

The guideline reference documents have been used to create this logical procedure for a basic Class A mobile evaluation using the AITS-R running Version 1.24 software.

You need to break your evaluation down into EVALUATION CRITERIA. We have offered you the logical steps and criteria that we would use in evaluating a Class A mobile based on the IMO/IALA Guidelines and only insofar as the use of the AITS-R will produce a meaningful result.

On installation this procedure will only be successful if you have set up the EUT according to the manufacturers Installation documentation.

If this is a survey then the EUT could already be correctly set up according to the EUT manufacturers procedure.

You must have set up and uploaded an 'own profile' to the AITS-R.

The procedure has been reduced to goals, which are then converted into evaluation criteria. Basic notes have been added to indicate AIS interactivity.

An important aspect of AIS is to understand that the AIS EUT is going to do what you request it to do with the AITS-R [**What you expect**] along with what its protocol for the current navigational situation says it must do [**What you don't expect**].

eg. If you interrogate the EUT for a particular message, the EUT will transpond [**What you expect**]. The EUT could within a very limited number of slots transmit its [**What you don't expect**] packet and overwrite the AITS-R display with a message number other than the one you requested.

Request it again until you are satisfied it has appeared on your AITS-R LCD. The data contained in any message is automatically logged to the 'current profile'.

We can only suggest a logical evaluation procedure based on the current guidelines.

It is not possible to create a direct 1 to 1 logical correlation table for AIS evaluation, due to the fact that the success of this logical procedure is a synergy between the AITS-R unit and a correctly set up EUT.

A EUT may not provide the required data simply because it has not been correctly setup according to the EUT manufacturers procedure.

This procedure assumes a correctly setup EUT.

Menu Function	Class A Mobile AIS Object
<p><b>Step 1: Enter Target MMSI</b></p> <p>Goal of Step 1 is to enter the correct Target MMSI.</p>	See Operational And Technical Manual
<p><b>Step 2: Measure RF power in a slot</b></p> <p>Goal of Step 2 is to measure RF power in a slot.</p>	See Operational And Technical Manual

What have we accomplished in this section.

Step 1. We entered the target MMSI so that we could isolate the EUT.

Step 2. We measured the forward power in a slot.

FIRST EVALUATION CRITERIA.

Q:

How much RF power is the EUT transmitting?

A;

The measured RF power in a slot from the target EUT is 00.00 watts.

We can now move on to the next section

<p><b>Step 3: Monitor and view received packets</b></p> <p>You need to receive a packet to indicate at the most basic level that you have entered the target MMSI correctly and that the EUT is transmitting correctly.</p> <p>You need to receive a packet 1 or 3 so the AITS-R may obtain the GPS location of the EUT.</p> <p>You optionally may wait to receive a Msg 5. Remember this is nominally every 6 minutes.</p> <p>This is optional, as you will interrogate the EUT for this packet in a later menu step.</p> <p>Goal 1 of Step 3 is to receive a Positional Packet Message Type 1 or 3 as indicated on the AITS-R LCD screen</p> <p>Goal 2 of Step 3 is to receive a Positional Packet Message Type 1 or 3 on AIS1 and AIS2 as indicated on the AITS-R LCD screen</p>	<p>Under normal Cold Boot Class A EUT operating conditions all 3 of the following packets should be expected at some time.</p> <p>The frequency of reception of the Positional Packets (1 or 3) will depend on the current navigational setting, which you have set the EUT to according to the EUT manufacturers installation document.</p> <p>The Static Voyage Packet (5) should be transmitted nominally every 6 minutes.</p> <p>In order to have the required minimum data as set out in the reference documents you require a minimum of:</p> <table border="1" data-bbox="794 801 1361 936"> <tr> <td>Positional Packet</td> <td>Msg 1 or 3</td> </tr> <tr> <td>Static Voyage Packet.</td> <td>Msg 5</td> </tr> </table> <p>Basic Packet Explanation</p> <p>When you power up the EUT, the following process takes place.</p> <p>EUT listens to VDL for 1 minute before it starts any transmissions</p> <p>After 1 minute nominally the EUT will start to announce its presence with a Msg 3 packet. This will last for 1 minute.</p> <p>Message 3 (Positional) The AIS unit transmits this packet in order to enter the Vhf data Link for the first minute after the initialization or listening period.</p> <p>After 1 minute nominally the EUT will enter the continuous mode and will continue to transmit its presence with a Msg 1 packet.</p> <p>Message 1 (Positional) The AIS unit transmits this packet after having entered the continuous mode of the Vhf data Link entry process. Normally after the second Operational minute.</p> <p>The EUT should within the first 3 minutes of operation transmit a Msg 5 packet.</p> <p>Message 5 (Static Voyage) The AIS unit transmits this packet with its static and voyage related data.</p> <p>Every 6 minutes nominally the EUT will will transmit its Msg 5 packet.</p>	Positional Packet	Msg 1 or 3	Static Voyage Packet.	Msg 5
Positional Packet	Msg 1 or 3				
Static Voyage Packet.	Msg 5				

