



ASM-018

SERVICE BULLETIN ASM-018

Product: Antenna System Monitor

Subject: Firmware 2.70 Release

Date: 9th April 2016

Description

This Service Bulletin announces the release of baseline 2.70 firmware for the Antenna System Monitor (ASM) series products.

The version 2.70 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 2.70 firmware addresses the following product issues;

- i) System Isolation Tests HELP page has been updated.
- ii) System Isolation Tests' Configuration page had an issue when 'Discard Changes' was selected.
- iii) Maintenance – Test Alarms HELP page has been updated.
- iv) The Time Zone Offset was incorrectly displayed in the Configuration file.
- v) A Network ID alarm assigned to an ASM relay was not restored by a Configuration file load.
- vi) Rx Port Subsystem Gain and Post Gain values may be set to unexpected values when a Configuration file is applied.
- vii) Manager Messages interface using TCPIP protocol not working correctly.
- viii) Change default Coupler calibration value to '40dB' and BTX Power calibration value to '50dBm'.
- ix) SNMP Rx Status messages may have incorrect values or fail to send
- x) Rx Level for Tx Rejection tests may not display correctly.

The version 2.70 firmware also introduces a new product to the ASM portfolio - the Receive Systems Module (RSM). The RSM provides the following features;

- xi) Receive Systems Module (RSM)



RSM fitted to an ASM

Multiple Receive Signal Path Monitoring

The Receive Systems Module (RSM) may be fitted to an ASM to support networks using two receive antennas, such as systems using dual diversity, redundant Rx antennas, or a hot/standby Rx antenna system (RxA and RxB), and a third Rx path (RxE). Dual diversity is often implemented on APCOP25 Phase 2, TETRA, MotoTurbo and DMR systems. Many mission critical networks implement redundant Rx antennas for improved fault tolerance or if remote sites are inaccessible for prolonged periods (i.e. winter or other weather events).

The third Rx path features >60dB of isolation from the RxA and RxB ports providing enhanced protection from Rx desensitization when monitoring frequencies outside the Rx systems' passbands in applications such as the off-air monitoring of adjacent network sites' coverage propagation, or the monitoring of a co-sited Distributed Antenna System (DAS).

The RSM adds Dual Diversity (RxA, RxB) and External Antenna (RxE) configurability into the ASM GUI, and is selectable and configurable on a per channel basis.

Rx level measurements for all three Rx paths (RxA, RxB and RxE) may now be accessed in the Status, System Isolation Tests and Channel Diagnostics pages of the ASM GUI.

Status	
Item	Status
Alarm Status	OK
RxA Peak Level	- 53.4 dBm
RxA Current Level	- 57.7 dBm
RxB Peak Level	- 54.0 dBm
RxB Current Level	- 58.5 dBm
Antenna (RxE) Peak Level	- 50.0 dBm
Antenna (RxE) Current Level	< - 65.0 dBm
Power Supply	OK

Example of Warning levels of Rx Peak Signal Levels being detected

level will be displayed in *Yellow*, and levels above the configured Alarm threshold level will be displayed in *Red*. These Rx peak signal level Alarm Events are also logged and may be viewed in the ASM GUI to assist fault-finding activities.

The RSM may be added to an ASM at any time, providing a network technology upgrade path as and when required.

The RSM also features a unique 'RF Peak Detector' that can measure high levels of RF, even of very short burst duration, that may be overloading the network's base station receivers and degrading network performance.

Alarm thresholds can be configured for these peak received signal levels so that alarm notifications can be actioned.

Acceptable measured levels will be displayed in *Green*. Levels above the configured Warning threshold

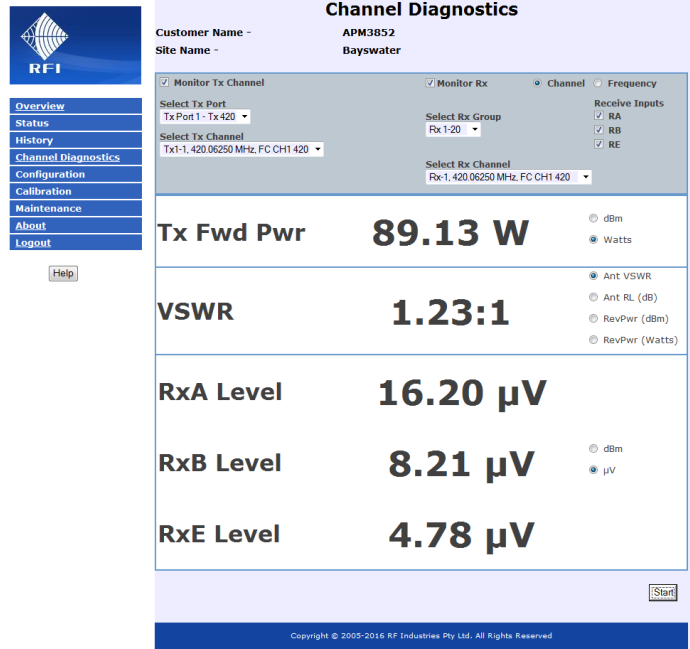
The operation of the Rx monitoring capability of the Service Mode page is enhanced when using the RSM.

