

Report Date: 21 July 2003

Customer P.O.: 1T893500, 1T899200 & 1T899201

Test Period: 27 May through 19 June 2003

Security Classification: NA

TEST REPORT

FOR

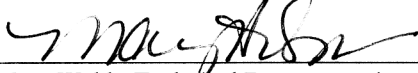
ENVIRONMENTAL TESTING OF THE P/N AISA1-000-01 AUTOMATIC INFORMATION SYSTEM

TESTING PERFORMED BY:

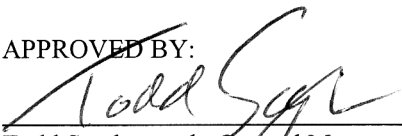
FOR:

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TEST REPORT PREPARED BY:


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QUALITY ASSURANCE:

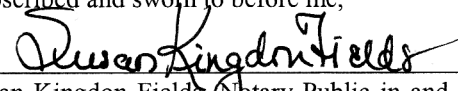

Mike McCord, Quality Assurance Manager

being duly sworn, deposes and says that the information contained in this report is the result of complete and carefully conducted tests and is to the best of his knowledge true and correct in all respects. Subscribed and sworn to before me,

"CQA Performed IAW One Book"

Not Required

Bill Kennedy, DCM Orlando QAS, S1002A


Susan Kingdon Fields, Notary Public in and for the State of Florida at large, this21st day of July, 2003.

State of Florida, County of Orange

Susan Kingdon Fields



My Commission CC865940

Expires August 24, 2003

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REPORT REVISION RECORD**REVISION DESCRIPTION OF CHANGE**

INITIAL RELEASE

- A Per Peggy Browning, L3 Communications, telephone conversation on 08 July 2003, the following Sections were BETA testing and not considered relevant to the test program:
- Section 1 (Dry Heat Storage)\
 - Section 2 (Dry Heat Functional)
 - Section 3 (Damp Heat Storage)
 - Section 4 (Low Temperature Functional)
 - Section 6 (Dry Heat Functional Retest)
 - Section 7 (Low Temperature Functional Retest 2)
 - Section 11 (Sinusoidal Vibration)
- The Sections were removed from the test report and the remaining Sections were sequentially renumbered, reformatted and edited to improve presentation.
- Improperly titled Section 2 (formerly Section 9) was changed from “Dry Heat Storage” to “Dry Heat Functional” and all related information corrected to reflect the change.
- The original Enclosure I containing the customer provided data was deleted and the data distributed among Enclosures appropriate to each test Section. Specifically, Enclosure I was added to Section 1, Enclosure II was added to Section 2, Enclosure III was added to Section 3, and Enclosure IV was added to Section 4. Customer supplied additional Enclosure data titles for clarity.
- Section 1 and Section 2 Low Temperature Functional tests were combined into one section for clarity.

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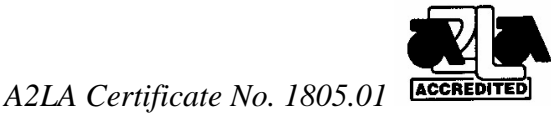
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FOREWORD

The objective of this test program was to subject customer provided test hardware to environmental simulation in compliance with customer stated specifications, including any authorized modifications, deviations or concessions to the original requirements. Test hardware consisted of items identified in the appropriate sections of this report. In addition to test hardware identification, each section contains information that describes the associated test setup and performance, and the resulting data. Qualtest measuring instruments used in testing were calibrated according to the requirements of ANSI/NCSL Z540-1-1994 and are NIST traceable. Calibration records are on file and available for inspection by request. Because the test methods are well established and are qualitative or semi-quantitative in nature, Qualtest does not apply measurement uncertainty unless obligated by contract. Measured value related to the corresponding tolerance requirement is used to decide whether a test meets the requirements of the specification. Any test hardware operational setups and resulting evaluations or inspections performed by the customer are not included in this report, unless they were explicitly requested. While observations and/or specification compliance statements may be reported, no interpretations or opinions regarding customer product performance are intended. Unless otherwise indicated in the appropriate report section, all contract obligations were met and the test objective achieved.

SECTION 1**LOW TEMPERATURE FUNCTIONAL TEST SUMMARY**

Test Start-Finish Dates: 05 through 13 June 2003

Responsible Test Technician: David Carpenter

1-1 TEST HARDWARE

One (1) P/N AISA1-000-01 Automatic Identification System (AIS), S/N 000221933

2-1 TEST REQUIREMENTS

With the test hardware configured for operation, descend to $-20\pm 3^{\circ}\text{C}$ at a rate $\leq 1^{\circ}\text{C}$ per minute and maintain this temperature for 10 to 16 hours. Once the customer has completed any operational requirements, raise the chamber temperature to $25\pm 3^{\circ}\text{C}$ at a rate $\leq 1^{\circ}\text{C}$ per minute.

2.1-1 Test Specification:

Primary: Section 8.4.2 of CEI IEC 60945, Fourth Edition, 2002-08

Reference: L3 Communications "Certification Test Matrix for the Automatic Identification System Part Number AISA1-000-00" number 905-M0151-54, Rev. A

3-1 TEST SETUP**QUALTEST FURNISHED MEASUREMENT AND TEST EQUIPMENT**

QTI #	Item	Manufacturer	Model Number	Calibration Due
100037	Chart Recorder	Honeywell	DR45AT-1111-0	11/22/2003
100968	Temperature Chamber	Thermotron	FX-32-CHV-15-15	NA

CHART RECORDER SETUP

Channel	Function	Type of sensor
1	Monitor chamber air temperature	100 Ω Bulb

The test item was placed on a rack in the temperature chamber with power cables routed through a porthole to customer support equipment located outside the chamber (Reference Figures 1-1 and 2-1).

4-1 TEST DESCRIPTION

4.1-1 Laboratory Ambient Conditions:

Temperature (°C): NA
Relative Humidity (%): NA
Atmospheric Pressure: Site Ambient

4.2-1 Non-Qualtest Personnel, Including Organization, Present for All or Part of the Test:

Sagar G. Dastidar, a representative from L3 Communications, was present for June 5 and 6 testing. Todd White, a representative from L3 Communications, was present for June 12 and 13 testing.

4.3-1 Powered/Operational State of the Hardware and by Whom:

Test item operation and functional testing was conducted by Sagar G. Dastidar and Todd White, L3 Communications. David Carpenter, Qualtest test technician, periodically observed functional test activities and was provided test data on digital media by the customer.

4.4-1 Test Activities and Resulting Measurements from Observed/Recorded Data:

Run #	Start Date/Time	End Date/Time	Test Duration
1	06/05/03 at 1226	06/06/03 at 0542	17-hours 16-minutes

In order for the customer to complete functional testing at temperature, the test item was held at $-20\pm3^{\circ}\text{C}$ beyond the specified 16 hours (total time at temperature of 17 hours 16 minutes).

Run #	Start Date/Time	End Date/Time	Duration of Soak
2	06/12/03 at 2045	06/13/03 at 1745	21-hours

In order for the customer to complete functional testing at temperature, the test item was held at $-20\pm3^{\circ}\text{C}$ beyond the specified 16 hours (total time at temperature of 21 hours).

5-1 ENVIRONMENTAL TEST DATA

No anomalies were observed. Chart recorder temperature data are located after Figure 2-1.

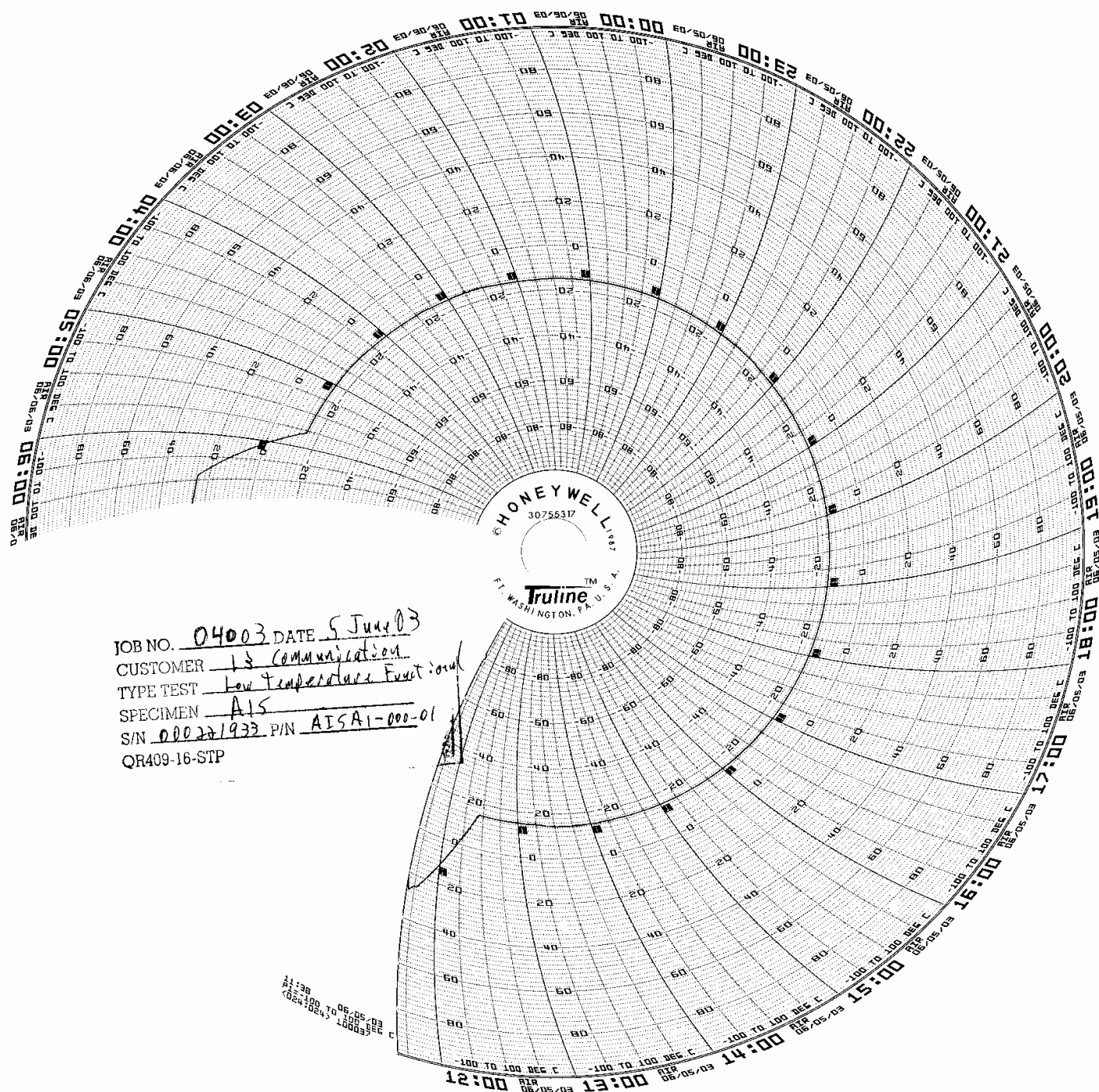
Screenshots related to the functional testing performed by the customer are presented in Enclosure I.

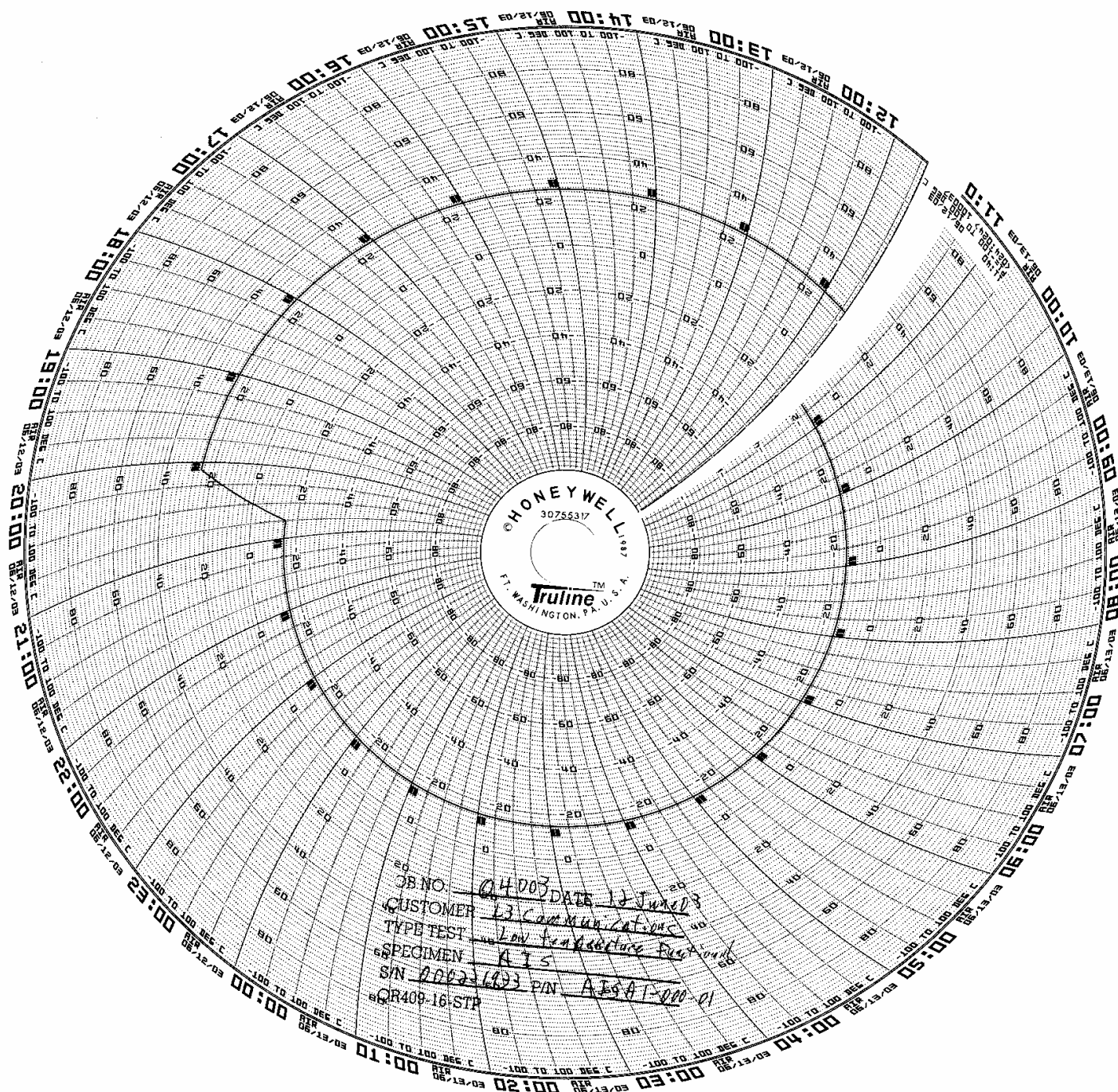


Figure 1-1. Typical chamber test setup for low temperature functional.



Figure 2-1. Typical overall test setup for low temperature functional.





Customer Note: The Low Temperature test was interrupted due to a loose internal cable. The unit was returned to L3 for repair and teting resumed.

ENCLOSURE I**L3 COMMUNICATIONS AUTOMATIC IDENTIFICATION SYSTEM (AIS) SCREEN SHOTS****FOR THE****LOW TEMPERATURE FUNCTIONAL TEST****PREFACE**

These data are the results of the IEC 60945 required Performance Checks and Performance Tests conducted by L3 Communications personnel. Specifically, Performance Test Sections 15.1.1, 15.1.2, 15.2.1, and 15.4.1 were conducted by Sagar G. Dastidar, L3 Communications. Performance Test Sections 15.3.1, 15.3.2 and the Performance Check were conducted by Todd White, L3 Communications. Customer data was supplied to Qualtest in Microsoft Word format on digital media, which was inserted into this Enclosure unaltered, including the descriptions with the accompanying graphics.

