# SERVICE BULLETIN ASM-SNMP

## Product:  Antenna System Monitor

**Subject:  SNMP**                                                    **Date:  17th February 2021**

Description

This Service Bulletin overviews the SNMP V1 and V2c scalar and table OID-based northbound Trap and southbound GET request functionality supported by the ASM products using baseline 2.85 (and above) firmware.  SNMP Community String value configuration and supporting SNMP Managers that require non 'null' returned values is available in baseline 2.8.3 (and above) firmware.

Scalar OID traps described in the Scalar OID Trap Objects section of this document are sent when the 'Specific Trap' checkbox is unticked in the Configuration-Communications GUI page.

Table OID traps described in the Table OID GET Requests and Trap Objects section of this document are enabled when the 'Specific Trap' checkbox is ticked in the Configuration-Communications GUI page.

The Antenna System Monitor (ASM) 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.

**Scalar OID Trap Objects**

The axmAlarmEntry object (1.3.6.1.4.1.32327.2.2.2.1.2) defines a trap and each trap includes the following 11 different trap objects

**axmAlarmCustName**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.1

Syntax                    Text String

Description              Provides the Customer Name string as configured on the User Data Configuration page.

**axmAlarmSiteName**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.2

Syntax                    Text String

Description              Provides the Site Name string as configured on the User Data Configuration page.

**axmAlarmType**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.3

Syntax                    Integer   0..5

Description              Identifies the type of alarm that this trap relates to. The data for some of the other objects
                         will depend on the alarm type.

The possible Types (and integer values) are:

| | |
|---|---|
| **Restart (0)** | The unit has just been restarted. |
| **SystemStatus (1)** | The summary alarm status has changed. |
| **ChannelStatus (2)** | An individual channel alarm status has changed. |
| **CamStatus (3)** | An Alarm Module input alarm status has changed. |
| **AccessEvent (4)** | Three or more consecutive login attempts have failed, resulting in a lockout state. |
| **IsolTestStatus (5)** | A change in Isolation test alarm status. |

**axmAlarmStatusBits**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.4

Syntax                    Integer   0/1 (1 bit) or 0..255 (8 bits) or 0..65535  (i.e. 16 bits)

                         System Status – 16 bits
                         Channel Rx Status – 16 bits
                         Channel Tx Status – 8 bits
                         CAM/SAM Status – 1 bit
                         Isolation Test Status – 16 bits

Description              This is an integer value representing the status bits relevant to the alarm type.
                         The various sets of status bits are detailed as follows;

**ReStart**

These bits will generally be the same as the System Status Bits, but because the system has only just restarted
they will likely not be fully be up to date representing the true system status.  They should therefore be ignored.

**SystemStatus**

The system summary status bits are:

0x0001 Lock detect fail for Receive synthesisers.
0x0002 Lock detect fail for Transmit synthesisers.
0x0004 One or more Tx Power level fails are present.
0x0008 One or more Tx VSWR fails are present.
0x0010 Rx Power level fail is present.
0x0020 System hardware alarms summary.    See Hardware Alarm Bits below.
0x0040 Antenna Isolation test fail is present.
0x0080 One or more CAM/SAM External or General Purpose DI alarms are present.
0x0100 Rx Summary alarm.
0x0200 Tx Power summary alarm.
0x0400 Tx VSWR summary alarm.
0x0800 Not in use.
0x1000 Not in use.
0x2000 Receive Systems Module alarm.
0x4000 Alarm relay is active. As masked by Alarm Config.
0x8000 Summary alarm LED is active.

**Hardware Alarm Bits**
Internal 5V rail is out of limit.
Internal hardware failure – SD-Card.

Note:    These are no presented separately, but any Hardware Alarm Bit(s) set will set the 0x0020 bit of
the (above) System Status Bits

**ChannelStatus**

Note:    Decoded from the following tables is based on determining a Rx or Tx message from the contents
of the rest of the SNMP trap message.

**Rx Status Bits**
0x0001 Rx power level fail summary.
0x0002 Rx Antenna isolation loss fail summary.
0x0004 RxA level out of range (Rx-0 only).
0x0008 VCO lock fail.
0x0010 RxB level out of range (Rx-0 only).
0x0020 Any Rx signal still ON/OFF.
0x0040 RxE level out of range (Rx-0 only).
0x0080 RxA signal present.
0x0100 RxB signal present.
0x0200 RxE signal present.
0x0400 RxA enabled.
0x0800 RxB enabled.
0x1000 RxE enabled.
0x2000 RSM Present.