The ASM's Rx sensitivity is improved, and the RxA, RxB and RxE receive signal paths can now be individually selected and displayed as desired.

System Isolation Tests can now be carried out between the respective Transmit, and Receive RxA, RxB and RxE systems.

This testing can confirm the performance of the intra-system Tx-to-Rx antenna isolations, the Rx multicoupling gain, ripple, and selectivity, and the intra-system Tx carrier rejections.

The Rx Antenna(s), feeder cables, connectors and lightning protector(s) performance is also confirmed in these tests.



Channel Diagnostics

Customer Name - APM3852
Site Name - Bayswater

Monitor Tx Channel Monitor Rx Channel Frequency

Select Tx Port: Tx Port 1 - Tx 420
Select Tx Channel: Tx1-1, 420.06250 MHz, FC CH1 420
Select Rx Group: Rx1-20
Select Rx Channel: Rx-1, 420.06250 MHz, FC CH1 420

Receive Inputs:
 RA
 RB
 RE

Tx Fwd Pwr **89.13 W** dBm Watts

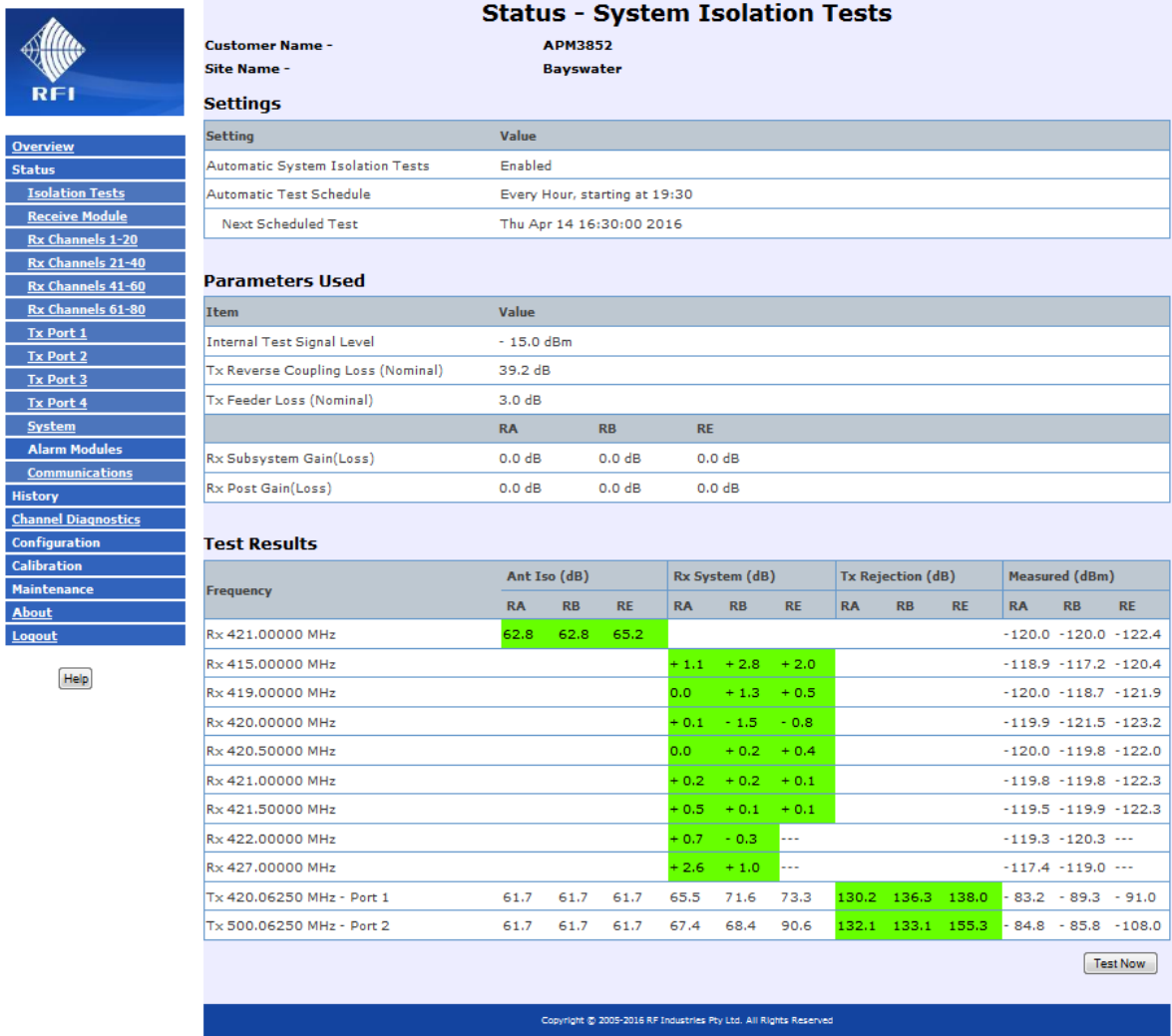
VSWR **1.23:1** Ant VSWR
 Ant RL (dB)
 RevPwr (dBm)
 RevPwr (Watts)