Criteria Statement

L3 Communications used the following criteria for Performance Checks and Performance Tests

Performance Check**Criteria for Pass**

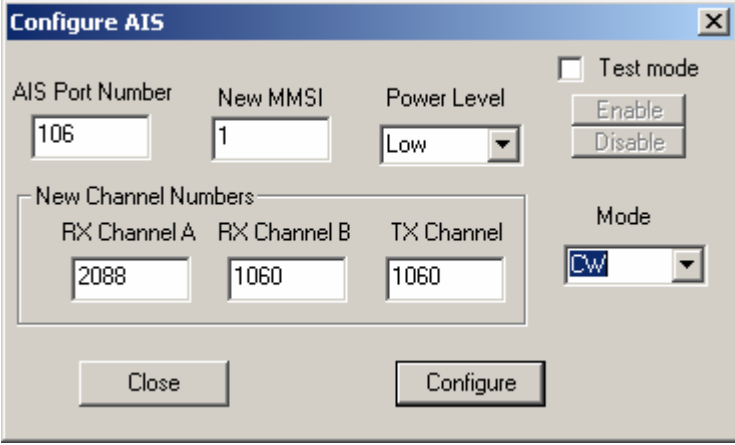
- 1) IEC 61993-2 Paragraph 14.1.1.1 -Transmit Position Reports needs to be every 2 +/- 0.3 seconds.
- 2) IEC 61993-2 Paragraph 14.1.1.2 -Receipt Position Reports needs to be continuous for the duration of the test. No unmatched messages indicate successful continuous reception.

Performance Tests**Criteria for Pass**

- 1) IEC 61993-2 Paragraph 15.1.1 – The frequency error shall not exceed $\pm 1\text{kHz}$ measured at +30% power under Dry Heat and –10% power under Low Temperature.
- 2) IEC 61993-2 Paragraph 15.1.2 – The carrier power (conducted) shall be within +2.0dB and -3.0dB of the rated output power measured at +30% power under Dry Heat and –10% power under Low Temperature.
- 3) IEC 61993-2 Paragraph 15.2.1 - The B and Y state frequencies measured at +30% power under Dry Heat and –10% power under Low Temperature shall be within $\pm 1\%$.
- 4) IEC 61993-2 Paragraph 15.3.1 – The sensitivity shall be –101dBm when measured at +30% power under Dry Heat and –10% power under Low Temperature with a PER of 20%.
- 5) IEC 61993-2 Paragraph 15.3.2 - The sensitivity shall be –92dBm when measured at +30% power under Dry Heat and –10% power under Low Temperature with a PER of 20%.
- 6) IEC 61993-2 Paragraph 15.4.1 – The maximum usable sensitivity shall not be less sensitive than –101dBm when measured at +30% power under Dry Heat and –10% power under Low Temperature.

LOW TEMPERATURE FUNCTIONAL TEST (SECTION 8.4.2 OF IEC 60945)

Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 156.025

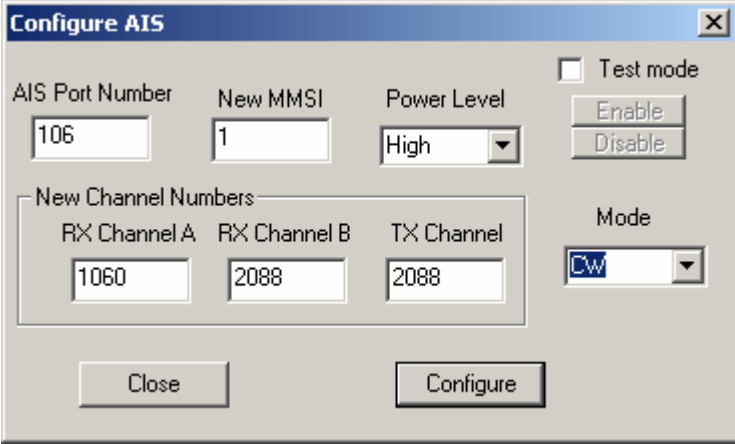


The 'Configure AIS' dialog box for Channel 156.025 contains the following settings:

Field	Value
AIS Port Number	106
New MMSI	1
Power Level	Low
Test mode	<input type="checkbox"/>
Enable	Button
Disable	Button
New Channel Numbers	
RX Channel A	2088
RX Channel B	1060
TX Channel	1060
Mode	CW

Buttons: Close, Configure

Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 162.025



The 'Configure AIS' dialog box for Channel 162.025 contains the following settings:

Field	Value
AIS Port Number	106
New MMSI	1
Power Level	High
Test mode	<input type="checkbox"/>
Enable	Button
Disable	Button
New Channel Numbers	
RX Channel A	1060
RX Channel B	2088
TX Channel	2088
Mode	CW

Buttons: Close, Configure

Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 157.4125

The 'Configure AIS' dialog box for Channel 157.4125 contains the following fields and controls:

- AIS Port Number:** Text box containing '106'.
- New MMSI:** Text box containing '1'.
- Power Level:** Dropdown menu set to 'High'.
- Test mode:** A checkbox that is currently unchecked, with 'Enable' and 'Disable' buttons to its right.
- New Channel Numbers:** A group box containing:
 - RX Channel A:** Text box containing '2260'.
 - RX Channel B:** Text box containing '1228'.
 - TX Channel:** Text box containing '1228'.
- Mode:** A dropdown menu set to 'CW'.
- Buttons:** 'Close' and 'Configure' buttons at the bottom.

Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 160.6375

The 'Configure AIS' dialog box for Channel 160.6375 contains the following fields and controls:

- AIS Port Number:** Text box containing '106'.
- New MMSI:** Text box containing '1'.
- Power Level:** Dropdown menu set to 'High'.
- Test mode:** A checkbox that is currently unchecked, with 'Enable' and 'Disable' buttons to its right.
- New Channel Numbers:** A group box containing:
 - RX Channel A:** Text box containing '1228'.
 - RX Channel B:** Text box containing '2260'.
 - TX Channel:** Text box containing '2260'.
- Mode:** A dropdown menu set to 'CW'.
- Buttons:** 'Close' and 'Configure' buttons at the bottom.

Transmit Frequency Error, Test Results, Section 15.1.1

Frequency Error Test

Test Equipment Required:

- Frequency Counter
- 30db Attenuator (Black & Green)

Cal Due: 5-21-04

Setup Instructions:

- See Photo(s):

Procedure:

- Connect Frequency Counter to EUT through Attenuator
- Apply power to the Frequency Counter and check for dashes
- Using the Configuration Tool, set EUT frequency to 1228
- Select Run mode
- Select "Stop/Single" to get the frequency
- Record frequency value: 157.41357 MHz
- Select Run mode
- Using the Configuration Tool, set EUT frequency to 2260
- Select "Stop/Single" to get the frequency
- Record frequency value: 160.637334 MHz
- Select Run mode
- Using the Configuration Tool, set EUT frequency to 1060
- Select "Stop/Single" to get the frequency
- Record frequency value: 156.020786 MHz
- Select Run mode
- Using the Configuration Tool, set EUT frequency to 2088
- Select "Stop/Single" to get the frequency
- Record frequency value: 162.025836 MHz

Transmit Carrier Power, Setup Screen, Section 15.1.2, Low Power

The 'Configure AIS' dialog box is shown with the following settings:

- AIS Port Number:** 106
- New MMSI:** 1
- Power Level:** Low
- Test mode:** ☐ (unchecked)
- Enable/Disable:** Buttons are present.
- New Channel Numbers:**
 - RX Channel A:** 1060
 - RX Channel B:** 2088
 - TX Channel:** 1060
- Mode:** CW
- Buttons:** Close, Configure

Transmit Carrier Power, Setup Screen, Section 15.1.2, High Power

The 'Configure AIS' dialog box is shown with the following settings:

- AIS Port Number:** 106
- New MMSI:** 1
- Power Level:** High
- Test mode:** ☐ (unchecked)
- Enable/Disable:** Buttons are present.
- New Channel Numbers:**
 - RX Channel A:** 1060
 - RX Channel B:** 2088
 - TX Channel:** 1060
- Mode:** CW
- Buttons:** Close, Configure

Transmit Carrier Power, Test Results, Section 15.1.2

Carrier Power Test

Test Equipment Required:

- Power Meter
- Power Sensor
- Black Attenuator (Number matches Power Sensor connector)

Cal Due: 5.22.04

Setup Instructions:

- See Photo(s):

Procedure:

- Connect black attenuator to power sensor with same SN
- Connect Power Sensor cable to Power Meter
- Place Power Meter into DBM mode (DBM/W button → Select on right of screen)
- Using the Configuration Tool, set EUT the following:
 - Rx1 = 1070
 - Rx2 = 1070
 - Tx = 1070
 - Power = High
 - Mode = CW
- Record value: +10.81 dbm
+11 dBm (+/- 3 dB)
- Using the Configuration Tool, set EUT the following:
 - Rx1 = 1070
 - Rx2 = 1070
 - Tx = 1070
 - Power = Low
 - Mode = CW
- Record value: +2.765 dbm
+3 dBm (+/- 3 dB)

Transmitter Frequency Error (DSC), Setup Screen, Section 15.2.1, B State

The 'Configure AIS' dialog box is shown with the following settings:

- AIS Port Number:** 106
- New MMSI:** 1
- Power Level:** High
- Test mode:** ☐ (unchecked)
- Enable/Disable buttons:** Both are disabled (greyed out).
- New Channel Numbers:**
 - RX Channel A:** 1060
 - RX Channel B:** 1060
 - TX Channel:** 1070
- Mode:** D21
- Buttons:** Close and Configure.

Transmitter Frequency Error (DSC), Setup Screen, Section 15.2.1, Y State

The 'Configure AIS' dialog box is shown with the following settings:

- AIS Port Number:** 6
- New MMSI:** 1
- Power Level:** Low
- Test mode:** ☐ (unchecked)
- Enable/Disable buttons:** Both are disabled (greyed out).
- New Channel Numbers:**
 - RX Channel A:** 1070
 - RX Channel B:** 1070
 - TX Channel:** 1070
- Mode:** D13
- Buttons:** Close and Configure.

Transmitter Frequency Error (DSC), Test Results, Section 15.2.1

DSC Frequency Error

Test Equipment Required:

- Marconi (Tx Mode) Receiving Signal
- Frequency Counter
- 30db Attenuator (Black & Green)

Cal Due: 10.03.03Cal Due: 5.22.04

Setup Instructions:

See Photo(s):

Procedure:

- Connect attenuator to Marconi (right input - look for light)
- Select Tx Button (Blue - Mode)
- Select Low Pass Filter (Under AF Filters)
- Connect Frequency Counter to DE Mod Out on back of Marconi
- Select Run on frequency counter
- Using the Configuration Tool, set EUT the following:
 - Rx1 = 1070
 - Rx2 = 1070
 - Tx = 1070
 - Power = High
 - Mode = D13
- Select "Stop/Single" on Frequency Counter
- Record value: 1301.320661 Hz
1300 Hz (+/- 13 Hz)
- Select Run on frequency counter
- Using the Configuration Tool, set EUT the following:
 - Rx1 = 1070
 - Rx2 = 1070
 - Tx = 1070
 - Power = High
 - Mode = D21
- Select "Stop/Single" on Frequency Counter
- Record value: 2111.5683 Hz
2100 Hz (+/- 21 Hz)

Receiver Sensitivity, Setup Screen, Section 15.3.1, 25kHz Channel 162.025

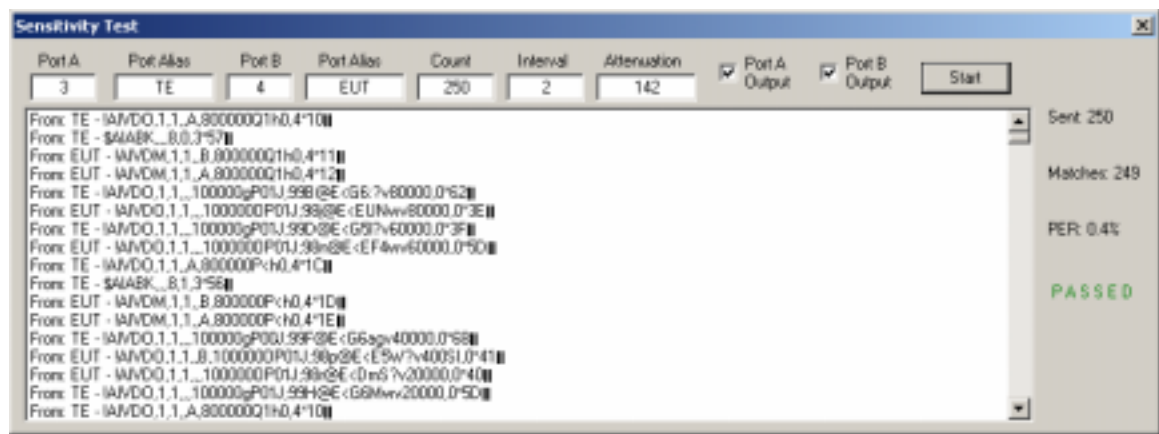
The screenshot shows the 'Configure AIS' dialog box. The 'AIS Port Number' field is set to 106. The 'New MMSI' field is empty. The 'Power Level' field is a dropdown menu. The 'Test mode' checkbox is unchecked. The 'Enable' and 'Disable' buttons are visible. The 'New Channel Numbers' section contains three fields: 'RX Channel A' (2088), 'RX Channel B' (2088), and 'TX Channel' (2088). The 'Mode' dropdown menu is also visible. The 'Close' and 'Configure' buttons are at the bottom.

The screenshot shows the 'Configure AIS' dialog box. The 'AIS Port Number' field is set to 107. The 'New MMSI' field is empty. The 'Power Level' field is a dropdown menu. The 'Test mode' checkbox is unchecked. The 'Enable' and 'Disable' buttons are visible. The 'New Channel Numbers' section contains three fields: 'RX Channel A' (2088), 'RX Channel B' (2088), and 'TX Channel' (2088). The 'Mode' dropdown menu is also visible. The 'Close' and 'Configure' buttons are at the bottom.

