission logic states.

Digital Input	Input ID	Enabled	Function	Criteria
DI1-1	Base Station Ch1	<input checked="" type="checkbox"/>	SAM1-1 PTT	Active Low
DI1-2	Not defined	<input type="checkbox"/>	Not in use	Active Low
DI1-3	Not defined	<input type="checkbox"/>	Not in use	Active Low
DI1-4	Not defined	<input type="checkbox"/>	Not in use	Active Low
DI1-5	Not defined	<input type="checkbox"/>	Not in use	Active Low
DI1-6	Not defined	<input type="checkbox"/>	Not in use	Active Low
DI1-7	Not defined	<input type="checkbox"/>	Not in use	Active Low
DI1-8	Not defined	<input type="checkbox"/>	Not in use	Active Low
DI1-9	Not defined	<input type="checkbox"/>	Not in use	Active Low
DI1-10	Not defined	<input type="checkbox"/>	Not in use	Active Low

Alarm Output	Alarm Source	Item	Alarm Configuration	Expand All
SAM1-1	Rx Chans 1-20	Rx-1, 418.21250 MHz, O&M	Alm Func: Normal, Rly Mode: N/R	
SAM1-2	Alarm not in use	Alarm not in use	Alm Func: Inactive, Rly Mode: Latching	

- xv) New ASM SNMP MIB files

To support the new functionality included in this version 2.60 firmware release, updated SNMP MIB files for the ASM are available. These files may be downloaded from the RFI website.

- xvi) New Manager Messages TCPIP Packet formats

An updated format of Manager Messages is used by an ASM operating this version 2.60 firmware release. These messages are enabled under the *Maintenance – Manager Interface* screen. Applications developers utilising Manager Messages should contact RFI for information regarding this updated format.

Upgrading to Firmware 2.60

Note: Please read all Service Bulletins published from the release of the firmware currently operating in your ASM prior to commencing an upgrade to this version 2.60 firmware. Upgrades may require a transition through an intermediate firmware version on the way to reaching this version - or may have other implications for your ASM.

Firmware 2.60 *cannot* be applied to units currently operating firmware earlier than 2.0. Units must be updated to firmware 2.0 or 2.05 prior to attempting an update to 2.60.

Cost Impact

Firmware version 2.60 is available to RFI customers at no charge.

- END -