**Tx Status Bits**
0x01 Tx power level fail.
0x02 Internal use
0x04 VSWR fail.
0x08 VCO lock fail.
0x10 Tx signal present.
0x20 Tx signal still ON/OFF.
0x40 Internal use.
0x80 Rx signal present.

**CamStatus**

**Alarm Module Status Bits**
0x0 Alarm not active.
0x1 Alarm active.

Note:    Each trap refers to only one alarm input, as detailed by the axmAlarmSourceNumber and
axmAlarmItemNumber objects.

**AccessEvent**

**Access Event Bits**
0x0000 (Always)

Note:    This trap is only sent when the number of sequential login attempts is ≥ 3.

<u>**IsolationTestStatus**</u>

**Isolation Test Status Bits**
0x0001 Not used.
0x0002 (Antenna Isolation), Rx Gain or Tx Rejection fail.    See Note below
0x0004 RxA Level out of range (Not used by SNMP).
0x0008 VCO Lock Fail (Not used by SNMP).
0x0010 RxB Level out of range (Not used by SNMP).
0x0020 Not used.
0x0040 RxE Level out of range (Not used by SNMP).
0x0080 Not used.
0x0100 Not used.
0x0200 Not used.
0x0400 RxA Enabled (Not used by SNMP).
0x0800 RxB Enabled (Not used by SNMP).
0x1000 RxE Enabled (Not used by SNMP).
0x2000 RSM Present (Not used by SNMP).

<u>Note:</u>    The axmAlarmSourceNumber is one of 21, 22 or 23 (as detailed in the Syntax Integer declaration for the axmAlarmSourceNumber object).

<u>Note:</u>    The use of the IsolationTestStatus bits varies between SNMP and Manager Messages.  Only bit 0x0002 is used for SNMP.  In SNMP, bit 0x0002 will be set whenever there is either an Antenna Isolation, Rx Gain, or Tx Rejection alarm.  The text of the next OID describes the fault, and the values measured.


**axmAlarmDescription**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.5

Syntax          Text String

Description      This is a brief textual description of the alarm status. The included detail depends on the alarm type.

The following are examples:

**Restart:** System Restart
**SystemStatus:**   SYS=FAIL, RX=OK, TXPWR=OK, TXVSWR=FAIL
          If a CAM or SAM is present an "ALMMOD=" status is added.
          If a Receive Systems Module is present a "RSM=" status is also added.
**ChannelStatus:**   For a Rx channel:  – PWR=OK(-97.5), VCO=OK, RX=ON
          For a Rx Channel with Receive Systems Module:
                 - PWR=OK(A=-97.5,B=-95.3,E=-101.2), VCO=OK, RX=ON
          For a Tx channel:
                  - PWR=OK(39.5), ILOSS=OK(1.5), VSWR=OK(1.52),VCO=OK, TX=ON
**CamStatus:**       SAM Input, DI1-6 - Test IP-6, STATUS=FAIL
**AccessEvent:**     System Access Lockout Alert, Source=10.3.5.119, Count=3
**IsolTestStatus:**
          For Antenna Isolation:
                 – Ant Isolation,STATUS=OK(A=82.0,B=83.1,E=78.7 dB,900.000000 MHz)
          For Rx System:
                 - Rx System,STATUS=OK(A=-0.1,B=-0.4,E=-1.3 dB,870.000000 MHz)
          For Tx Rejection:
                 - Tx Rejection,STATUS=OK(A=95.1,B=97.8,E=91.4 dB,915.000000 MHz)

Note that 'A', 'B' and 'E' values are only included if a Receive Systems Module is in use.

**axmAlarmState**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.6

Syntax     Integer

Description   The alarm status for this trap. A value of 1 represents OK, a value of 2 is FAIL.


**axmAlarmDateTime**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.7

Syntax     Date and Time

Description   The time stamp for when this trap was sent.