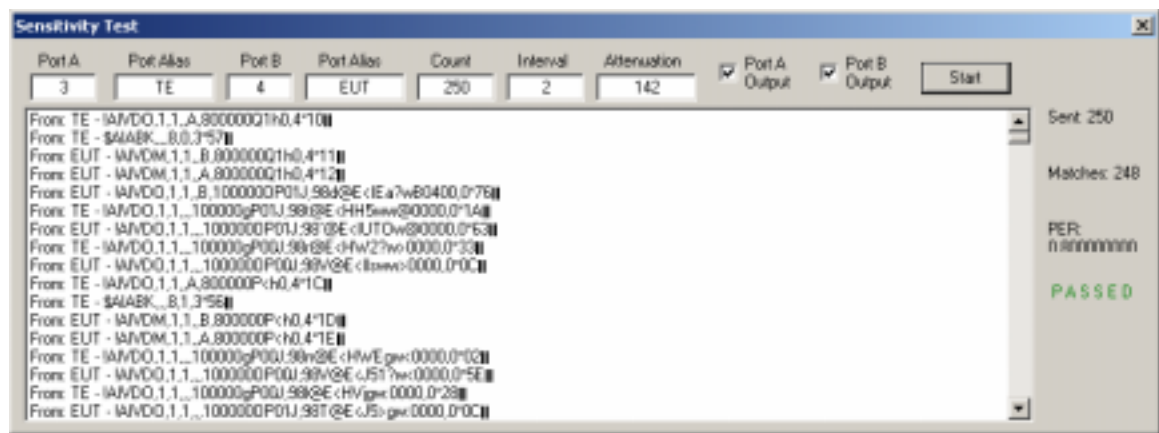
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 162.025

Run 1



Run 2



Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 162.025

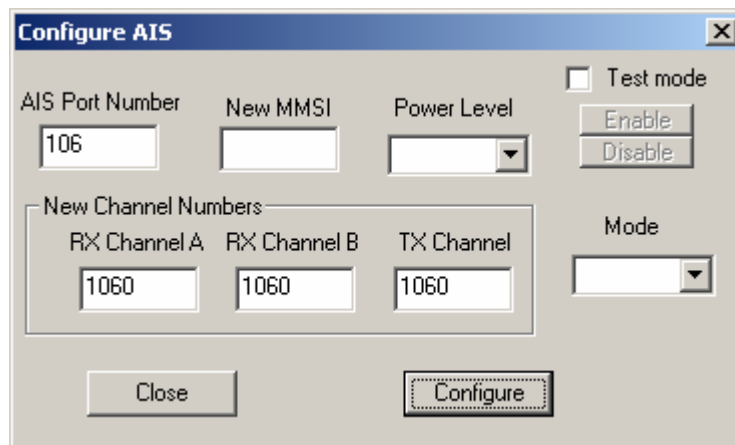
Run 3

Port A	Port Alias	Port B	Port Alias	Count	Interval	Attenuation	Port A Output	Port B Output	Start
3	TE	4	EUT	250	2	142	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
From: TE - IAWDO,1,1,...100000gP0U,98d9E<LnLgwR0000,0*50									Sent: 250
From: TE - IAWDO,1,1,A,800000Q1h0,4*10									
From: TE - \$AABK...8,0,3*57									Matches: 247
From: EUT - IAWDM,1,1,B,800000Q1h0,4*11									
From: EUT - IAWDM,1,1,A,800000Q1h0,4*12									
From: EUT - IAWDO,1,1,...1000000P0U,98d9E<K70wwR0000,0*44									PER: 1.2%
From: TE - IAWDO,1,1,...100000gP0U,98d9E<LUNdW0000,0*40									
From: EUT - IAWDM,1,1,B,100000gP0U,98d9E<K4g0wP0000,0*32									
From: EUT - IAWDM,1,1,A,100000gP0U,98d9E<LUE?wN0400,0*62									
From: EUT - IAWDM,1,1,B,800000P<h0,4*1D									PASSED
From: EUT - IAWDM,1,1,A,800000P<h0,4*1E									
From: EUT - IAWDO,1,1,...1000000P0U,98d9E<K70wwR0000,0*48									
From: EUT - \$AIALR,165245.00,035,A,V,AIS: No valid ROT information*66									
From: EUT - \$AIALR,165245.00,032,A,V,AIS: Heading lost/invalid*01									
From: TE - IAWDO,1,1,A,100000gP0U,98d9E<LUE?wN0400,0*63									
From: TE - IAWDO,1,1,A,800000P<h0,4*1C									

Run 4

Port A	Port Alias	Port B	Port Alias	Count	Interval	Attenuation	Port A Output	Port B Output	Start
3	TE	4	EUT	250	2	142	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
From: TE - IAWDO,1,1,A,800000Q1h0,4*10									Sent: 250
From: TE - \$AABK...8,0,3*57									
From: TE - IAWDO,1,1,A,100000gP0U,98d9E<LULwvN00R0,0*0A									Matches: 246
From: EUT - IAWDM,1,1,B,800000Q1h0,4*11									
From: EUT - IAWDM,1,1,A,800000Q1h0,4*12									
From: EUT - IAWDM,1,1,B,100000gP0U,98d9E<LULwvN00R0,0*0B									
From: EUT - IAWDM,1,1,A,100000gP0U,98d9E<LULwvN00R0,0*0B									
From: EUT - IAWDO,1,1,...1000000P0U,98d9E<HhgwN0000,0*47									PER: 1.6%
From: EUT - \$AIALR,165245.00,035,A,V,AIS: No valid ROT information*66									
From: EUT - \$AIALR,165245.00,032,A,V,AIS: Heading lost/invalid*01									
From: EUT - \$AIALR,165317.00,030,V,V,AIS: No valid COG information*70									
From: EUT - \$AIALR,165317.00,029,V,V,AIS: No valid SOG information*68									
From: EUT - \$AIALR,165317.00,026,V,V,AIS: No sensor position in use*6D									
From: EUT - \$AIALR,165317.00,025,A,V,AIS: External EPFS lost*0A									
From: EUT - \$AIALR,000000.00,008,V,V,AIS: MKD connection lost*7C									
From: EUT - \$AIALR,000000.00,006,V,V,AIS: General Failure*14									
From: EUT - \$AIALR,000000.00,005,V,V,AIS: Rx channel 70 malfunction*2D									PASSED

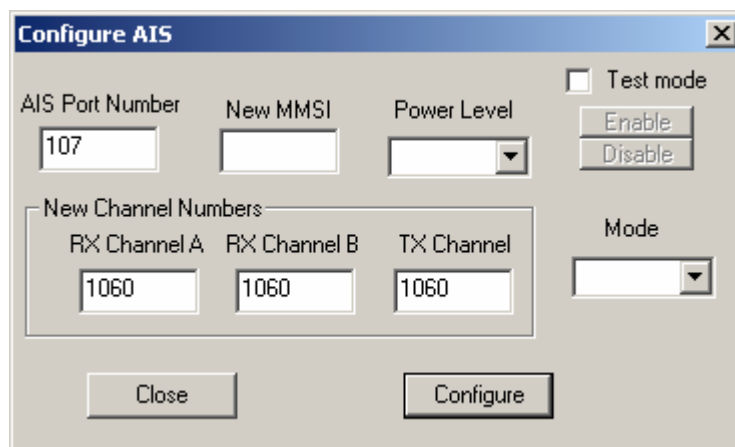
Receiver Sensitivity, Setup Screens, Section 15.3.1, 25kHz Channel 156.025



The 'Configure AIS' dialog box features a title bar with a close button. It contains three input fields: 'AIS Port Number' (106), 'New MMSI' (empty), and 'Power Level' (dropdown). To the right is a 'Test mode' checkbox and 'Enable/Disable' buttons. A 'New Channel Numbers' section includes 'RX Channel A' (1060), 'RX Channel B' (1060), and 'TX Channel' (1060). A 'Mode' dropdown is also present. At the bottom are 'Close' and 'Configure' buttons.

AIS Port Number	New MMSI	Power Level	Test mode
106			<input type="checkbox"/>

New Channel Numbers			Mode
RX Channel A	RX Channel B	TX Channel	
1060	1060	1060	



This dialog box is identical to the one above, but the 'AIS Port Number' is set to 107.

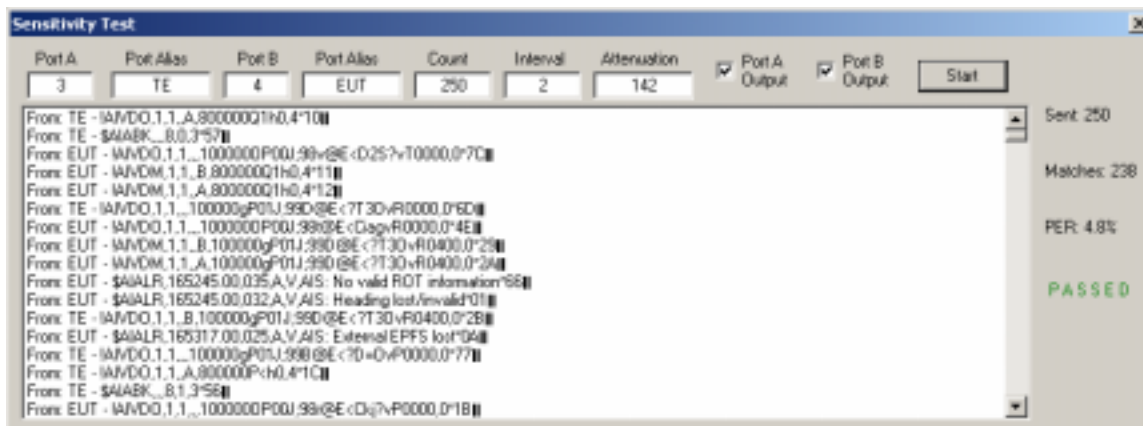
AIS Port Number	New MMSI	Power Level	Test mode
107			<input type="checkbox"/>

New Channel Numbers			Mode
RX Channel A	RX Channel B	TX Channel	
1060	1060	1060	

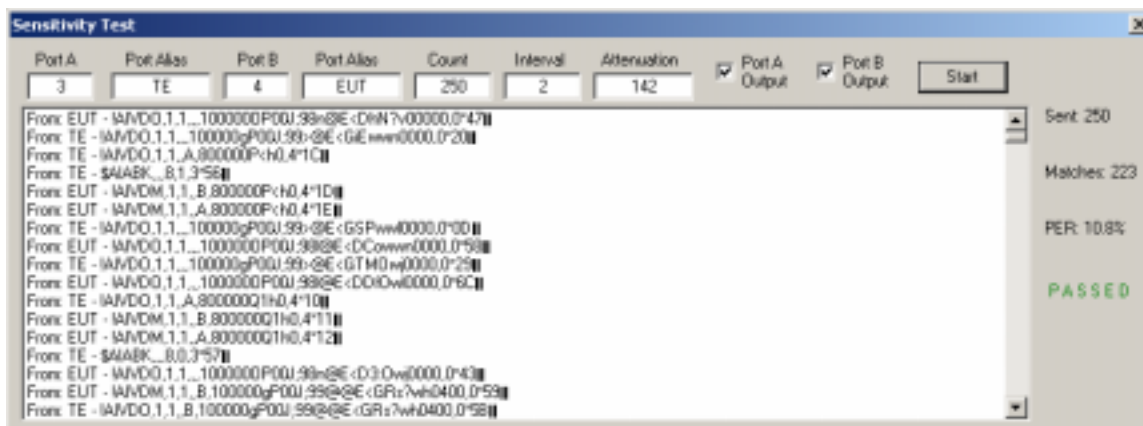
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 156.025

Run 1

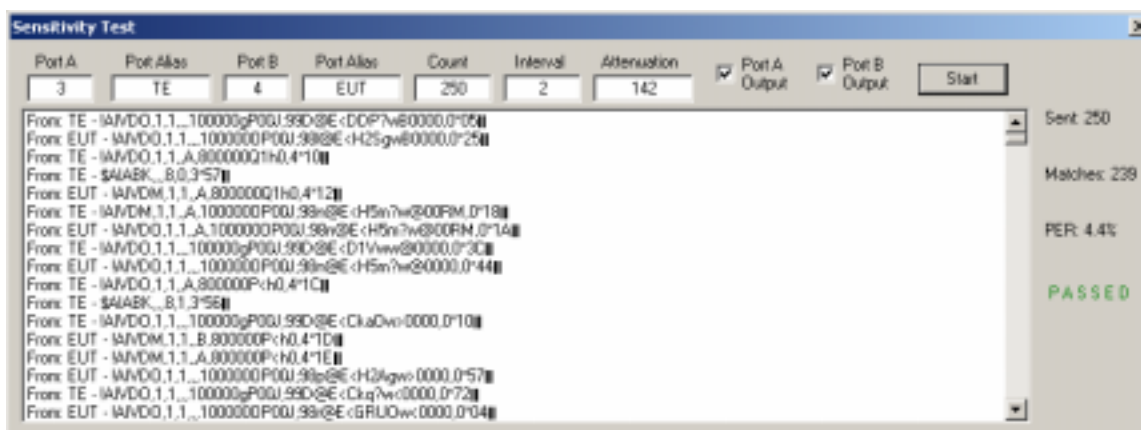


Run 2

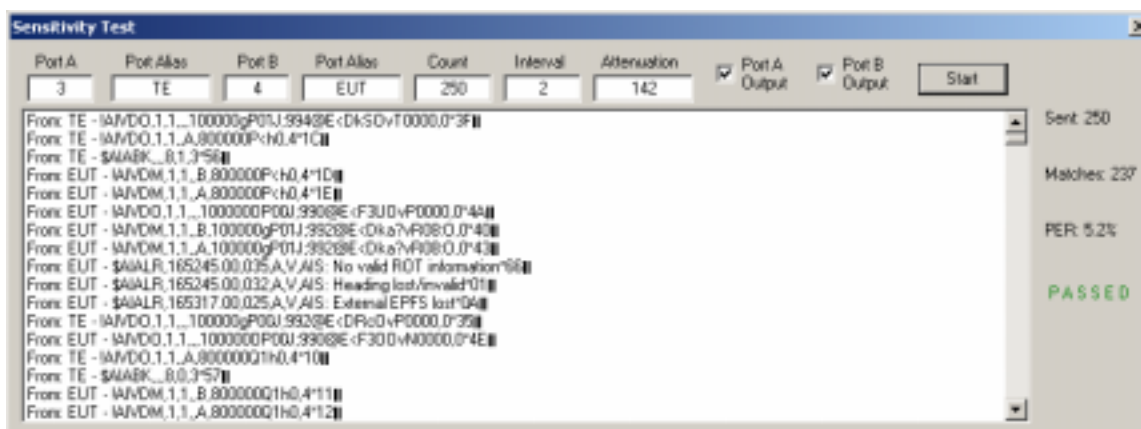


Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 156.025

Run 3



Run 4



Receiver Sensitivity, Setup Screens, Section 15.3.2, 12.5kHz Channel 157.4125

Configure AIS

AIS Port Number: 106

New MMSI:

Power Level:

☐ Test mode

Enable
Disable

New Channel Numbers

RX Channel A: 1228

RX Channel B: 1228

TX Channel: 1228

Mode:

Close Configure

Configure AIS

AIS Port Number: 107

New MMSI:

Power Level:

☐ Test mode

Enable
Disable

New Channel Numbers

RX Channel A: 1228

RX Channel B: 1228

TX Channel: 1228

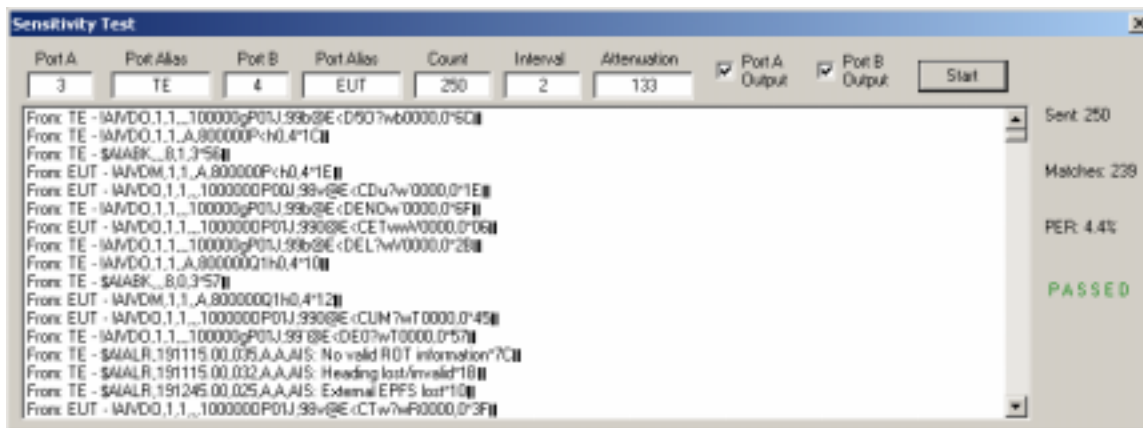
Mode:

Close Configure

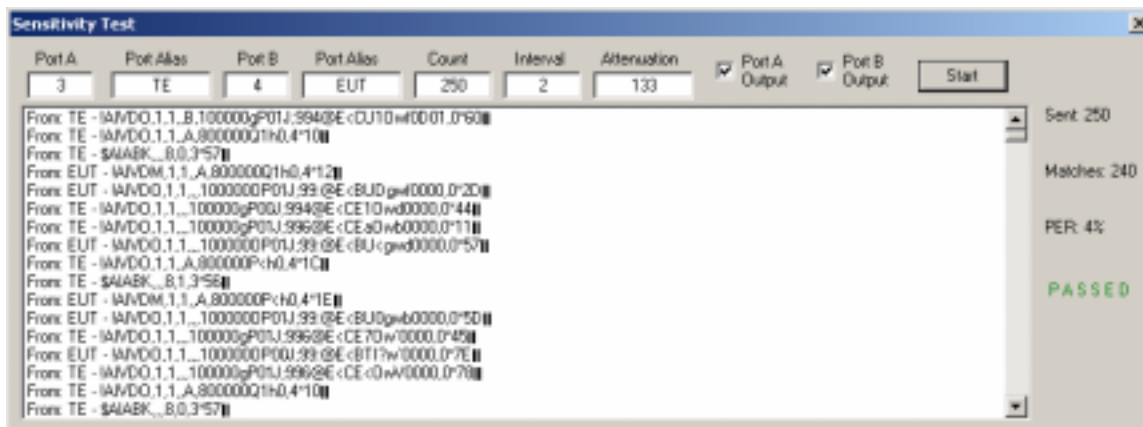
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 157.4125

Run 1

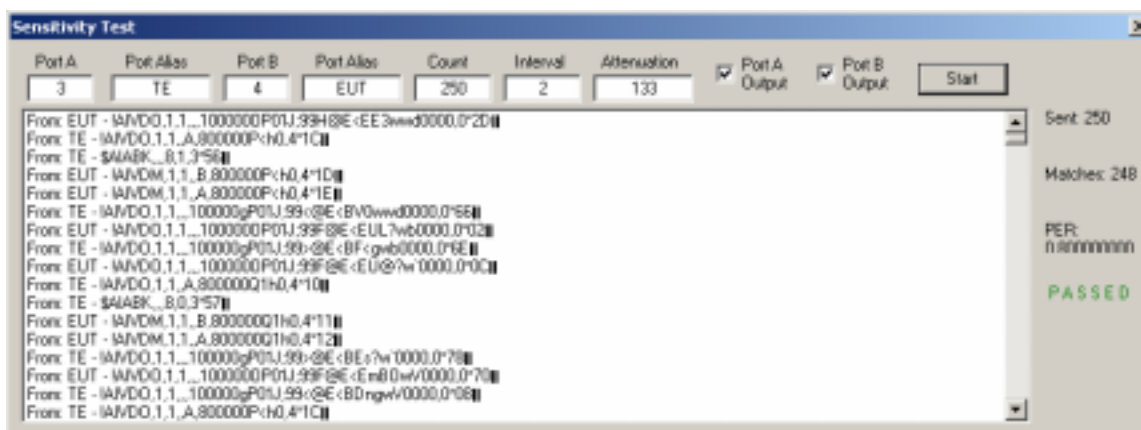


Run 2

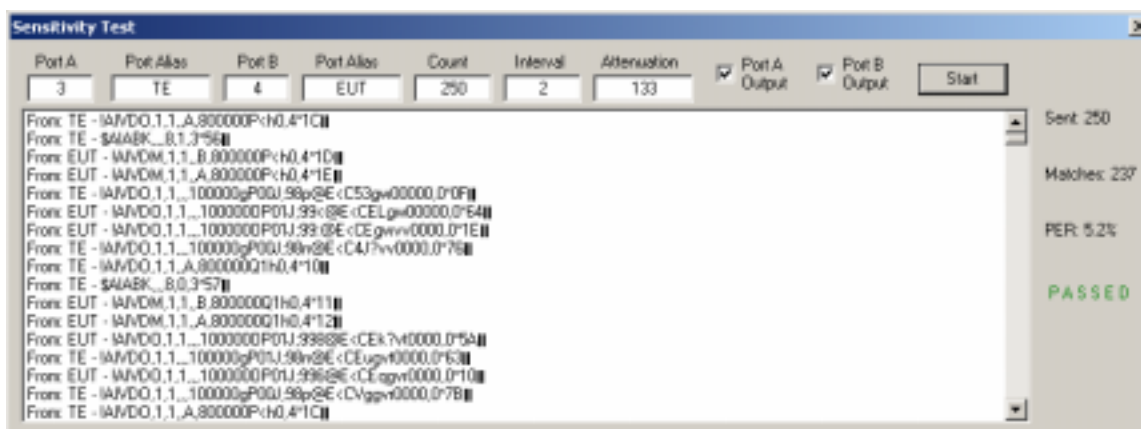


Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 157.4125

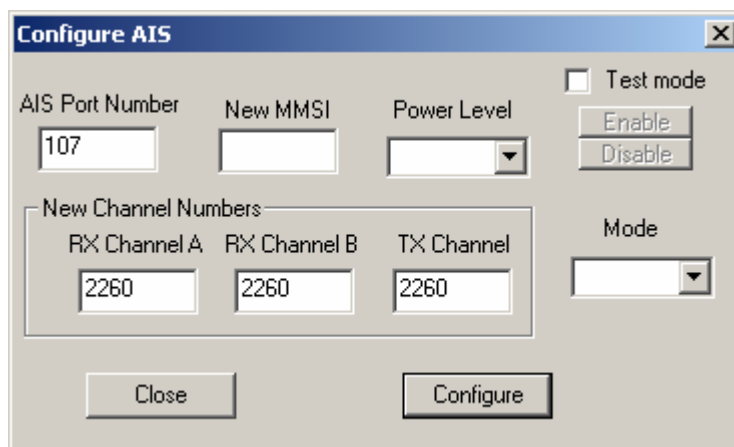
Run 3



Run 4



Receiver Sensitivity, Setup Screens, Section 15.3.2, 12.5kHz Channel 160.6375

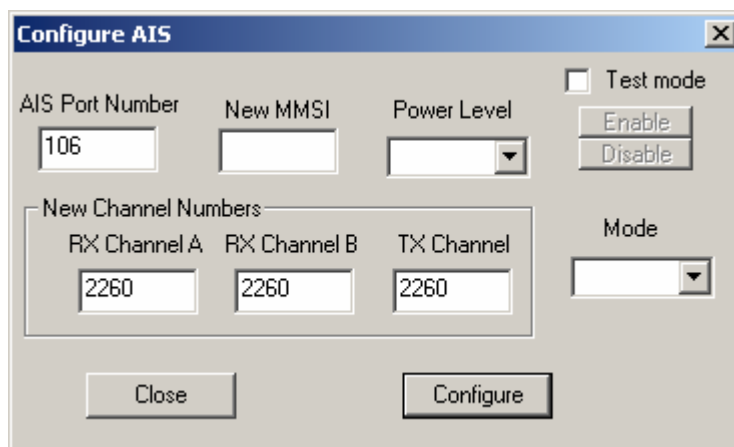


The 'Configure AIS' dialog box features a title bar with a close button. It contains several input fields: 'AIS Port Number' (text box with '107'), 'New MMSI' (empty text box), and 'Power Level' (dropdown menu). To the right is a 'Test mode' checkbox and two buttons, 'Enable' and 'Disable'. Below these is a section titled 'New Channel Numbers' containing three text boxes: 'RX Channel A' (2260), 'RX Channel B' (2260), and 'TX Channel' (2260). To the right of this section is a 'Mode' dropdown menu. At the bottom are 'Close' and 'Configure' buttons.

AIS Port Number	New MMSI	Power Level	Test mode	Enable	Disable
107			<input type="checkbox"/>	Enable	Disable

New Channel Numbers			Mode
RX Channel A	RX Channel B	TX Channel	
2260	2260	2260	

Close Configure



This 'Configure AIS' dialog box is identical in layout to the one above, but the 'AIS Port Number' text box contains the value '106'.

AIS Port Number	New MMSI	Power Level	Test mode	Enable	Disable
106			<input type="checkbox"/>	Enable	Disable

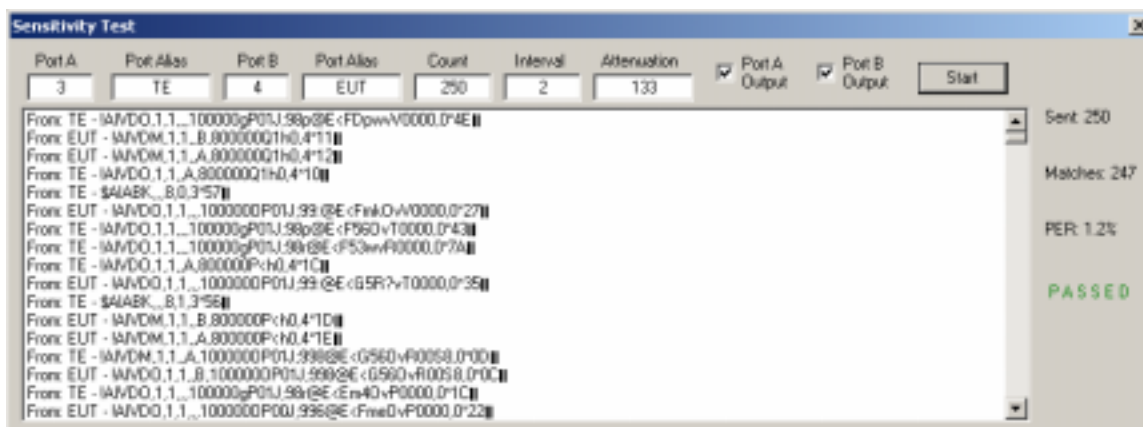
New Channel Numbers			Mode
RX Channel A	RX Channel B	TX Channel	
2260	2260	2260	

Close Configure

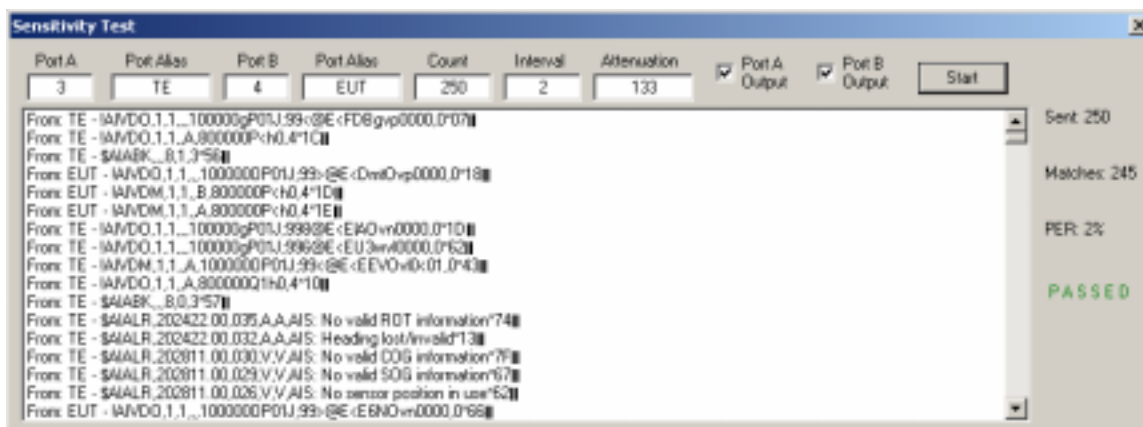
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 160.6375

Run 1

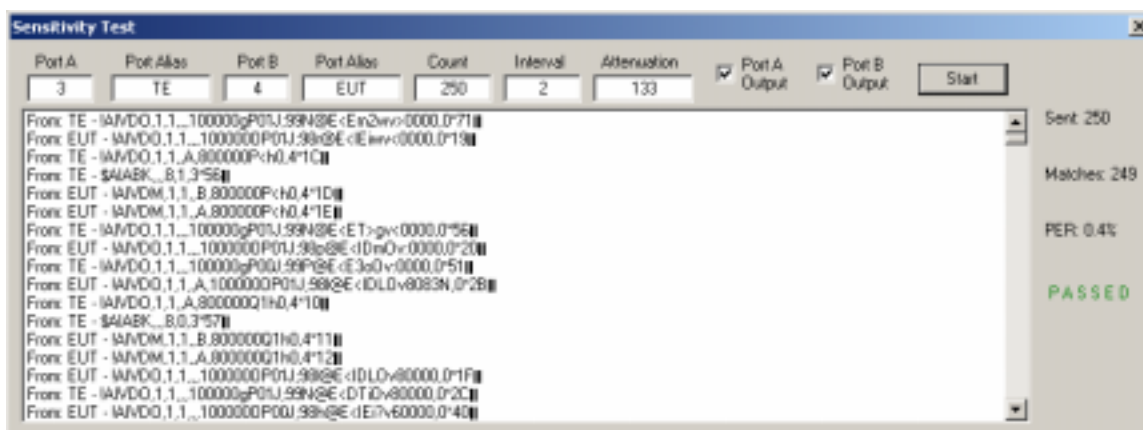


Run 2

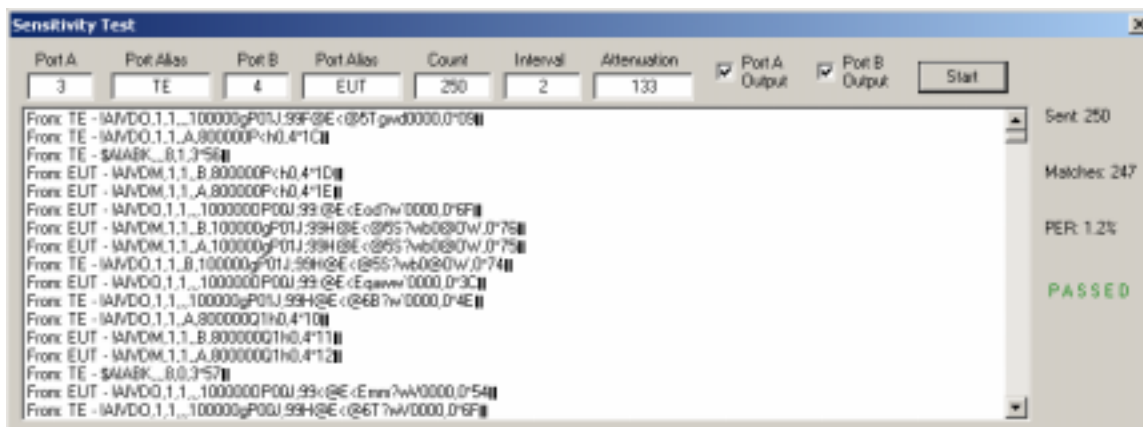


Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 160.6375

Run 3



Run 4



Receiver Sensitivity (DSC), Section 15.4.1

DSC Sensitivity

Test Equipment Required:

- UAIS Test Equipment (TE)
- Frequency Counter
- Logic Analyzer
- 30db Attenuator (Black & Green)
- Tuning Tool

Cal Due: 5.22.04
 Cal Due: 2.19.04

Setup Instructions:

See Photo(s):

Procedure:

Note: PC not needed for this test (only Logic Analyzer)

- Set variable attenuators to zero
- Replace TE RF cable with 100' Cable
- Take TE and Additional Power supply 100' away
- Using the MKD Test Mode, set TE the following:
 - Rx1 = 1070
 - Rx2 = 1070
 - Tx = 1070
 - Power = Low
 - Mode = D3 (Dot Pattern - 10101010)
- Apply power and begin TE transmission
- Connect Logic Analyzer pod (Ground, Clock & Data) to the BER Fixture
- LOGIC ANALYZER:
 - 1 Select CONFIGURATION screen
 - 2 Select Hard Disk
 - 3 Scroll down to AIS_BER2_C and Select Execute
 - 4 Select SYSTEM → 100/500 Hz L.A.C
 - 5 Select CONFIGURATION → Listing 1
(Make sure power is applied and TE is running)
 - 6 Select RUN on the Logic Analyzer
 - 7 Wait for program to STOP
 - 8 Place selector on position 0 and select PRINT → PRINT DISK
 - 9 Select NAME and name the file DSCSEN1
 - 10 Insert Floppy → Select Hard Disk → Flexible Disk → EXECUTE
 - 11 Using frequency counter, verify that the unit is at 156.525 Hz
 - 12 Record value: 156.525007 MHz

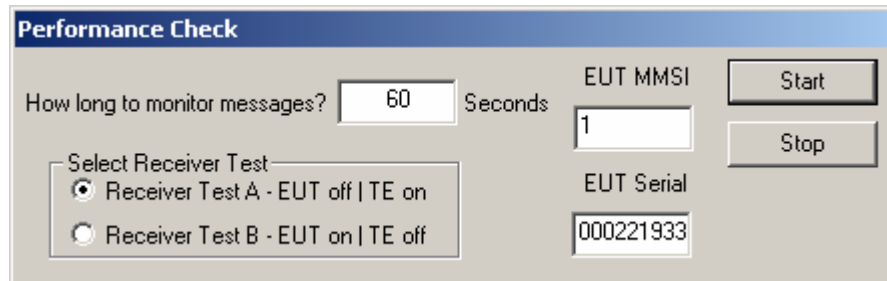
Perform same test with TE1 (156.5265 Hz)

Perform same test with TE1 (156.5235 Hz)

~~156.525007~~ 156.5264 MHz
 156.5233 MHz

Performance Check at Low Temperature

Receiver Test A



The image shows a software dialog box titled "Performance Check". It contains several input fields and buttons. The "How long to monitor messages?" field is set to "60" with the unit "Seconds". The "EUT MMSI" field is set to "1". The "EUT Serial" field is set to "000221933". There are two radio buttons under "Select Receiver Test": "Receiver Test A - EUT off | TE on" (selected) and "Receiver Test B - EUT on | TE off". There are "Start" and "Stop" buttons.