What have we accomplished in this section.

Step 3. We have received the positional packet from the target EUT.

#### SECOND EVALUATION CRITERIA.

Q:

Do we receive the EUT positional transmission as indicated on the AITS-R LCD?

A:

We receive the positional packet transmission from the target EUT.

#### THIRD EVALUATION CRITERIA.

Q:

Do we receive the EUT positional transmission on AIS1 and AIS2 as indicated on the AITS-R LCD?

A:

We receive the positional packet as transmitted on both AIS channels by the EUT.

Step 3. Optionally we also received the Static And Voyage packet from the target EUT.

#### OPTIONAL FOURTH EVALUATION CRITERIA.

Q:

Do we receive the EUT static and voyage transmission from the target EUT?

A:

We receive and decode the static and voyage data from the target EUT.

We can now move on to the next section

The next set of evaluation criteria is based on evaluating the operational capability of the EUT AIS receivers and their controller response.

**Step 4: Choose GPS mode**

The Goal of Step 4 is to assign a location to the AITS-R unit

In order for you to send a packet to the EUT, the AITS-R unit must have a GPS location. This position can be acquired from two sources.

The first source is the 'own profile' data where you created a profile for the AITS-R unit and then uploaded it to the AITS.R.

The second is to use the GPS position, which was sent by the EUT and decoded by the AITS-R unit in Step 3.

Should you later want to evaluate the display object, the latter choice would be better

<p><b>Step 5: Interrogate EUT AIS Channels</b></p> <p>The Goal of Step 5 is to interrogate the EUT on AIS1 and AIS2 and receive a response Message 3 and Message 5 as indicated on the AITS-R LCD screen</p>	<p>A Class A Mobile can be interrogated for the following messages,</p> <p>Message 3. (Positional)  Message 5. (Static Voyage)  Message 11. (UTC Time and Date)</p> <p>Search And Rescue Can Be Interrogated for the following messages.</p> <p>Message 9. (Search And Rescue)</p> <p>Class B Can Be Interrogated for the following messages.</p> <p>Message 18. (Standard Position Report)  Message 19. (Extended Position Report)</p> <p>Aids To Navigation Can Be Interrogated for the following messages.</p> <p>Message 21. (Aids-to-Navigation Report)</p>
<p><b>5.1</b>  <b>Find the following menu item in the AIR menu</b></p> <p><b>Manual AIR-2 Msg Type 3</b></p> <p><b>Then press the SND Key</b></p>	<p>What happened when you pressed the send key for this menu item?</p> <p>The AITS-R transmitted a packet to the EUT on AIS Channel 162.025Mhz.</p> <p>This packet requested the EUT to return or transpond the Message Type 3.</p>
<p><b>5.1.1</b>  <b>Find the following menu item in the AIR menu</b></p> <p><b>Manual AIR-1 Msg Type 3</b></p> <p><b>Then press the SND Key</b></p>	<p>What happened when you pressed the send key for this menu item?</p> <p>The AITS-R transmitted a packet to the EUT on AIS Channel 161.975Mhz.</p> <p>This packet requested the EUT to return or transpond the Message Type 3.</p>