**axmAlarmSourceNumber**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.8

Syntax     Integer

Description   This identifies the source of the alarm event.   This object, although included with every trap, is only relevant for the following alarm types:

**ChannelStatus:**

| 0 – RxPort | 1 – TxPort-1 | 2 – TxPort-2 | 3 – TxPort-3 | 4 – TxPort-4 |
|---|---|---|---|---|

**CamStatus:**
Possible values are::

| 11 – Alarm Module 1 | 12 – Alarm Module 2 | 13 – Alarm Module 3 | 14 – Alarm Module 4 |
|---|---|---|---|
| 15 – Alarm Module 5 | 16 – Alarm Module 6 | 17 – Alarm Module 7 | 18 – Alarm Module 8 |
| 19 – Alarm Module 9 | 20 – Alarm Module 10 | | |

**IsolTestStatus:**

| 21 – Antenna Isolation | 22 – Rx System | 23 – Tx Rejection |
|---|---|---|

**axmAlarmSourceText**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.9

Syntax            Text String

Description       The textual description for the axmAlarmSourceNumber.. This object, although included with every trap, is only relevant for the following alarm types:

    **ChannelStatus:**
    The port reference string as configured on the User Data Configuration page.
    Examples are:
        Rx Port
        Tx Antenna 1
    **CamStatus:**
    The Alarm Module description.
    Examples are:
        SAM-1
        CAM-3
    **IsolTestStatus:**
    The Isolation Test description.
    Examples are:
        Ant Isolation
        Rx System
        Tx Rejection


**axmAlarmItemNumber**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.10

Syntax            Integer

Description       This identifies the specific item number within the above alarm source.  This object, although included with every trap, is only relevant for the following alarm types:

    **ChannelStatus:**
    Possible values are 1 to 80 for the Rx Port, or 1 to 20 for Tx Ports.
    **CamStatus:**
    The Alarm Module input number.
    Possible values are 1 to 4 for External Inputs, or 11 to 20 for Digital Inputs 1 to 10

**axmAlarmItemText**

OID 1.3.6.1.4.1.32327.2.2.2.1.2.11

Syntax          Text String

Description     The textual description for the specific item.  This object, although included with every trap, is only relevant for the following alarm types:

> **ChannelStatus:**
> The channel ID string as configured on the Channel Configuration page.
> Examples are:
> > Ambulance 1
> > Fire Service 3
>
> **CamStatus:**
> The Alarm Module Input ID string as configured on the Alarm Module Configuration page.
> Examples are:
> > Temperature
> > Door Open
>
> **IsolTestStatus:**
> The frequency that the specific Isolation Test was performed on.
> For example:
> > 960.000000 MHz

## Scalar OID GET Requests

**SNMP GET Requests**

Any SNMP GET requests on the objects defined in the MIB and described above will return the current parameter value of the associated object (OID) sent with the GET.

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

| | |
|---|---|
| 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 | |

## Table OID GET Requests and Trap Objects

The MIB file defines a group of OIDs which belong to a particular table OID. Any SNMP GET request to a table OID will be a multi OID request and the ASM will return the current parameter values for all the associated OIDs in that table.

The Alarm Status node (1.3.6.1.4.1.32327.2.2.2.1.3) has the following five table OID's. The first four OIDs have nine different objects, and the last OID has four different objects.

- Tx channel status (1.3.6.1.4.1.32327.2.2.2.1.3.1.1)
- Rx channel status (1.3.6.1.4.1.32327.2.2.2.1.3.2.1)
- Isolation test status (1.3.6.1.4.1.32327.2.2.2.1.3.3.1)
- CAM and SAM alarm status (1.3.6.1.4.1.32327.2.2.2.1.3.4.1)
- System status (1.3.6.1.4.1.32327.2.2.2.1.3.5.1)

**Tx channel status table entry OID objects (**1.3.6.1.4.1.32327.2.2.2.1.3.1.1.1**)**

| Object name | OID | Syntax | Description |
|---|---|---|---|
| statusTxChannelIndex | 1.3.6.1.4.1.32327.2.2.2.1.3.1.1.1.1 | Integer(1..80) | A unique value for each Tx channel (instance/row) |
| channelPort | 1.3.6.1.4.1.32327.2.2.2.1.3.1.1.1.2 | Integer(1..4) | Information about the port number |
| channelNumber | 1.3.6.1.4.1.32327.2.2.2.1.3.1.1.1.3 | Integer(1..20) | Information about the channel number in a specific port |
| channelForwardPwr | 1.3.6.1.4.1.32327.2.2.2.1.3.1.1.1.4 | Integer(-2048..2047) | Information about Tx forward power level. This is in 1/10th of dBm |
| channelInsertionLoss | 1.3.6.1.4.1.32327.2.2.2.1.3.1.1.1.5 | Integer (0..4095) | Information about Tx combiner insertion loss<br>This is in 1/10ths of a dB |
| channelVswr | 1.3.6.1.4.1.32327.2.2.2.1.3.1.1.1.6 | Integer (100..9999) | Information about Antenna VSWR. This is in 1/100ths units. |
| channelStatus | 1.3.6.1.4.1.32327.2.2.2.1.3.1.1.1.7 | Integer (0..255) | Value representing the Tx channel status bits |
| channelState | 1.3.6.1.4.1.32327.2.2.2.1.3.1.1.1.8 | Integer (1..4 ) | State of the channel |
| channelDescription | 1.3.6.1.4.1.32327.2.2.2.1.3.1.1.1.9 | Text String | Textual description of Tx channel status bits |