Field	Value
How long to monitor messages?	60 Seconds
EUT MMSI	1
EUT Serial	000221933
Select Receiver Test	Receiver Test A - EUT off TE on

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Friday, June 13, 2003

Total VDO Messages Transmitted: 51

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test A

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Friday, June 13, 2003

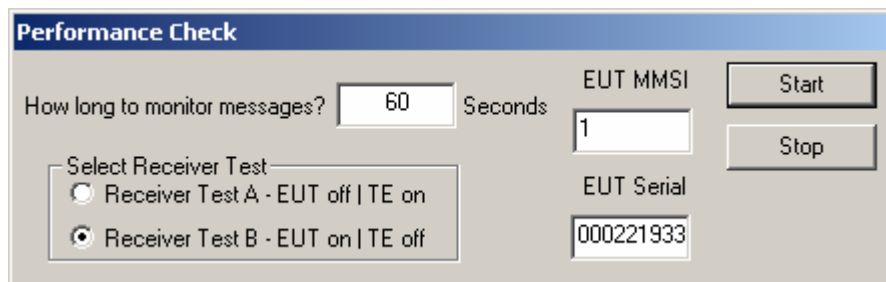
=====

Unmatched Messages

=====

Performance Check at Low Temperature

Receiver Test B

A screenshot of a software dialog box titled "Performance Check". It contains several input fields and buttons. The "How long to monitor messages?" field is set to "60" with the unit "Seconds". The "EUT MMSI" field is set to "1". The "EUT Serial" field is set to "000221933". There are two radio buttons under "Select Receiver Test": "Receiver Test A - EUT off | TE on" and "Receiver Test B - EUT on | TE off", with the second one selected. There are "Start" and "Stop" buttons on the right side.

Performance Check

How long to monitor messages? 60 Seconds

EUT MMSI 1

EUT Serial 000221933

Select Receiver Test

☐ Receiver Test A - EUT off | TE on

☒ Receiver Test B - EUT on | TE off

Start

Stop

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Friday, June 13, 2003

Total VDO Messages Transmitted: 51

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test B

Equipment Under Test on, Test Equipment off

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Friday, June 13, 2003

=====

Unmatched Messages

=====

SECTION 2**DRY HEAT FUNCTIONAL TEST SUMMARY**

Test Start-Finish Dates: 13 through 14 June 2003

Responsible Test Technician: David Carpenter

1-2 TEST HARDWARE

One (1) P/N AISA1-000-01 Automatic Identification System (AIS), S/N 000221933

2-2 TEST REQUIREMENTS

With the test hardware configured for operation, ascend to $55\pm 3^{\circ}\text{C}$ at a rate $\leq 1^{\circ}\text{C}$ per minute and maintain this temperature for 10 to 16 hours. Once the customer has completed any operational requirements, lower the chamber temperature to $25\pm 3^{\circ}\text{C}$ at a rate $\leq 1^{\circ}\text{C}$ per minute.

2.1-2 Test Specification:

Primary: Section 8.2.2 of CEI IEC 60945, Fourth Edition, 2002-08

Reference: L3 Communications "Certification Test Matrix for the Automatic Identification System Part Number AISA1-000-00" number 905-M0151-54, Rev. A

3-2 TEST SETUP**QUALTEST FURNISHED MEASUREMENT AND TEST EQUIPMENT**

QTI #	Item	Manufacturer	Model Number	Calibration Due
100037	Chart Recorder	Honeywell	DR45AT-1111-0	11/22/2003
100968	Temperature Chamber	Thermotron	FX-32-CHV-15-15	NA

CHART RECORDER SETUP

Channel	Function	Type of sensor
1	Monitor chamber air temperature	100 Ω Bulb

The test item was placed on a rack in the temperature chamber with power cables routed through a porthole to customer support equipment located outside the chamber (Reference Figures 1-2 and 2-2).

4-2 TEST DESCRIPTION

4.1-2 Laboratory Ambient Conditions:

Temperature (°C): NA
Relative Humidity (%): NA
Atmospheric Pressure: Site Ambient

4.2-2 Non-Qualtest Personnel, Including Organization, Present for All or Part of the Test:

Todd White, a representative from L3 Communications

4.3-2 Powered/Operational State of the Hardware and by Whom:

Test item operation and functional testing was conducted by Todd White, L3 Communications. David Carpenter, Qualtest test technician, periodically observed functional test activities and was provided test data on digital media by the customer.

4.4-2 Test Activities and Resulting Measurements from Observed/Recorded Data:

Run #	Start Date/Time	End Date/Time	Duration of Soak
1	06/13/03 at 2024	06/14/03 at 1455	18-hours 31-minutes

In order for the customer to complete functional testing at temperature, the test item was held at $55\pm3^{\circ}\text{C}$ beyond the specified 16 hours (total time at temperature of 18 hours 31 minutes).

5-2 ENVIRONMENTAL TEST DATA

No anomalies were observed. Chart recorder temperature data are located after Figure 2-2.

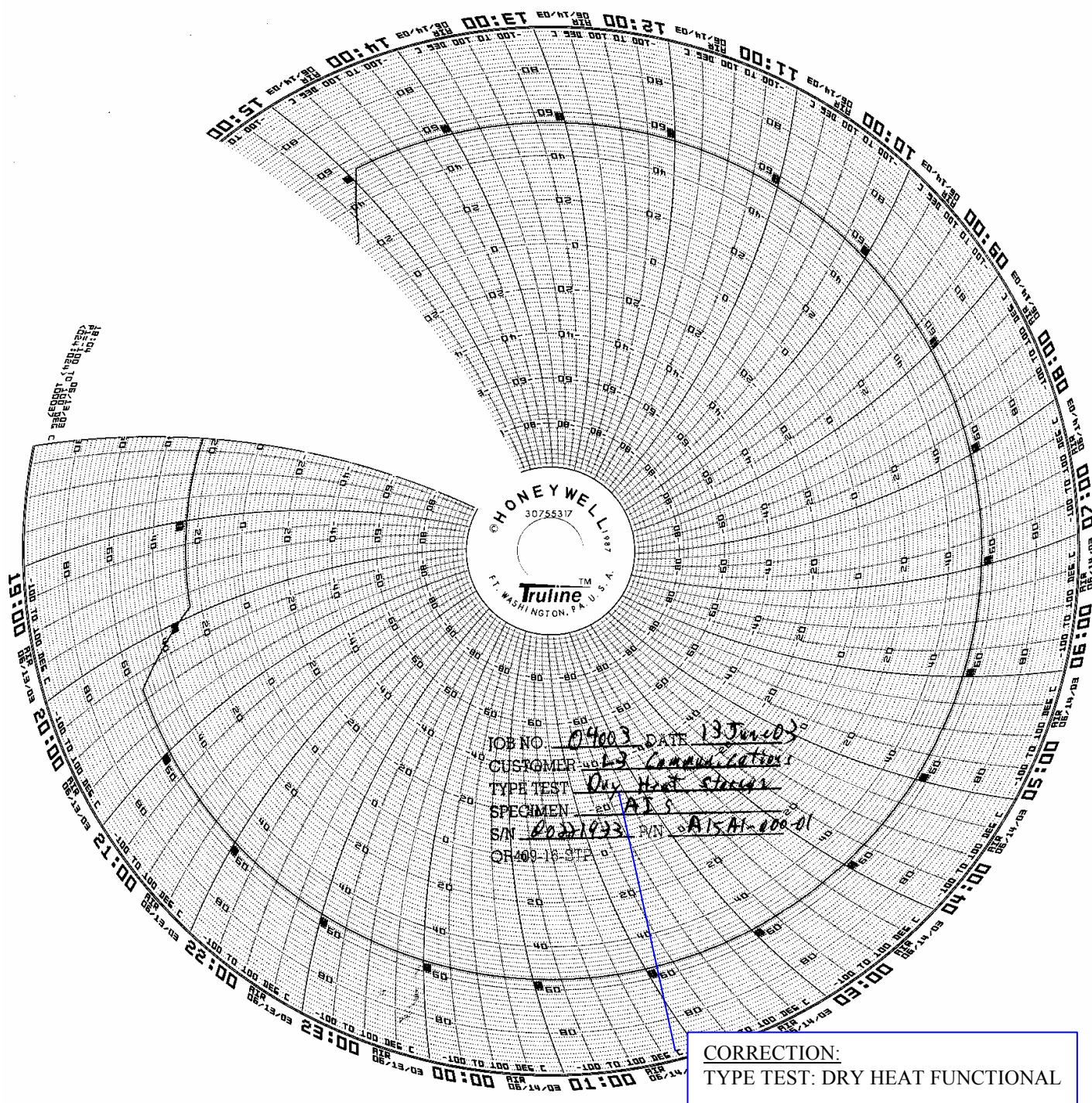
Screenshots related to the functional testing performed by the customer are presented in Enclosure II.



Figure 1-2. Typical chamber test setup for dry heat functional test.



Figure 2-2. Typical overall test setup for dry heat functional test.



ENCLOSURE II**L3 COMMUNICATIONS AUTOMATIC IDENTIFICATION SYSTEM (AIS) SCREEN SHOTS****FOR THE****DRY HEAT FUNCTIONAL TEST****PREFACE**

These data are the results of the IEC 60945 required Performance Checks and Performance Tests conducted by L3 Communications personnel. Customer data was supplied to Qualtest in Microsoft Word format on digital media, which was inserted into this Enclosure unaltered, including the descriptions with the accompanying graphics.

Criteria Statement

L3 Communications used the following criteria for Performance Checks and Performance Tests

Performance Check**Criteria for Pass**

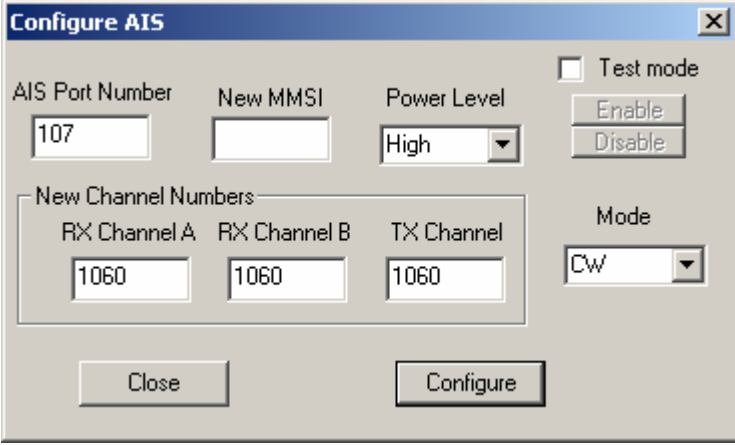
- 1) IEC 61993-2 Paragraph 14.1.1.1 -Transmit Position Reports needs to be every 2 +/- 0.3 seconds.
- 2) IEC 61993-2 Paragraph 14.1.1.2 -Receipt Position Reports needs to be continuous for the duration of the test. No unmatched messages indicate successful continuous reception.

Performance Tests**Criteria for Pass**

- 1) IEC 61993-2 Paragraph 15.1.1 – The frequency error shall not exceed ± 1 kHz measured at +30% power under Dry Heat and –10% power under Low Temperature.
- 2) IEC 61993-2 Paragraph 15.1.2 – The carrier power (conducted) shall be within +2.0dB and -3.0dB of the rated output power measured at +30% power under Dry Heat and –10% power under Low Temperature.
- 3) IEC 61993-2 Paragraph 15.2.1 - The B and Y state frequencies measured at +30% power under Dry Heat and –10% power under Low Temperature shall be within $\pm 1\%$.
- 4) IEC 61993-2 Paragraph 15.3.1 – The sensitivity shall be –101dBm when measured at +30% power under Dry Heat and –10% power under Low Temperature with a PER of 20%.
- 5) IEC 61993-2 Paragraph 15.3.2 - The sensitivity shall be –92dBm when measured at +30% power under Dry Heat and –10% power under Low Temperature with a PER of 20%.
- 6) IEC 61993-2 Paragraph 15.4.1 – The maximum usable sensitivity shall not be less sensitive than -101dBm when measured at +30% power under Dry Heat and –10% power under Low Temperature.

DRY HEAT FUNCTIONAL TEST (SECTION 8.2.2 OF IEC 60945)

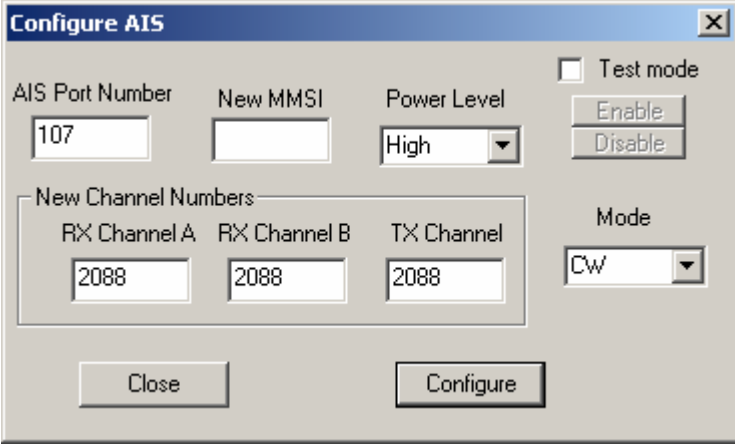
Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 156.025



The 'Configure AIS' dialog box for Channel 156.025 contains the following fields and controls:

- AIS Port Number:** Text box containing '107'.
- New MMSI:** Empty text box.
- Power Level:** Dropdown menu set to 'High'.
- Test mode:** Unchecked checkbox with 'Enable' and 'Disable' buttons.
- New Channel Numbers:**
 - RX Channel A:** Text box containing '1060'.
 - RX Channel B:** Text box containing '1060'.
 - TX Channel:** Text box containing '1060'.
- Mode:** Dropdown menu set to 'CW'.
- Buttons:** 'Close' and 'Configure' buttons at the bottom.