RxA Level **16.20 µV** dBm µV

RxB Level **8.21 µV** dBm µV

RxE Level **4.78 µV** dBm µV

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Status - System Isolation Tests

Customer Name - APM3852
Site Name - Bayswater

Settings

Setting	Value
Automatic System Isolation Tests	Enabled
Automatic Test Schedule	Every Hour, starting at 19:30
Next Scheduled Test	Thu Apr 14 16:30:00 2016

Parameters Used

Item	Value
Internal Test Signal Level	- 15.0 dBm
Tx Reverse Coupling Loss (Nominal)	39.2 dB
Tx Feeder Loss (Nominal)	3.0 dB
	RA RB RE
Rx Subsystem Gain(Loss)	0.0 dB 0.0 dB 0.0 dB
Rx Post Gain(Loss)	0.0 dB 0.0 dB 0.0 dB

Test Results

Frequency	Ant Iso (dB)			Rx System (dB)			Tx Rejection (dB)			Measured (dBm)		
	RA	RB	RE	RA	RB	RE	RA	RB	RE	RA	RB	RE
Rx 421.00000 MHz	62.8	62.8	65.2							-120.0	-120.0	-122.4
Rx 415.00000 MHz				+ 1.1	+ 2.8	+ 2.0				-118.9	-117.2	-120.4
Rx 419.00000 MHz				0.0	+ 1.3	+ 0.5				-120.0	-118.7	-121.9
Rx 420.00000 MHz				+ 0.1	- 1.5	- 0.8				-119.9	-121.5	-123.2
Rx 420.50000 MHz				0.0	+ 0.2	+ 0.4				-120.0	-119.8	-122.0
Rx 421.00000 MHz				+ 0.2	+ 0.2	+ 0.1				-119.8	-119.8	-122.3
Rx 421.50000 MHz				+ 0.5	+ 0.1	+ 0.1				-119.5	-119.9	-122.3
Rx 422.00000 MHz				+ 0.7	- 0.3	---				-119.3	-120.3	---
Rx 427.00000 MHz				+ 2.6	+ 1.0	---				-117.4	-119.0	---
Tx 420.06250 MHz - Port 1	61.7	61.7	61.7	65.5	71.6	73.3	130.2	136.3	138.0	- 83.2	- 89.3	- 91.0
Tx 500.06250 MHz - Port 2	61.7	61.7	61.7	67.4	68.4	90.6	132.1	133.1	155.3	- 84.8	- 85.8	-108.0

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The version 2.70 firmware also introduces the following new features and functionality to the ASM portfolio;

xii) SNMP Southbound GET command support

A SNMP GET command is sent to the ASM it will return the System Summary Alarm status, mimicking that shown on the Status-System page of the ASM GUI. This southbound SNMP GET command may be used to retrieve the current system alarm status, or as a means to poll the ASM to test and or periodically confirm that the IP connectivity with the ASM is operational.

An example of the response to GET commands sent to the ASM is as follows;

Alarm Summary										
Alarm	Status									
Fault Summary	FAIL									
Isolation Tests	FAIL									
Rx Power	FAIL									
Tx Power	FAIL									
Tx VSWR	FAIL									
VCO	OK									
SD-Card	OK									
Internal Supply Rails	OK									
Diversity Module	OK									
Alarm Modules	1	2	3	4	5	6	7	8	9	10
Ext & DI Summary	OK	-	-	-	-	-	-	-	-	-

axmAlarmCustName.0	Not defined
axmAlarmSiteName.0	Not defined
axmAlarmType.0	SystemStatus(1)
axmAlarmStatusBits.0	49488
axmAlarmDescription.0	SYS=FAIL, RX=FAIL, TXPWR=OK, TXVSWR=OK, ALMMOD=OK
axmAlarmState.0	fail(2)
axmAlarmDateTime.0	2016-3-3,15:18:26.0
axmAlarmSourceNumber.0	RxPort(0)
axmAlarmSourceText.0	
axmAlarmItemNumber.0	0
axmAlarmItemText.0	

Upgrading to Firmware 2.70

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 2.70 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.

The required intermediate firmware version transitions are;

- Firmware below version 2.0 must transition through version 2.0 or 2.05 prior to attempting an update to 2.1 or above.
- Firmware below 2.60 must transition through version 2.60 prior to attempting an update to 2.7 or above.

Cost Impact

Firmware version 2.70 is available to RFI customers at no charge.

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