**Channel states**
1 OK
2 Fail
3 Disabled / Not configured
4 Invalid Tx channel index

**Tx Channel Status Bits**
0x01 Tx power level failed.
0x02 Internal Use only.
0x04 VSWR failed.
0x08 VCO lock failed.
0x10 Tx signal present.
0x20 Tx signal still ON/OFF.
0x40 Internal use.
0x80 Rx signal present.

An example of the Tx channel status table is;



| s... | channelPort | channelNumber | channelForwardPwr | channelInsertionLoss | channelVswr | channelStatus | channelState | channelDescription |
|---|---|---|---|---|---|---|---|---|
| 1 | TxPort1(1) | 1 | -334 | 563 | 1 | 33 | fail(2) | PWR=FAIL(<- 10 ); ILOSS=OK( 56.3); VSWR=OK( 1.00); VCO=OK; TX=OFF |
| 2 | TxPort1(1) | 2 | -118 | 0 | 1 | 32 | okay(1) | PWR=OK(<- 10 ); ILOSS=OK( 0.0); VSWR=OK( 1.00); VCO=OK; TX=OFF |
| 3 | TxPort1(1) | 3 | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 4 | TxPort1(1) | 4 | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 5 | TxPort1(1) | 5 | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 6 | TxPort1(1) | 6 | 2047 | 2047 | 2047 | 0 | disabled(3) | |

<u>**Note:**</u>     The levels will be reported as +2047 if the respective input is not enabled


**Rx channel status table entry OID objects (**1.3.6.1.4.1.32327.2.2.2.1.3.2.1.1**)**

| Object name | OID | Syntax | Description |
|---|---|---|---|
| **statusRxChannelIndex** | 1.3.6.1.4.1.32327.2.2.2.1.3.2.1.1.1 | Integer (1..80) | A unique value for each Rx channel (instance/row) |
| **rxChannelPort** | 1.3.6.1.4.1.32327.2.2.2.1.3.2.1.1.2 | Integer(0) | Information about the port number |
| **rxChannelNumber** | 1.3.6.1.4.1.32327.2.2.2.1.3.2.1.1.3 | Integer(1..80) | Information about the Rx channel number in a specific port |
| **channelRxALevel** | 1.3.6.1.4.1.32327.2.2.2.1.3.2.1.1.4 | Integer(-2048..2047) | Information about Rx (or RSM-RxA) power level. This is in 1/10ths of a dBm |
| **channelRxBLevel** | 1.3.6.1.4.1.32327.2.2.2.1.3.2.1.1.5 | Integer(-2048..2047) | Information about RSM-RxE power level. This is in 1/10ths of a dBm |
| **channelRxELevel** | 1.3.6.1.4.1.32327.2.2.2.1.3.2.1.1.6 | Integer(-2048..2047) | Information about RSM-RxE power level.  This is in 1/10ths of a dBm |
| **rxChannelStatus** | 1.3.6.1.4.1.32327.2.2.2.1.3.2.1.1.7 | Integer(0..65535) | Information about Rx channel status bits |
| **rxChannelState** | 1.3.6.1.4.1.32327.2.2.2.1.3.2.1.1.8 | Integer(1..4) | An integer representing state of the Rx channel |
| **rxChannelDescription** | 1.3.6.1.4.1.32327.2.2.2.1.3.2.1.1.9 | Text String | Description of Rx channel status bits |

**Channel states**
1  OK
2  Fail
3  Disable/Not configured
4  Invalid Rx channel index

**Rx Channel Status Bits**
0x0001 Rx power level failure summary.
0x0002 Rx Antenna isolation loss fail summary.
0x0004 RxA level out of range (Rx-0 only).
0x0008 VCO lock failed.
0x0010 RxB level out of range (Rx-0 only).
0x0020 Any Rx signal still ON/OFF.
0x0040 RxE level out of range (Rx-0 only).
0x0080 RxA signal present.
0x0100 RxB signal present.
0x0200 RxE signal present.
0x0400 RxA enabled.
0x0800 RxB enabled.
0x1000 RxE enabled.
0x2000 RSM Present.