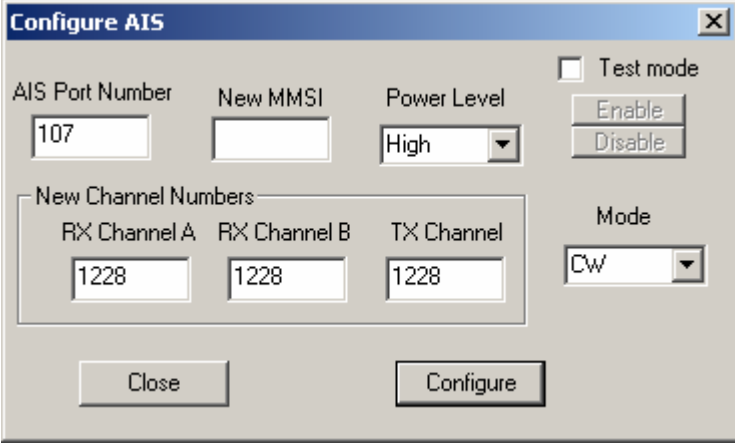
Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 162.025



The 'Configure AIS' dialog box for Channel 162.025 contains the following fields and controls:

- AIS Port Number:** Text box containing '107'.
- New MMSI:** Empty text box.
- Power Level:** Dropdown menu set to 'High'.
- Test mode:** Unchecked checkbox with 'Enable' and 'Disable' buttons.
- New Channel Numbers:**
 - RX Channel A:** Text box containing '2088'.
 - RX Channel B:** Text box containing '2088'.
 - TX Channel:** Text box containing '2088'.
- Mode:** Dropdown menu set to 'CW'.
- Buttons:** 'Close' and 'Configure' buttons at the bottom.

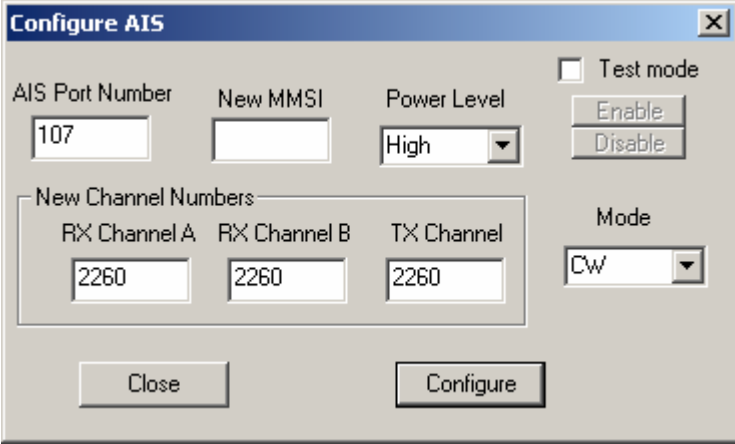
Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 157.4125



The 'Configure AIS' dialog box for Channel 157.4125 contains the following fields and controls:

- AIS Port Number:** Text box containing '107'.
- New MMSI:** Empty text box.
- Power Level:** Dropdown menu set to 'High'.
- Test mode:** Unchecked checkbox.
- Enable/Disable:** Two buttons.
- New Channel Numbers:** A group box containing:
 - RX Channel A:** Text box containing '1228'.
 - RX Channel B:** Text box containing '1228'.
 - TX Channel:** Text box containing '1228'.
- Mode:** Dropdown menu set to 'CW'.
- Close/Configure:** Two buttons at the bottom.

Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 160.6375



The 'Configure AIS' dialog box for Channel 160.6375 contains the following fields and controls:

- AIS Port Number:** Text box containing '107'.
- New MMSI:** Empty text box.
- Power Level:** Dropdown menu set to 'High'.
- Test mode:** Unchecked checkbox.
- Enable/Disable:** Two buttons.
- New Channel Numbers:** A group box containing:
 - RX Channel A:** Text box containing '2260'.
 - RX Channel B:** Text box containing '2260'.
 - TX Channel:** Text box containing '2260'.
- Mode:** Dropdown menu set to 'CW'.
- Close/Configure:** Two buttons at the bottom.

Transmit Frequency Error, Test Results, Section 15.1.1

Frequency Error Test

Test Equipment Required:

- Frequency Counter
- 30db Attenuator (Black & Green)

Cal Due: 5-22-04Setup Instructions: MODE = CW

- See Photo(s):

Procedure:

- Connect Frequency Counter to EUT through Attenuator
- Apply power to the Frequency Counter and check for dashes
- Using the Configuration Tool, set EUT frequency to 1228
- Select Run mode
- Select "Stop/Single" to get the frequency
- Record frequency value: 157.4127
- Select Run mode
- Using the Configuration Tool, set EUT frequency to 2260
- Select "Stop/Single" to get the frequency
- Record frequency value: 160.6378
- Select Run mode
- Using the Configuration Tool, set EUT frequency to 1060
- Select "Stop/Single" to get the frequency
- Record frequency value: 156.0252
- Select Run mode
- Using the Configuration Tool, set EUT frequency to 2088
- Select "Stop/Single" to get the frequency
- Record frequency value: 162.0253

Transmit Carrier Power, Setup Screen, Section 15.1.2, Low Power

The 'Configure AIS' dialog box is shown with the following settings:

- AIS Port Number:** 107
- New MMSI:** (empty)
- Power Level:** Low
- Test mode:** ☐ (unchecked)
- Enable/Disable:** Buttons are present.
- New Channel Numbers:**
 - RX Channel A:** 1070
 - RX Channel B:** 1070
 - TX Channel:** 1070
- Mode:** CW
- Buttons:** Close, Configure

Transmit Carrier Power, Setup Screen, Section 15.1.2, High Power

The 'Configure AIS' dialog box is shown with the following settings:

- AIS Port Number:** 107
- New MMSI:** (empty)
- Power Level:** High
- Test mode:** ☐ (unchecked)
- Enable/Disable:** Buttons are present.
- New Channel Numbers:**
 - RX Channel A:** 1070
 - RX Channel B:** 1070
 - TX Channel:** 1070
- Mode:** CW
- Buttons:** Close, Configure

Transmit Carrier Power, Test Results, Section 15.1.2

Carrier Power Test

Test Equipment Required:

- Power Meter
- Power Sensor
- Black Attenuator (Number matches Power Sensor connector)

Cal Due: 5-22-04

Setup Instructions:

- See Photo(s):

Procedure:

- Connect black attenuator to power sensor with same SN
- Connect Power Sensor cable to Power Meter
- Place Power Meter into DBM mode (DBM/W button → Select on right of screen)
- Using the Configuration Tool, set EUT the following:
 - Rx1 = 1070
 - Rx2 = 1070
 - Tx = 1070
 - Power = High
 - Mode = CW
- Record value: 10.2 dBm
+1 dBm (+/- 3 dB)
- Using the Configuration Tool, set EUT the following:
 - Rx1 = 1070
 - Rx2 = 1070
 - Tx = 1070
 - Power = Low
 - Mode = CW
- Record value: 2.57 dBm
+3 dBm (+/- 3 dB)

Transmitter Frequency Error (DSC), Setup Screen, Section 15.2.1, B State

The 'Configure AIS' dialog box is shown with the following settings:

- AIS Port Number:** 107
- New MMSI:** (empty)
- Power Level:** High
- Test mode:** ☐ (unchecked)
- Enable/Disable buttons:** Both are disabled (greyed out).
- New Channel Numbers:**
 - RX Channel A:** 1070
 - RX Channel B:** 1070
 - TX Channel:** 1070
- Mode:** D13
- Buttons:** Close and Configure.

Transmitter Frequency Error (DSC), Setup Screen, Section 15.2.1, Y State

The 'Configure AIS' dialog box is shown with the following settings:

- AIS Port Number:** 107
- New MMSI:** (empty)
- Power Level:** High
- Test mode:** ☐ (unchecked)
- Enable/Disable buttons:** Both are disabled (greyed out).
- New Channel Numbers:**
 - RX Channel A:** 1070
 - RX Channel B:** 1070
 - TX Channel:** 1070
- Mode:** D21
- Buttons:** Close and Configure.

Transmitter Frequency Error (DSC), Test Results, Section 15.2.1

DSC Frequency Error

Test Equipment Required:

- Marconi (Tx Mode) Receiving Signal
 - Frequency Counter
 - 30db Attenuator (Black & Green)
- Cal Due: 10-3-03
Cal Due: 5-22-04

Setup Instructions:

See Photo(s):

Procedure:

- Connect attenuator to Marconi (right input - look for light)
- Select Tx Button (Blue - Mode)
- Select Low Pass Filter (Under AF Filters)
- Connect Frequency Counter to DE Mod Out on back of Marconi
- Select Run on frequency counter
- Using the Configuration Tool, set EUT the following:
Rx1 = 1070
Rx2 = 1070
Tx = 1070
Power = High
Mode = D13
ENTER TEST MODE
- Select "Stop/Single" on Frequency Counter
- Record value: 1312
1300 Hz (+/- 13 Hz)
- Select Run on frequency counter
- Using the Configuration Tool, set EUT the following:
Rx1 = 1070
Rx2 = 1070
Tx = 1070
Power = High
Mode = D21
- Select "Stop/Single" on Frequency Counter
- Record value: 2114
2100 Hz (+/- 21 Hz)

Receiver Sensitivity, Setup Screen, Section 15.3.1, 25kHz Channel 162.025

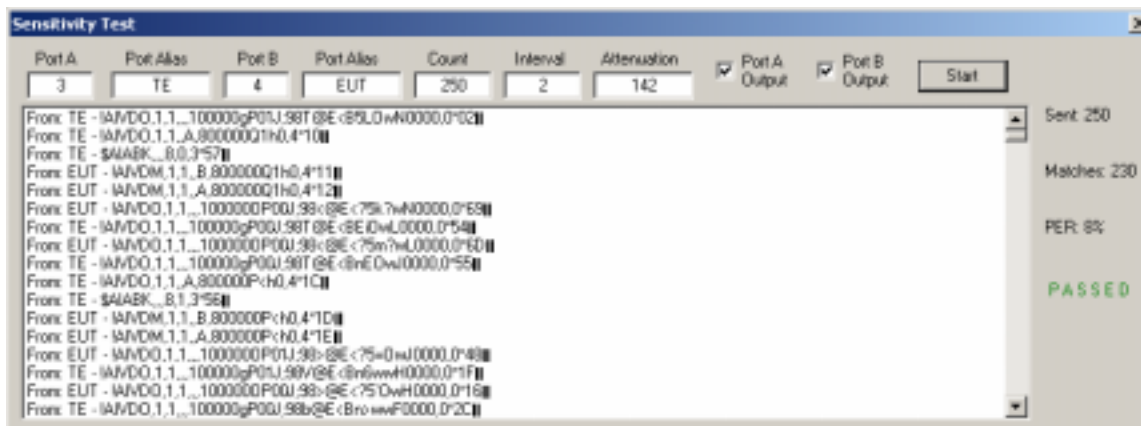
The screenshot shows the 'Configure AIS' dialog box. The 'AIS Port Number' field contains the value '106'. The 'New MMSI' field is empty. The 'Power Level' field is a dropdown menu. To the right, there is a 'Test mode' checkbox which is unchecked, and two buttons labeled 'Enable' and 'Disable'. Below these, there is a 'Mode' dropdown menu. In the 'New Channel Numbers' section, 'RX Channel A' and 'RX Channel B' both contain '2088', and 'TX Channel' contains '2088'. At the bottom are 'Close' and 'Configure' buttons.

This screenshot is identical to the one above, but the 'AIS Port Number' field now contains the value '107'. All other fields and controls remain the same.

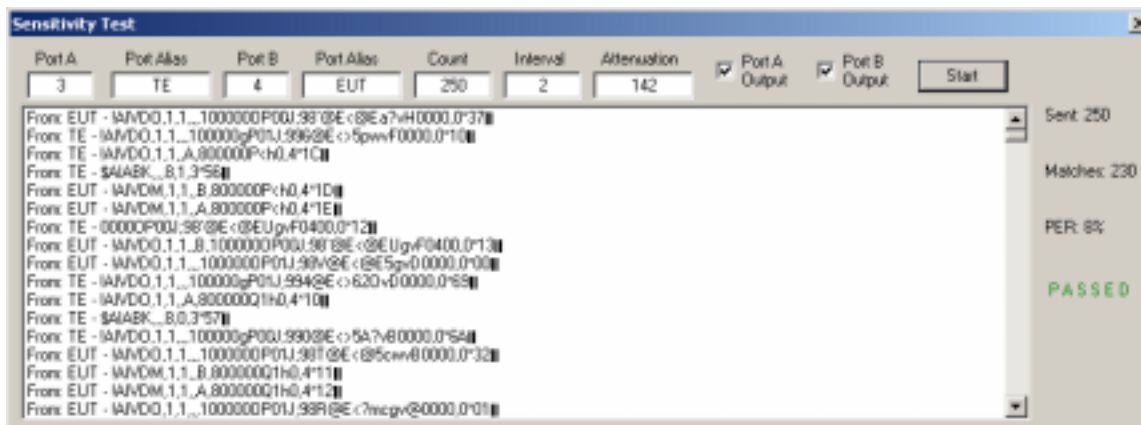
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 162.025

Run 1



Run 2



Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 162.025

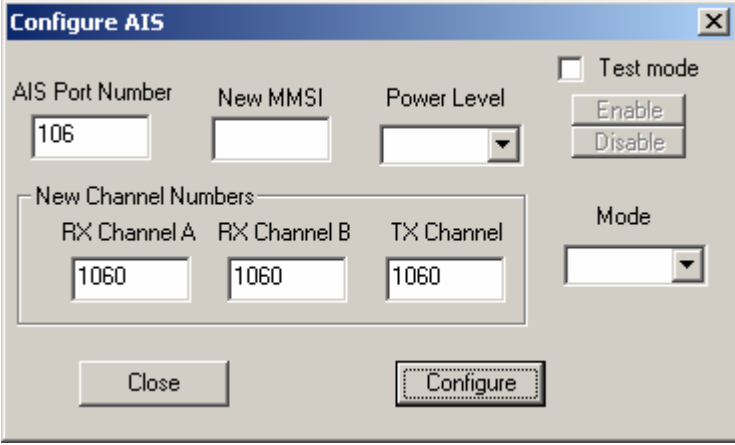
Run 3

Port A	Port Alias	Port B	Port Alias	Count	Interval	Attenuation	<input checked="" type="checkbox"/> Port A Output	<input checked="" type="checkbox"/> Port B Output	Start
3	TE	4	EUT	250	2	142			
From: TE - IAWDO.1.1_A.800000P<H0.4*1C									
From: TE - \$AABK...8.1.3*56									
From: EUT - IAWDM.1.1_B.800000P<H0.4*1D									
From: EUT - IAWDM.1.1_A.800000P<H0.4*1E									
From: EUT - IAWDO.1.1_100000gP0U.98@E<B60vvP0000.0*45									
From: TE - IAWDO.1.1_100000gP0U.98@E<D55vvP0000.0*0E									
From: EUT - IAWDO.1.1_100000gP0U.98@E<BEu7wP0000.0*39									
From: TE - IAWDO.1.1_100000gP0U.98@E<CnBvvN0000.0*52									
From: TE - IAWDO.1.1_A.800000Q1H0.4*10									
From: TE - \$AABK...8.0.3*57									
From: EUT - IAWDM.1.1_B.800000Q1H0.4*11									
From: EUT - IAWDM.1.1_A.800000Q1H0.4*12									
From: EUT - IAWDO.1.1_100000gP0U.98@E<BELvvN0000.0*50									
From: TE - IAWDO.1.1_100000gP0U.98@E<Cn1vvL0000.0*26									
From: EUT - IAWDO.1.1_100000gP0U.98@E<BEpwwL0000.0*5C									
From: TE - IAWDO.1.1_100000gP0U.98@E<CUoDwL0000.0*7E									
From: TE - IAWDO.1.1_A.800000P<H0.4*1C									
									Sent: 250
									Matches: 233
									PER: 6.8%
									PASSED