<p><b>5.2</b> <b>Find the following menu item in the AIR menu</b></p> <p><b>Manual AIR-2 Msg Type 5</b></p> <p><b>Then press the SND Key</b></p>	<p>What happened when you pressed the send key for this menu item?</p> <p>The AITS-R transmitted a packet to the EUT on AIS Channel 162.025Mhz.</p> <p>This packet requested the EUT to return or transpond the Message Type 5.</p>
<p><b>5.2.1</b> <b>Find the following menu item in the AIR menu</b></p> <p><b>Manual AIR-1 Msg Type 5</b></p> <p><b>Then press the SND Key</b></p>	<p>What happened when you pressed the send key for this menu item?</p> <p>The AITS-R transmitted a packet to the EUT on AIS Channel 161.975Mhz.</p> <p>This packet requested the EUT to return or transpond the Message Type 5.</p>

What have we accomplished in this section.

Step 4. We chose which GPS location to use for our VDL emulation.

Step 5.1. We interrogated the target EUT for AIS positional information.

Step 5.2. We interrogated the target EUT for AIS static voyage information..

#### FIFTH EVALUATION CRITERIA.

Q:

Is the EUT AIS2 receiver and controller operational?

A;

1.The EUT has received an interrogation request on AIS2 from the AITS-R.

2.The correct Msg 3 response has been sent from the EUT.

3.The correct Msg 5 response has been sent from the EUT.

4.This indicates that the AIS2 receiver is operational

5.That the controller could process the desired response.

6.We have logged the data contained in Msg 3 in the 'current profile'.

7.We have logged the data contained in Msg 5 in the 'current profile'.

#### SIXTH EVALUATION CRITERIA.

Q:

Is the EUT AIS1 receiver and controller operational?

A;

1.The EUT has received an interrogation request on AIS1 from the AITS-R.

2.The correct Msg 3 response has been sent from the EUT.

3.The correct Msg 5 response has been sent from the EUT.

4.This indicates that the AIS1 receiver is operational

5.That the controller could process the desired response.

6.We have logged the data contained in Msg 3 in the 'current profile'.

7.We have logged the data contained in Msg 5 in the 'current profile'.

We can now move on to the next section

The next set of evaluation criteria is based on evaluating the operational capability of the EUT DSC receivers and their controller response.

<p><b>Step 6: Interrogate DSC</b></p> <p>The Goal of Step 6 is to interrogate the EUT on the DSC channel and receive a response as indicated on the AITS-R LCD screen</p>	<p>A Class A Mobile can be interrogated by the AITS-R for the following DSC message as defined in IEC 61993-2 chapter 10.4.1</p> <p>Standard Test Signal Number 1</p> <p>A DSC call with an individual station address and with command sets 103 (report your position) and 111 (report ship name) unless otherwise stated (refer to ITU-R M.825).</p>
<p><b>6.1</b></p> <p><b>Find the following menu item in the DSC menu</b></p> <p><b>Manual DSC Position &amp; Name S/N</b></p> <p><b>Then press the SND Key</b></p>	<p>What happened when you pressed the send key for this menu item?</p> <p>The AITS-R transmitted a packet to the EUT on DSC Channel 156.525Mhz.</p> <p>This packet requested the EUT to return or transpond the Position and Name.</p>

What have we accomplished in this section.

Step 6.1. We interrogated the target EUT for DSC position and Name information.

#### SEVENTH EVALUATION CRITERIA.

Q:

Is the EUT DSC receiver and controller operational?

A;

- 1.The EUT has received an interrogation request on DSC from the AITS-R.
- 2.The correct response has been sent from the EUT.
- 3.This indicates that the DSC receiver is operational
- 4.That the controller could process the desired response.
- 5.We have logged the DSC data contained in the 'current profile'.

#### EIGHTH EVALUATION CRITERIA.

Q:

Is the EUT DSC Transmitter operational?