An example of Rx channel status table is;

| statusRxChannell... | rxChannelPort | rxChannelNum... | channelRxALe... | channelRxBLe... | channelRxELevel | rxChanne... | rxChanne... | rxChannelDescription |
|---|---|---|---|---|---|---|---|---|
| 1 | RxPort(0) | 1 | -710 | -1251 | -1251 | 160 | okay(1) | PWR=OK(A=-71.0,B=<-125 ,E=<-125 ); VCO=OK; RX=ON |
| 2 | RxPort(0) | 2 | -1251 | -1251 | 2047 | 32 | okay(1) | PWR=OK(A=<-125 ,B=<-125 ); VCO=OK; RX=OFF |
| 3 | RxPort(0) | 3 | -1251 | 2047 | 2047 | 32 | okay(1) | PWR=OK(A=<-125 ); VCO=OK; RX=OFF |
| 4 | RxPort(0) | 4 | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 5 | RxPort(0) | 5 | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 6 | RxPort(0) | 6 | 2047 | 2047 | 2047 | 0 | disabled(3) | |

SNMP Table - .iso.org.dod.internet.private.enterprises.rfIndustries.rfiPublic.rfiProducts.rfiAxMProduct.axmAlarmMIB.statusAlarmEntry.statusRxChannelNode.statusRxChannelTable

**Note:**     The levels will be reported as +2047 if the respective input is not enabled

**Isolation test status table entry objects (**1.3.6.1.4.1.32327.2.2.2.1.3.3.1.1**)**

| Object name | OID | Syntax | Description |
|---|---|---|---|
| isolChannelIndex | 1.3.6.1.4.1.32327.2.2.2.1.3.3.1.1.1 | Integer(0..40) | A unique value for each isolation test channel (instance/row) |
| isolTestSource | 1.3.6.1.4.1.32327.2.2.2.1.3.3.1.1.2 | Text string | Textual representation of test source |
| isolTestFreq | 1.3.6.1.4.1.32327.2.2.2.1.3.3.1.1.3 | Text string | Textual representation of test frequency |
| isolTestResultA | 1.3.6.1.4.1.32327.2.2.2.1.3.3.1.1.4 | Integer(-2048..2047) | Measurement results of antenna Isolation A/ RxA Gain/ TxA rejection levels.  This is in 1/10ths of a dB |
| isolTestResultB | 1.3.6.1.4.1.32327.2.2.2.1.3.3.1.1.5 | Integer(-2048..2047) | Measurement results of antenna Isolation B/ RxB Gain/ TxB rejection levels.  This is in 1/10ths of a dB |
| isolTestResultE | 1.3.6.1.4.1.32327.2.2.2.1.3.3.1.1.6 | Integer(-2048..2047) | Measurement results of antenna Isolation E/ RxE Gain/ TxE rejection levels.  This is in 1/10ths of a dB |
| isolTestStatus | 1.3.6.1.4.1.32327.2.2.2.1.3.3.1.1.7 | Integer(0..65535) | Information about isolation test status bits |
| isolTestState | 1.3.6.1.4.1.32327.2.2.2.1.3.3.1.1.8 | Integer(1..4) | State of isolation test channel |
| isolTestDescription | 1.3.6.1.4.1.32327.2.2.2.1.3.3.1.1.9 | Text string | Textual description of  isolation test status bits |

**Isolation Channel Index**
0          Antenna Isolation,
1 - 20     Rx System Gain channels (1 - 20)
21 - 40   Tx Rejection channels (1 - 20)

**Isolation test channel states**
1   OK
2   Fail
3   Disable/Not configured
4   Invalid index

**Isolation Test Status Bits**
0x0001 Not used.
0x0002 Rx Gain or Tx Rejection fail.
0x0004 RxA level out of range. (Not used by SNMP)
0x0008 VCO lock fail (Rx Gain only). (Not used by SNMP)
0x0010 RxB level out of range. (Not used by SNMP)
0x0020 Not used.
0x0040 RxE level out of range. (Not used by SNMP)
0x0080 Not used.
0x0100 Not used.
0x0200 Not used.
0x0400 RxA enabled. (Not used by SNMP)
0x0800 RxB enabled. (Not used by SNMP)
0x1000 RxE enabled. (Not used by SNMP)
0x2000 RSM Present. (Not used by SNMP)

**Note:**     The use of the IsolationTestStatus bits varies between SNMP and Manager Messages. Only bit 0x0002 is used for SNMP. In SNMP, bit 0x0002 will be set whenever there is either an Antenna Isolation, Rx Gain, or Tx Rejection alarm.