Run 4

Port A	Port Alias	Port B	Port Alias	Count	Interval	Attenuation	<input checked="" type="checkbox"/> Port A Output	<input checked="" type="checkbox"/> Port B Output	Start
3	TE	4	EUT	250	2	142			
From: EUT - IAWDO.1.1_100000gP0U.98@E<DUJ7vD0000.0*29									
From: TE - IAWDO.1.1_A.800000Q1H0.4*10									
From: TE - \$AABK...8.0.3*57									
From: EUT - IAWDM.1.1_A.800000P<H0.4*1E									
From: EUT - IAWDM.1.1_B.800000Q1H0.4*11									
From: TE - \$AABK...8.1.2*57									
From: TE - IAWDO.1.1_A.100000gP0U.98@E<EF1DvD0@9V.0*48									
From: EUT - IAWDM.1.1_B.100000gP0U.98@E<EF1DvD0@9V.0*44									
From: EUT - IAWDO.1.1_100000gP0U.98@E<DUPvvP0000.0*7D									
From: TE - IAWDO.1.1_100000gP0U.98@E<EFgrvP0000.0*38									
From: EUT - IAWDO.1.1_100000gP0U.98@E<DUSvvP0000.0*7A									
From: TE - IAWDO.1.1_100000gP0U.98@E<EUQ7vP0000.0*1F									
From: EUT - IAWDO.1.1_100000gP0U.98@E<DU7DvP0000.0*0F									
From: TE - IAWDO.1.1_100000gP0U.98@E<EV0gvP0000.0*5E									
From: TE - IAWDO.1.1_A.800000Q1H0.4*10									
From: TE - \$AABK...8.0.3*57									
From: EUT - IAWDO.1.1_100000gP0U.98@E<DEu0vP0000.0*08									
									Sent: 250
									Matches: 250
									PER: 0%
									PASSED

Receiver Sensitivity, Setup Screens, Section 15.3.1, 25kHz Channel 156.025



Configure AIS

AIS Port Number: 106

New MMSI:

Power Level:

☐ Test mode

Enable

Disable

New Channel Numbers

RX Channel A: 1060

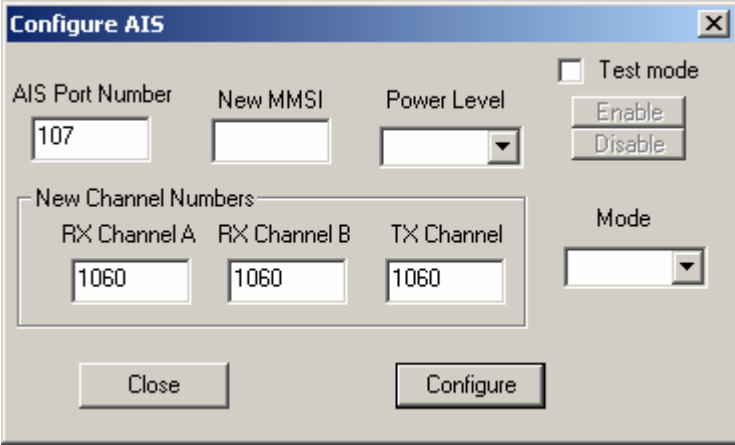
RX Channel B: 1060

TX Channel: 1060

Mode:

Close

Configure



Configure AIS

AIS Port Number: 107

New MMSI:

Power Level:

☐ Test mode

Enable

Disable

New Channel Numbers

RX Channel A: 1060

RX Channel B: 1060

TX Channel: 1060

Mode:

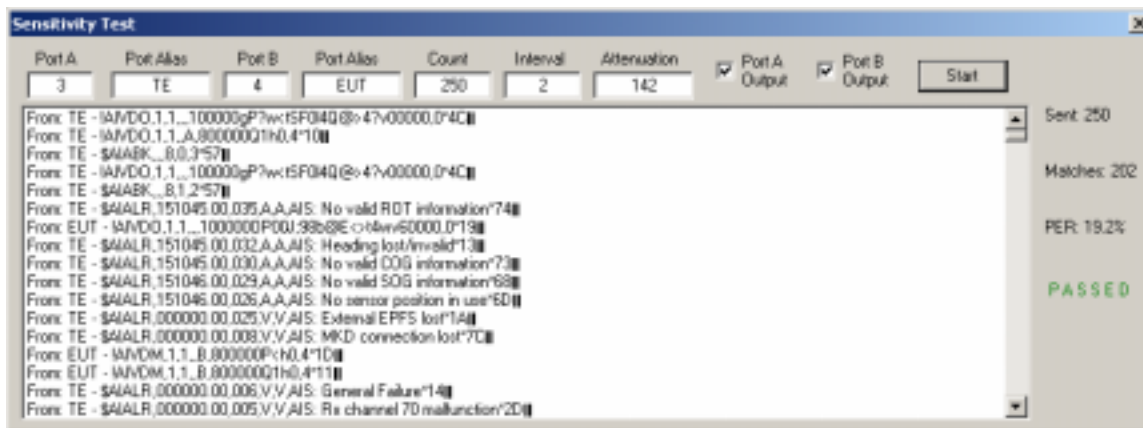
Close

Configure

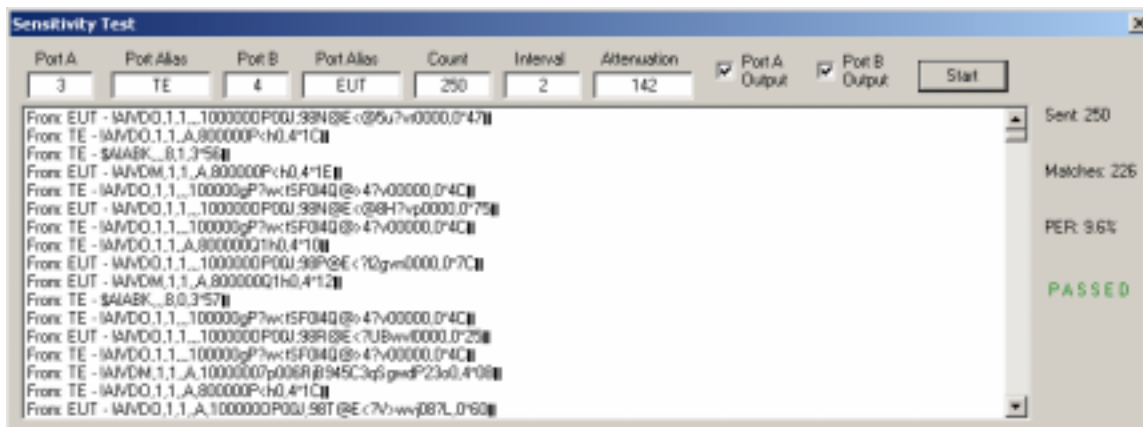
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 156.025

Run 1



Run 2



Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 156.025

Run 3

Port A	Port Alias	Port B	Port Alias	Count	Interval	Attenuation	Port A Output	Port B Output	Start
3	TE	4	EUT	250	2	142	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
From: TE - IAWDO.1.1...100000gP00J.98R8E<:jww20000.0*54									Sent: 250
From: TE - IAWDO.1.1...A.800000Q1h0.4*10									
From: TE - \$AABK...8.0.3*57									
From: EUT - IAWDM.1.1...A.800000Q1h0.4*12									Matches: 242
From: EUT - IAWDO.1.1...1000000P00J.98R8E<:Ugw00000.0*78									
From: TE - IAWDO.1.1...100000gP00J.98R8E<:Rh7w00000.0*24									PER: 3.2%
From: EUT - IAWDO.1.1...1000000P00J.98R8E<:n77v0000.0*0F									
From: TE - \$AALR.152741.00.032.A.A.A.S: No valid ROT information?74									
From: TE - \$AALR.154802.00.025.A.V.A.S: External EPFS lost?07									
From: EUT - IAWDM.1.1...A.800000P<h0.4*1E									PASSED
From: TE - IAWDO.1.1...100000gP00J.98R8E<:C5gw0000.0*70									
From: TE - IAWDO.1.1...A.800000P<h0.4*1C									
From: TE - \$AABK...8.1.3*56									
From: EUT - IAWDO.1.1...1000000P00J.98R8E<:Sg7w0000.0*69									
From: TE - IAWDO.1.1...100000gP00J.98R8E<:C70w0000.0*5C									
From: EUT - IAWDO.1.1...1000000P00J.98R8E<:Sg7w0000.0*77									

Run 4

Port A	Port Alias	Port B	Port Alias	Count	Interval	Attenuation	Port A Output	Port B Output	Start
3	TE	4	EUT	250	2	142	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
From: TE - IAWDO.1.1...A.100000gP00J.98R8E<:nDwB0400.0*75									Sent: 250
From: TE - IAWDO.1.1...100000gP00J.98R8E<:nDwB0000.0*3C									
From: EUT - IAWDM.1.1...B.100000gP00J.98R8E<:nDwB0400.0*75									Matches: 228
From: EUT - IAWDM.1.1...A.100000gP00J.98R8E<:nDwB0400.0*75									
From: EUT - IAWDO.1.1...1000000P00J.98R8E<:47v80000.0*10									PER: 8.8%
From: TE - IAWDO.1.1...A.800000Q1h0.4*10									
From: TE - \$AABK...8.0.3*57									
From: EUT - IAWDM.1.1...B.800000Q1h0.4*11									
From: EUT - IAWDM.1.1...A.800000Q1h0.4*12									
From: EUT - IAWDO.1.1...1000000P00J.98R8E<:EQ7v0000.0*58									
From: TE - IAWDO.1.1...100000gP00J.98R8E<:nEDv80000.0*01									
From: TE - IAWDO.1.1...100000gP00J.98R8E<:nEDv0000.0*55									
From: TE - IAWDO.1.1...A.800000P<h0.4*1C									
From: EUT - IAWDO.1.1...1000000P00J.98R8E<:EW7v0000.0*26									
From: TE - \$AABK...8.1.3*56									
From: EUT - IAWDM.1.1...B.800000P<h0.4*1D									
From: EUT - IAWDM.1.1...A.800000P<h0.4*1E									PASSED

Receiver Sensitivity, Setup Screens, Section 15.3.2, 12.5kHz Channel 157.4125

Configure AIS

AIS Port Number: 107

New MMSI:

Power Level:

☐ Test mode

Enable
Disable

New Channel Numbers

RX Channel A: 1228

RX Channel B: 1228

TX Channel: 1228

Mode:

Close Configure

Configure AIS

AIS Port Number: 106

New MMSI:

Power Level:

☐ Test mode

Enable
Disable

New Channel Numbers

RX Channel A: 1228

RX Channel B: 1228

TX Channel: 1228

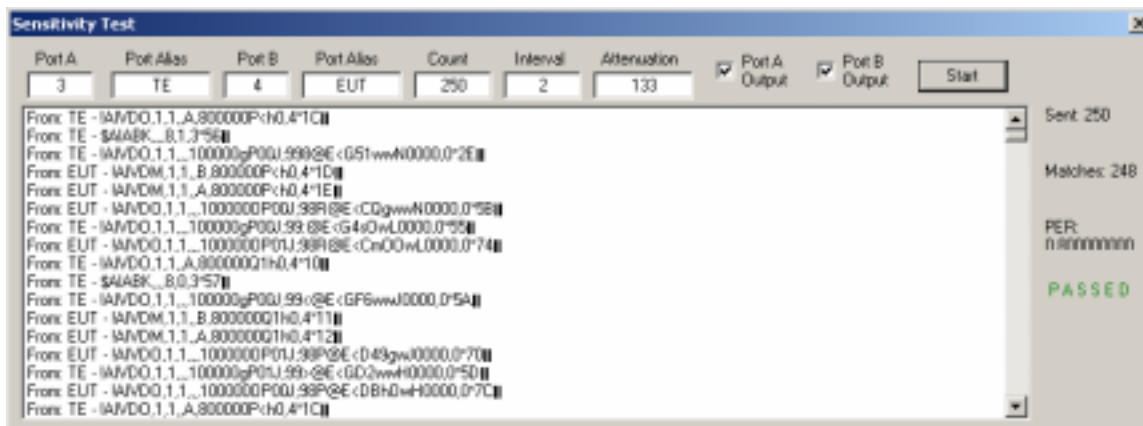
Mode:

Close Configure

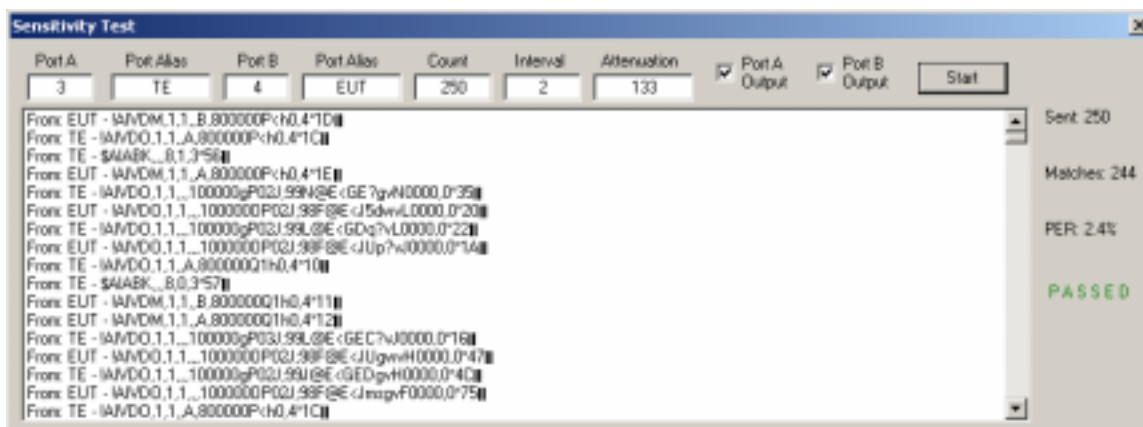
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 157.4125