A;

- 1.The EUT has received an interrogation request on DSC from the AITS-R.
- 2.The correct response has been transmitted from the EUT.
- 3.This indicates that the DSC transmitter is operational

We can now move on to the next section

<p><b>Step 7: Evaluate EUT Presentation Port, MKD and or display object</b></p> <p>Goal of Step 7 is to transmit an 'own' positional and or a 'own' static voyage message to the EUT on any one or both of the AIS channels and to view this message on the display object connected to the EUT.</p>	<p>A Class A Mobile should have at the very least a Minimum Keyboard Display unit connected to its presentation port.</p>
<p><b>7.1</b>  <b>Find the following menu item in the VDL menu</b></p> <p>Depending on the classification of the equipment you want to emulate select from the following categories.</p> <p><b>Class A AIS</b>  <b>Message 1</b>  <b>Message 3</b>  <b>Message 5</b></p> <p><b>Search And Rescue</b>  <b>Message 9</b></p> <p><b>Class B</b>  <b>Message 18</b>  <b>Message 19</b></p> <p><b>Aid To Navigation</b>  <b>Message 21</b></p> <p><b>Then press the SND Key</b></p>	<p>What happened when you pressed the send key for this menu item?</p> <p>The AITS-R transmitted a packet to the EUT on the selected AIS1 or AIS2 channel.</p> <p>Review EUT manufacturers documentation to view the received message.</p> <p>If you selected the same GPS as the EUT In Step 4 and you have a visual display object connected to the EUT then you should be able to view your 'own' position on the screen.</p>

What have we accomplished in this section.

Step 7.1 We emulated VDL activity by sending an 'own profile' message to the EUT using the VDL.

NINTH EVALUATION CRITERIA.

Q:

Is the interconnection of the presentation interface and the display object operational?

A;

The 'own profile' message has been viewed on the display object. This indicates that the interconnection between the EUT and the display object is functional.

We can now move on to the next section

<p><b>Step 8: Evaluate external antenna</b></p> <p>Goal of Step 8 is to compute the return loss and SWR of the antenna to be used on the EUT.</p>	<p>See AITS-R Operational And Technical Manual for procedure.</p>
<p><b>8.1</b>  <b>Find the following menu item</b></p> <p><b>Measure Return Loss / SWR N/F</b></p> <p><b>Connect AITS(R) and Antenna E/F</b></p> <p><b>Then press the ENT Key</b></p>	<p>What happened when you pressed the enter key for this menu item?</p> <p>The AITS-R transmitted a message 3 positional packet using RATDMA on the VDL channel 161.975Mhz.</p> <p>The AITS-R computed the return loss and SWR during the transmission of this packet.</p>

What have we accomplished in this section.

Step 8.1 We computed the return loss and SWR of the operational antenna.

TENTH EVALUATION CRITERIA.

Q:  
Is the Operational Antenna functional?

A;

1.The return loss and SWR is -00.00dB and 00:1  
2.We have logged the data in the 'current profile'.

We can now move on to the next section

<p><b>Step 9: Evaluate Pilot Plug</b></p> <p>Goal of Step 9 is to decode the VDO data stream, which is ported from the Pilot Plug.</p>	<p>The pilot plug is an RS422 extension of the presentation interface of the EUT.</p> <p>Every time the EUT transmits a message, this message is coded into a VDO message, which is then ported to the presentation interface.</p> <p>By intercepting and decoding this message we can evaluate the stream of data emanating from the Pilot Plug.</p> <p>Remember that the Navigational Setting of the EUT will dictate the frequency of VDL transmissions.</p> <p>You will get a corresponding VDO output from the Pilot Plug for every VDL transmission from the EUT.</p>
<p><b>9.1</b> <b>Find the following menu item</b></p> <p><b>Pilot Plug Profile N/F</b></p> <p><b>Baud Rate 38400 E/N/F</b></p> <p><b>Connected 38400/N/F</b></p> <p><b>Then press the ENT Key</b></p>	<p>What happened when you pressed the enter key for this menu item?</p> <p>The AITS-R will decode the VDO data stream and place the decoded data in the 'Pilot Plug Profile'</p> <p>The AITS-R does not give any direct visual indication of this process.</p> <p>You can step through the pilot profile by pressing the RX key. See Operational and technical manual.</p>

What have we accomplished in this section.