An example of isolation test status table is;

SNMP Table - .iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiAxMProduct.axmAlarmMIB.statusAlarmEntry.statusIsolationChannelNode.statusIsolationChannelTable

| isolChannelIndex | isolTestSource | isolTestFreq | isolTestResultA | isolTestResultB | isolTestResultE | isolTestStatus | isolTestState | isolTestDescription |
|---|---|---|---|---|---|---|---|---|
| 0 | AntIsolation | 480.000000 MHz | 591 | 591 | 593 | 32 | okay(1) | Ant Isolation,STATUS=OK(A=59.1,B=59.1,E=59.3 dB,480.000000 MHz) |
| 1 | RxSystem-1 | 480.000000 MHz | 4 | 2 | 3 | 0 | okay(1) | Rx System,STATUS=OK(A=0.4,B=0.2,E=0.3 dB,480.000000 MHz) |
| 2 | RxSystem-2 | 481.000000 MHz | 1 | 2 | 2047 | 0 | okay(1) | Rx System,STATUS=OK(A=0.1,B=0.2 dB,481.000000 MHz) |
| 3 | RxSystem-3 | 482.000000 MHz | 3 | 2047 | 2047 | 0 | okay(1) | Rx System,STATUS=OK(A=0.3 dB,482.000000 MHz) |
| 4 | RxSystem-4 | 483.000000 MHz | 0 | 6 | 4 | 0 | okay(1) | Rx System,STATUS=OK(A=0.0,B=0.6,E=0.4 dB,483.000000 MHz) |
| 5 | RxSystem-5 | 484.000000 MHz | -4 | 4 | 2047 | 0 | okay(1) | Rx System,STATUS=OK(A=-0.4,B=0.4 dB,484.000000 MHz) |
| 6 | RxSystem-6 | 485.000000 MHz | -6 | 2047 | 2047 | 0 | okay(1) | Rx System,STATUS=OK(A=-0.6 dB,485.000000 MHz) |
| 7 | RxSystem-7 | 486.000000 MHz | -11 | 4 | -1 | 0 | okay(1) | Rx System,STATUS=OK(A=-1.1,B=0.4,E=-0.1 dB,486.000000 MHz) |
| 8 | RxSystem-8 | 487.000000 MHz | -17 | 1 | 2047 | 0 | okay(1) | Rx System,STATUS=OK(A=-1.7,B=0.1 dB,487.000000 MHz) |
| 9 | RxSystem-9 | 488.000000 MHz | -21 | 2047 | 2047 | 0 | okay(1) | Rx System,STATUS=OK(A=-2.1 dB,488.000000 MHz) |
| 10 | RxSystem-10 | 480.500000 MHz | 0 | 1 | 2 | 0 | okay(1) | Rx System,STATUS=OK(A=0.0,B=0.1,E=0.2 dB,480.500000 MHz) |
| 11 | RxSystem-11 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 12 | RxSystem-12 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 13 | RxSystem-13 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 14 | RxSystem-14 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 15 | RxSystem-15 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 16 | RxSystem-16 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 17 | RxSystem-17 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 18 | RxSystem-18 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 19 | RxSystem-19 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 20 | RxSystem-20 | 494.000000 MHz | -17 | -9 | -15 | 0 | okay(1) | Rx System,STATUS=OK(A=-1.7,B=-0.9,E=-1.5 dB,494.000000 MHz) |
| 21 | TxRejection-1 | 410.000000 MHz | -1 | -1 | -1 | 0 | okay(1) | Tx Rejection,STATUS=OK(A=-0.1,B=-0.1,E=-0.1 dB,410.000000 MHz) |
| 22 | TxRejection-2 | 411.000000 MHz | 893 | 1466 | 2047 | 2 | fail(2) | Tx Rejection,STATUS=FAIL(A=89.3,B=> 146.6 dB,411.000000 MHz) |
| 23 | TxRejection-3 | 410.000000 MHz | -1 | 2047 | 2047 | 0 | okay(1) | Tx Rejection,STATUS=OK(A=-0.1 dB,410.000000 MHz) |
| 24 | TxRejection-4 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 25 | TxRejection-5 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 26 | TxRejection-6 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 27 | TxRejection-7 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 28 | TxRejection-8 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 29 | TxRejection-9 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 30 | TxRejection-10 | 440.000000 MHz | -1 | 2047 | 2047 | 0 | okay(1) | Tx Rejection,STATUS=OK(A=-0.1 dB,440.000000 MHz) |
| 31 | TxRejection-11 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 32 | TxRejection-12 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 33 | TxRejection-13 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 34 | TxRejection-14 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 35 | TxRejection-15 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 36 | TxRejection-16 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 37 | TxRejection-17 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 38 | TxRejection-18 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 39 | TxRejection-19 | | 2047 | 2047 | 2047 | 0 | disabled(3) | |
| 40 | TxRejection-20 | 440.000000 MHz | -1 | -1 | -1 | 0 | okay(1) | Tx Rejection,STATUS=OK(A=-0.1,B=-0.1,E=-0.1 dB,440.000000 MHz) |

**Note:** The levels will be reported as +2047 if the respective input is not enabled

**CAM and SAM status table entry objects (**1.3.6.1.4.1.32327.2.2.2.1.3.4.1.1**)**

| Object name | OID | Syntax | Description |
|---|---|---|---|
| moduleIndex | 1.3.6.1.4.1.32327.2.2.2.1.3.4.1.1.1 | Integer(1..10) | A unique value representing CAM/SAM module ID |
| moduleInfo | 1.3.6.1.4.1.32327.2.2.2.1.3.4.1.1.2 | Integer(0..4) | Module information bits |
| EXT-1 | 1.3.6.1.4.1.32327.2.2.2.1.3.4.1.1.3 | Integer(-32768..32767) | External analog input voltage measurement in mV or Module Temperature in 1/10ths of a degree Fahrenheit |
| EXT-2 | 1.3.6.1.4.1.32327.2.2.2.1.3.4.1.1.4 | Integer(-32768..32767) | External analog voltage measurement in 10 mV units |
| EXT-3 | 1.3.6.1.4.1.32327.2.2.2.1.3.4.1.1.5 | Integer(-32768..32767) | External analog voltage measurement in 10 mV units |
| EXT-4 | 1.3.6.1.4.1.32327.2.2.2.1.3.4.1.1.6 | Integer(-32768..32767) | External analog input voltage measurement in 10 mV units |
| moduleStatus | 1.3.6.1.4.1.32327.2.2.2.1.3.4.1.1.7 | Integer(0..65535) | Represents external and digital input alarm status bits. See below |
| moduleState | 1.3.6.1.4.1.32327.2.2.2.1.3.4.1.1.8 | Integer(1..4) | Represents state of alarm module. See below |
| moduleDescription | 1.3.6.1.4.1.32327.2.2.2.1.3.4.1.1.9 | Text string | Textual description of the module status and module Information |

**CAM/SAM module states**
1 OK
2 Fail
3 Disabled / Not configured
4 Invalid module Id

**Module Information Bits**
0x1        Alarm module is present.
0x2        Alarm module is SAM.
0x4        Ext-1 value is degrees Celsius.
0x8        Spare.

**Module Status Bits**
0x0001   Ext-1 input alarm active.
0x0002   Ext-2 input alarm active.
0x0004   Ext-3 input alarm active.
0x0008   Ext-4 input alarm active.
0x0010   DI-1 input alarm active.
0x0020   DI-2 input alarm active.
0x0040   DI-3 input alarm active.
0x0080   DI-4 input alarm active.
0x0100   DI-5 input alarm active.
0x0200   DI-6 input alarm active.
0x0400   DI-7 input alarm active.
0x0800   DI-8 input alarm active.
0x1000   DI-9 input alarm active.
0x2000   DI-10 input alarm active.