Step 9.1 Decode the Pilot Plug RS422 VDO stream.

**ELEVENTH EVALUATION CRITERIA.**

Q:  
Have we decoded the VDO stream from the Pilot Plug?

A;  
The VDO data has been logged to the 'Pilot Profile' section

We can now move on to the next section

<p><b>Step 10: Save current profile</b></p> <p>Goal of Step 10 is to save and format a document with the required tags.</p>	<p>See Operational And Technical Manual.</p>
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<p>TWELTH EVALUATION CRITERIA.</p> <p>Produce a report of the previous 11 steps.</p> <p>As you have the facility to overwrite your evaluation data, until such a time as you the user are 100% able to use the AITS-R unit without any reference documentation you should download the data to your PC whilst at the evaluation site.</p>
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<p><b>Step 11: Terminal display of sensor and VDO strings</b></p>	<p>This is a helper function. It will display the first 32 characters of a VDO or NMEA Sensor string.</p> <p>The RS422 connection is polarity sensitive, in other words if the connections are reversed the AITS-R unit will not display anything. If this is the case then simply reverse the connections.</p>
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<p><b>Step 12: Indicate serial number and software version</b></p>	<p>This is provided so that the user has access to the software version and serial number of the unit.</p>
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Goal of	Evaluation Criteria
Step 1 is to enter the correct Target MMSI.	None
FIRST EVALUATION CRITERIA.	
Step 2 is to measure RF power in a slot.	How much RF power is the EUT transmitting? The measured RF power in a slot from the target EUT is 00.00 watts.
SECOND EVALUATION CRITERIA.	
Step 3 Goal 1 is to receive a Positional Packet Message Type 1 or 3 as indicated on the AITS-R LCD screen	Do we receive the EUT positional transmission as indicated on the AITS-R LCD? We receive the positional packet transmission from the target EUT.
THIRD EVALUATION CRITERIA.	
Step 3 Goal 2 is to receive a Positional Packet Message Type 1 or 3 on AIS1 and AIS2 as indicated on the AITS-R LCD screen	Do we receive the EUT positional transmission on AIS1 and AIS2 as indicated on the AITS-R LCD? We receive the positional packet as transmitted on both AIS channels by the EUT.
FOURTH EVALUATION CRITERIA.	
Step 3 optional Goal static and voyage message 5	Do we receive the EUT static and voyage transmission from the target EUT? We receive and decode the static and voyage data from the target EUT.
Step 4 Goal is to assign a GPS location to the AITS-R unit	None
FIFTH EVALUATION CRITERIA	
Step 5 Goal is to interrogate the EUT on AIS1 and AIS2 and receive a response Message 3 and Message 5 as indicated on the AITS-R LCD screen	Is the EUT AIS2 receiver and controller operational? 1.The EUT has received an interrogation request on AIS2 from the AITS-R. 2.The correct Msg 3 response has been sent from the EUT. 3.The correct Msg 5 response has been sent from the EUT. 4.This indicates that the AIS2 receiver is operational 5.That the controller could process the desired response. 6.We have logged the data contained in Msg 3 in the 'current profile'. 7.We have logged the data contained in Msg 5 in the 'current profile'.