An example of CAM/SAM status table is;

| SNMP Table - .iso.org.dod.internet.private.enterprises.rfIndustries.rfiPublic.rfiProducts.rfiAxMProduct.axmAlarmMIB.statusAlarmEntry.statusCamSamNode.statusCamSamTable | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| moduleIndex | moduleInfo | eXT-1 | eXT-2 | eXT-3 | eXT-4 | moduleStatus | moduleState | moduleDescription |
| almMod1(1) | 1 | 0 | 0 | 0 | 0 | 8117 | fail(2) | CAM Input; DI(1,2,4,5,6,7,8,9)-FAIL ; EXT(1,3)-FAIL |
| almMod2(2) | 0 | 32767 | 32767 | 32767 | 32767 | 0 | disabled(3) | MODULE: NOT PRESENT |
| almMod3(3) | 0 | 32767 | 32767 | 32767 | 32767 | 0 | disabled(3) | MODULE: NOT PRESENT |
| almMod4(4) | 0 | 32767 | 32767 | 32767 | 32767 | 0 | disabled(3) | MODULE: NOT PRESENT |
| almMod5(5) | 0 | 32767 | 32767 | 32767 | 32767 | 0 | disabled(3) | MODULE: NOT PRESENT |
| almMod6(6) | 0 | 32767 | 32767 | 32767 | 32767 | 0 | disabled(3) | MODULE: NOT PRESENT |
| almMod7(7) | 0 | 32767 | 32767 | 32767 | 32767 | 0 | disabled(3) | MODULE: NOT PRESENT |
| almMod8(8) | 0 | 32767 | 32767 | 32767 | 32767 | 0 | disabled(3) | MODULE: NOT PRESENT |
| almMod9(9) | 3 | 4974 | 491 | 491 | 491 | 16123 | fail(2) | SAM Input; DI(1,2,3,4,6,7,8,9,10)-FAIL ; EXT(1,2,4)-FAIL |
| almMod10(10) | 0 | 32767 | 32767 | 32767 | 32767 | 0 | disabled(3) | MODULE: NOT PRESENT |

**Note:**     The levels will be reported as +32767 if the respective input is not enabled.
              Analog values are applicable only for SAM module.

**System status table entry objects (**1.3.6.1.4.1.32327.2.2.2.1.3.5.1.1**)**

| Object name | OID | Syntax | Description |
|---|---|---|---|
| systemIndex | 1.3.6.1.4.1.32327.2.2.2.1.3.5.1.1.1 | Integer(0..1) | 0 - System summary alarm status<br>1 - System login/access failure attempt status |
| systemStatus | 1.3.6.1.4.1.32327.2.2.2.1.3.5.1.1.2 | Integer(0..65535) | System summary status bits |
| systemState | 1.3.6.1.4.1.32327.2.2.2.1.3.5.1.1.3 | Integer(1,2,4) | State corresponding to "System summary alarm status" or "System login/access status" |
| systemDescription | 1.3.6.1.4.1.32327.2.2.2.1.3.5.1.1.4 | Text string | Textual description of the status |

**System states:**
1   OK
2   Fail
4   Invalid index

**System summary alarm status**
**System Status Bits**
0x0001 Lock detect fail for Receive synthesisers.
0x0002 Lock detect failed for Transmit synthesisers.
0x0004 One or more Tx Power level failures are present.
0x0008 One or more Tx VSWR fails are present.
0x0010 Rx Power level failure is present.
0x0020 System hardware alarms summary. (See Hardware Alarm Bits)
0x0040 Antenna Isolation test failure present.
0x0080 One or more CAM/SAM External or General Purpose Digital Input alarms are present.
0x0100 Rx Summary alarm.
0x0200 Tx Power summary alarm.
0x0400 Tx VSWR summary alarm.
0x0800 Not in use.
0x1000 Not in use.
0x2000 Receive Systems Module alarm.
0x4000 Alarm relay is active. As masked by Alarm Config.
0x8000 Summary alarm LED is active.

**Hardware Alarms**
Internal 5V rail is out of limit.
Internal hardware failure – SD-Card.

**Note:**    These are not presented separately, but any Hardware Alarm Bit(s) will set the 0x0020 bit of the (above) System Status Bits.

**System login/access status**

**Note:** System status not applicable

An example of system status table is;

| systemIndex | systemStatus | systemState | systemDescription |
|---|---|---|---|
| SystemStatus(0) | 58712 | fail(2) | SYS=FAIL, RX=FAIL, TXPWR=OK, TXVSWR=FAIL, RSM=FAIL |
| SystemAccess(1) | 0 | fail(2) | System Access Lockout Alert, Source=192.168.1.110; 192.168.1.10 |

SNMP Table - .iso.org.dod.internet.private.enterprises.rfiIndustries.rfiPublic.rfiProducts.rfiAxMProduct.axmAlarmMIB.statusAlarmEntry.statusSystemNode.statusSystemTable

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