SIXTH EVALUATION CRITERIA.	
<p>Step 5 Goal is to interrogate the EUT on AIS1 and AIS2 and receive a response Message 3 and Message 5 as indicated on the AITS-R LCD screen</p>	<p>Is the EUT AIS1 receiver and controller operational?</p>
	<ol style="list-style-type: none"> <li>1.The EUT has received an interrogation request on AIS1 from the AITS-R.</li> <li>2.The correct Msg 3 response has been sent from the EUT.</li> <li>3.The correct Msg 5 response has been sent from the EUT.</li> <li>4.This indicates that the AIS1 receiver is operational</li> <li>5.That the controller could process the desired response.</li> <li>6.We have logged the data contained in Msg 3 in the 'current profile'.</li> <li>7.We have logged the data contained in Msg 5 in the 'current profile'.</li> </ol>
SEVENTH EVALUATION CRITERIA.	
<p>Step 6 Goal is to interrogate the EUT on the DSC channel and receive a response as indicated on the AITS-R LCD screen</p>	<p>Is the EUT DSC receiver and controller operational?</p>
	<ol style="list-style-type: none"> <li>1.The EUT has received an interrogation request on DSC from the AITS-R.</li> <li>2.The correct response has been sent from the EUT.</li> <li>3.This indicates that the DSC receiver is operational</li> <li>4.That the controller could process the desired response.</li> <li>5.We have logged the DSC data contained in the 'current profile'.</li> </ol>
EIGHTH EVALUATION CRITERIA.	
<p>Step 6 Goal is to interrogate the EUT on the DSC channel and receive a response as indicated on the AITS-R LCD screen</p>	<p>Is the EUT DSC transmitter operational?</p>
	<ol style="list-style-type: none"> <li>1.The EUT has received an interrogation request on DSC from the AITS-R.</li> <li>2.The correct response has been transmitted from the EUT.</li> <li>3.This indicates that the DSC transmitter is operational</li> </ol>
NINTH EVALUATION CRITERIA.	
<p>Step 7 Goal is to transmit an 'own' positional and or a 'own' static voyage message to the EUT on any one or both of the AIS channels and to view this message on the display object connected to the EUT.</p>	<p>Is the interconnection of the presentation interface and the display object operational?</p>
	<p>The 'own profile message has been viewed on the display object. This indicates that the interconnection between the EUT and the display object is functional.</p>

TENTH EVALUATION CRITERIA	
Step 8 Goal is to compute the return loss and SWR of the antenna to be used on the EUT.	<p>Is the Operational Antenna functional?</p> <p>1.The return loss and SWR is -00.00dB and 00:1</p> <p>2.We have logged the data in the 'current profile'.</p>
ELEVENTH EVALUATION CRITERIA.	
Step 9 Goal is to decode the VDO data stream, which is ported from the Pilot Plug.	<p>Have we decoded the VDO stream from the Pilot Plug?</p> <p>The VDO data has been logged to the 'Pilot Profile' section</p>
TWELTH EVALUATION CRITERIA.	
<p>Step 10 Goal is to save and format a document with the required minimal IMO/IALA information.</p> <p>Produce a report of the previous 11 steps. By processing HTML document parsed with the following tags</p>	\$USER_VDL_MMSI_USER_ID
	\$USER_VDL_IMO_NUMBER
	\$USER_VDL_CALL_SIGN
	\$USER_VDL_NAME
	\$USER_VDL_NAVIGATIONAL_STATUS
	\$USER_VDL_LONGITUDE
	\$USER_VDL_LATITUDE
	\$USER_VDL_TYPE_OF_SHIP_CARGO_TYPE
	\$USER_VDL_DIM_REF_FOR_POSITION
	\$USER_VDO_MMSI_USER_ID
	\$USER_VDO_IMO_NUMBER
	\$USER_VDO_CALL_SIGN
	\$USER_VDO_NAME
	\$USER_VDO_NAVIGATIONAL_STATUS
	\$USER_VDO_LONGITUDE
	\$USER_VDO_LATITUDE
	\$USER_VDO_TYPE_OF_SHIP_CARGO_TYPE
	\$USER_VDO_DIM_REF_FOR_POSITION
	\$USER_DSC_SELF_IDENTIFICATION
	\$USER_DSC_LONGITUDE
\$USER_DSC_LATITUDE	
\$USER_DSC_SHIPS_NAME	
\$USER_VDL_SLOT_RF_POWER	
\$USER_VDL_SLOT_RETURN_LOSS	
\$USER_VDL_SLOT_SWR	
END	

The total time taken for the above evaluation on our test bed from cold boot of the EUT to print out of the report is less than 5 minutes