Run 1

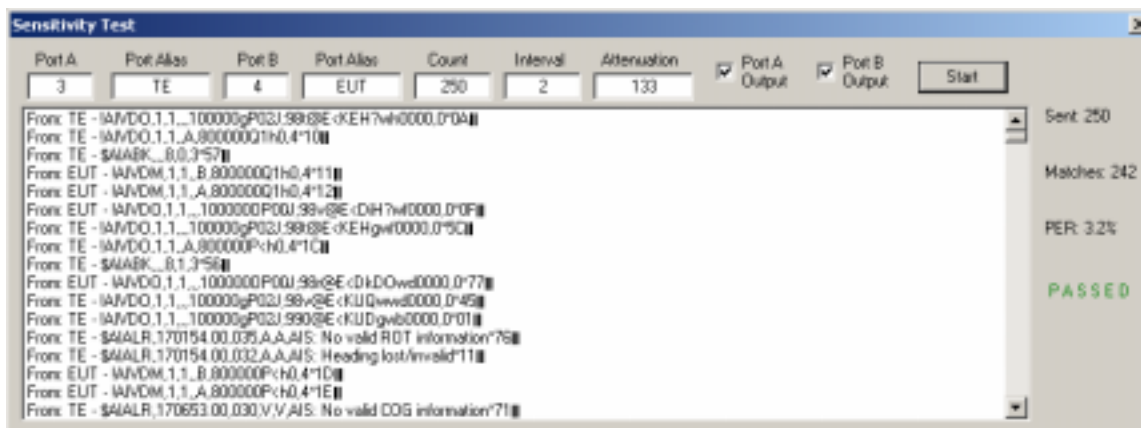


Run 2

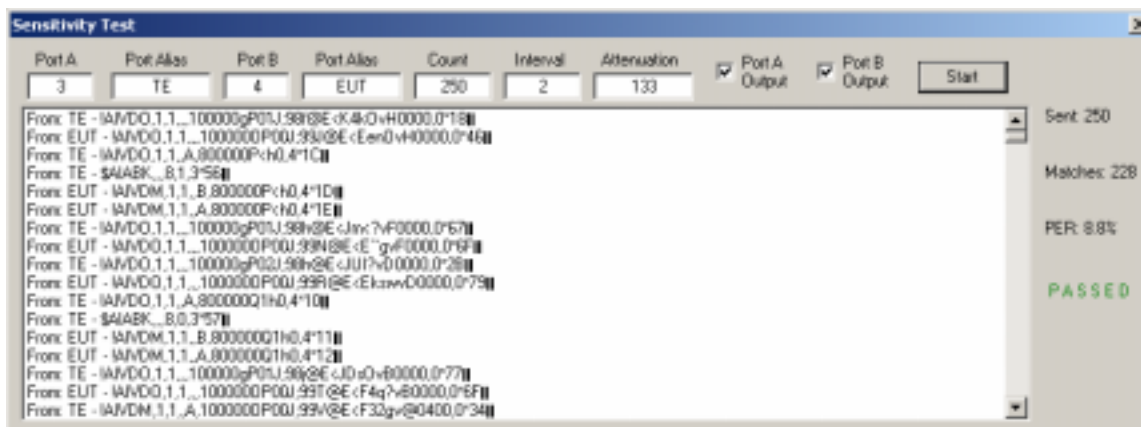


Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 157.4125

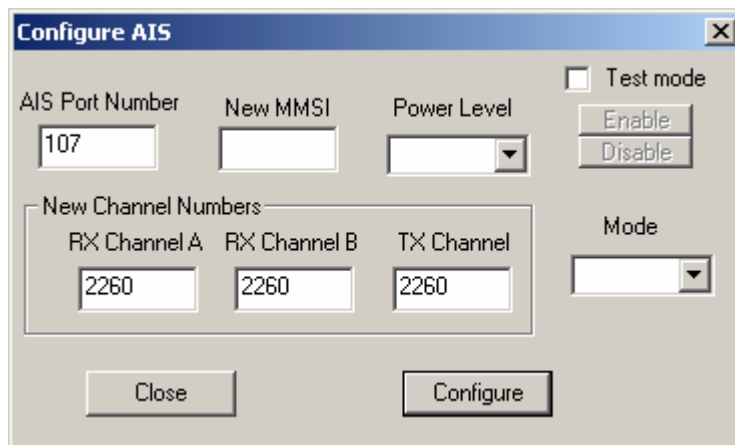
Run 3



Run 4



Receiver Sensitivity, Setup Screens, Section 15.3.2, 12.5kHz Channel 160.6375

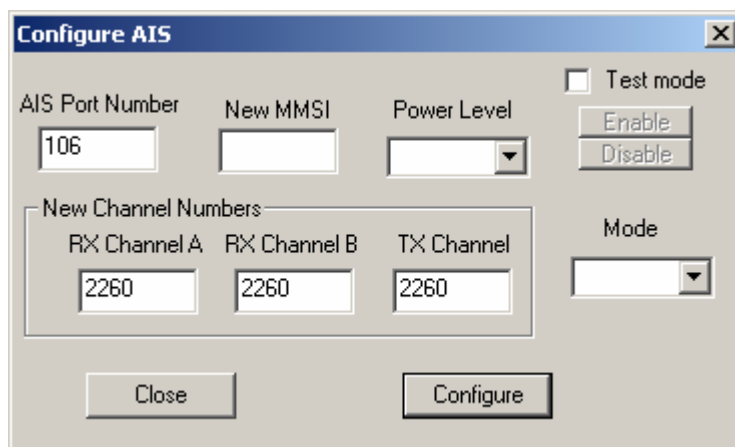


The 'Configure AIS' dialog box features a title bar with a close button. It contains three input fields: 'AIS Port Number' (107), 'New MMSI' (empty), and 'Power Level' (dropdown). To the right is a 'Test mode' checkbox and 'Enable/Disable' buttons. A 'New Channel Numbers' section includes 'RX Channel A' (2260), 'RX Channel B' (2260), and 'TX Channel' (2260). A 'Mode' dropdown is also present. 'Close' and 'Configure' buttons are at the bottom.

AIS Port Number	New MMSI	Power Level	Test mode	Enable	Disable
107			<input type="checkbox"/>	Enable	Disable

New Channel Numbers			Mode
RX Channel A	RX Channel B	TX Channel	
2260	2260	2260	

Close Configure



This 'Configure AIS' dialog box is identical in layout to the one above, but the 'AIS Port Number' is set to 106. All other fields and buttons remain the same.

AIS Port Number	New MMSI	Power Level	Test mode	Enable	Disable
106			<input type="checkbox"/>	Enable	Disable

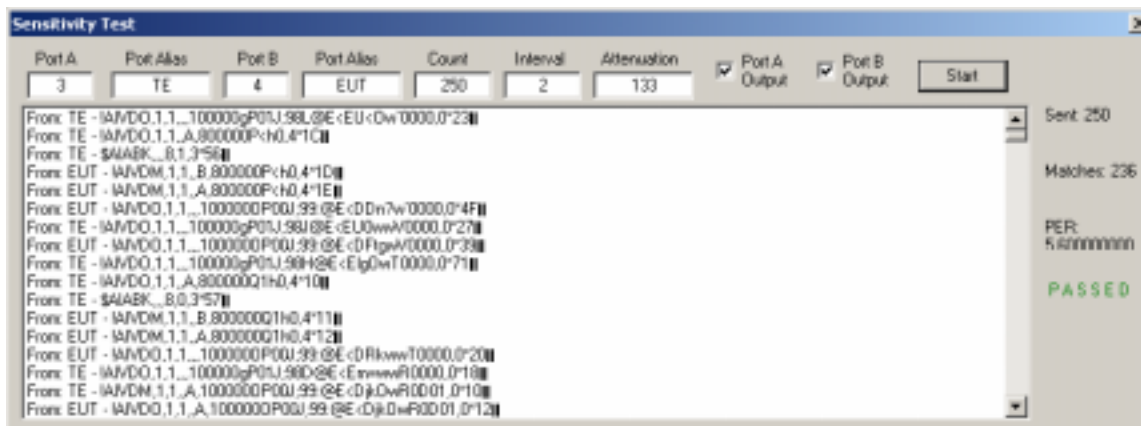
New Channel Numbers			Mode
RX Channel A	RX Channel B	TX Channel	
2260	2260	2260	

Close Configure

Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 160.6375

Run 1



Run 2



Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 160.6375

Run 3

Port A	Port Alias	Port B	Port Alias	Count	Interval	Attenuation	Port A Output	Port B Output	Start
3	TE	4	EUT	250	2	133	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

From: TE - IAWDO.1.1...100000gP00J.99<@E<B37wh0000.0*02	From: EUT - IAWDO.1.1...1000000P00J.99<@E<B C>gwh0000.0*1F	From: TE - IAWDO.1.1...A.800000Q1h0.4*10	From: TE - \$AIABK...8.0.3*57	From: EUT - IAWDM.1.1...B.800000Q1h0.4*11	From: EUT - IAWDM.1.1...A.800000Q1h0.4*12	From: TE - IAWDO.1.1...100000gP00J.99<@E<B D h7w0000.0*57	From: EUT - IAWDO.1.1...1000000P00J.99<@E<A J wv0000.0*5E	From: TE - IAWDO.1.1...100000gP00J.99<@E<B I67wd0000.0*13	From: TE - IAWDO.1.1...A.800000P<h0.4*1C	From: TE - \$AIABK...8.0.3*56	From: TE - IAWDO.1.1...100000gP00J.99<@E<C D N w0000.0*31	From: TE - \$AIALR.170154.00.035 A,A,AIS: No valid RDT information*76	From: TE - \$AIALR.170154.00.032 A,A,AIS: Heading lost/invalid*11	From: TE - \$AIALR.170653.00.030 V,V,AIS: No valid COG information*71	From: TE - \$AIALR.170654.00.029 V,V,AIS: No valid SOG information*6E	From: TE - \$AIALR.170653.00.026 V,V,AIS: No sensor position in use*6C
---	--	--	-------------------------------	---	---	---	---	---	--	-------------------------------	---	---	---	---	---	--

Sent: 250
Matches: 240
PER: 4%
PASSED

Run 4

Port A	Port Alias	Port B	Port Alias	Count	Interval	Attenuation	Port A Output	Port B Output	Start
3	TE	4	EUT	250	2	133	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

From: TE - IAWDO.1.1...100000gP00J.99H3@E<ETp0vL0000.0*47	From: TE - IAWDO.1.1...A.800000P<h0.4*1C	From: TE - \$AIABK...8.0.3*56	From: EUT - IAWDM.1.1...B.800000P<h0.4*1D	From: EUT - IAWDM.1.1...A.800000P<h0.4*1E	From: EUT - IAWDO.1.1...1000000P00J.998@E<D3cwwJ0000.0*54	From: TE - IAWDO.1.1...100000gP00J.99H3@E<ETg0vJ0000.0*56	From: EUT - IAWDO.1.1...1000000P00J.998@E<D30gvH0000.0*74	From: TE - IAWDO.1.1...100000gP00J.99L@E<EDq0vH0000.0*56	From: TE - IAWDO.1.1...A.800000Q1h0.4*10	From: TE - \$AIABK...8.0.3*57	From: EUT - IAWDM.1.1...B.800000Q1h0.4*11	From: EUT - IAWDO.1.1...1000000P00J.998@E<DCU7vF0000.0*56	From: TE - IAWDO.1.1...100000gP00J.99L@E<E2F0vF0000.0*19	From: EUT - IAWDO.1.1...1000000P00J.998@E<D5tgvC0000.0*30	From: TE - IAWDO.1.1...100000gP00J.99J@E<Dn7vC0000.0*45	From: TE - IAWDO.1.1...A.800000P<h0.4*1C
---	--	-------------------------------	---	---	---	---	---	--	--	-------------------------------	---	---	--	---	---	--

Sent: 250
Matches: 237
PER: 5.2%
PASSED

Receiver Sensitivity (DSC), Section 15.4.1

DSC Sensitivity

Test Equipment Required:

- UAIS Test Equipment (TE)
- Frequency Counter
- Logic Analyzer
- 30db Attenuator (Black & Green)
- Tuning Tool

Cal Due: 5-22-04Cal Due: 2-19-04

Setup Instructions:

See Photo(s):

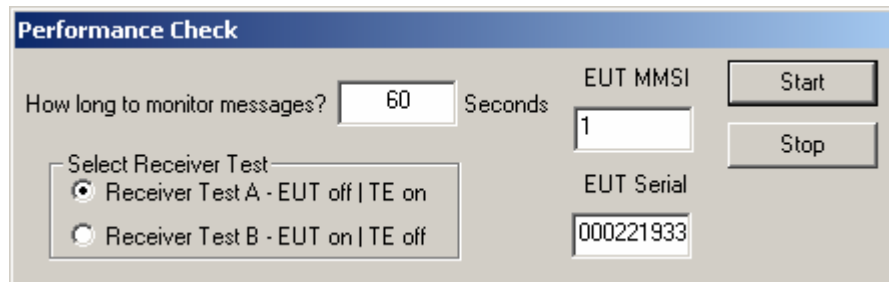
Procedure:

Note: PC not needed for this test (only Logic Analyzer)

- Set variable attenuators to zero
 - Replace TE RF cable with 100' Cable
 - Take TE and Additional Power supply 100' away
 - Using the MKD Test Mode, set TE the following:
 - Rx1 = 1070
 - Rx2 = 1070
 - Tx = 1070
 - Power = Low
 - Mode = D3 (Dot Pattern - 10101010)
 - Apply power and begin TE transmission
 - Connect Logic Analyzer pod (Ground, Clock & Data) to the BER Fixture
 - LOGIC ANALYZER:
 - 1 Select CONFIGURATION screen
 - 2 Select Hard Disk
 - 3 Scroll down to AIS_BER2_C and Select Execute
 - 4 Select SYSTEM → 100/500 Hz LA C
 - 5 Select CONFIGURATION → Listing 1
(Make sure power is applied and TE is running)
 - 6 Select RUN on the Logic Analyzer
 - 7 Wait for program to STOP
 - 8 Place selector on position 0 and select PRINT → PRINT DISK
 - 9 Select NAME and name the file DSCSEN1
 - 10 Insert Floppy → Select Hard Disk → Flexible Disk → EXECUTE
 - 11 Using frequency counter, verify that the unit is at 156.5254Hz
 - 12 Record value: SEC FILES
 - 156.5250 } DSCSEN - H
 - 156.5265 } DSCSEN - L
 - 156.5235 } DSCSEN - N
- Perform same test with TE1 (156.5265Hz)
- Perform same test with TE1 (156.5235Hz)

Performance Check at Dry Heat

Receiver Test A

A screenshot of a software dialog box titled "Performance Check". It contains several input fields and buttons. The first row has a label "How long to monitor messages?" followed by a text box containing "60", the word "Seconds", a label "EUT MMSI" followed by a text box containing "1", and two buttons labeled "Start" and "Stop". The second row has a label "Select Receiver Test" followed by two radio button options: "Receiver Test A - EUT off | TE on" (which is selected) and "Receiver Test B - EUT on | TE off". To the right of these is a label "EUT Serial" followed by a text box containing "000221933".

Performance Check

How long to monitor messages? 60 Seconds

EUT MMSI 1

Select Receiver Test

☒ Receiver Test A - EUT off | TE on

☐ Receiver Test B - EUT on | TE off

EUT Serial 000221933

Start

Stop

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Saturday June 14, 2003

Total VDO Messages Transmitted: 36

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test A

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Saturday June 14, 2003

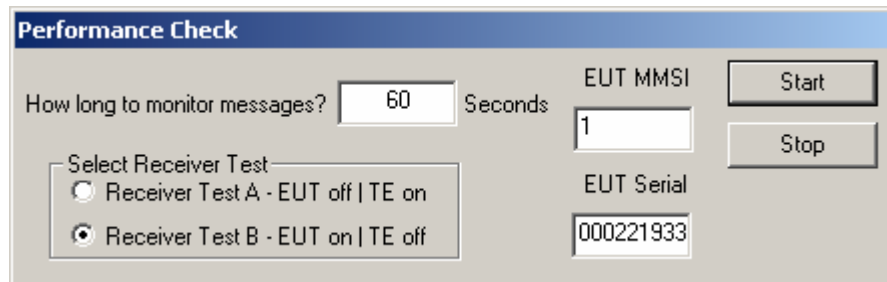
=====

Unmatched Messages

=====

Performance Check at Dry Heat

Receiver Test B

A screenshot of a software dialog box titled "Performance Check". It contains several input fields and buttons. The "How long to monitor messages?" field is set to "60" with the unit "Seconds". The "EUT MMSI" field is set to "1". The "EUT Serial" field is set to "000221933". There are two radio buttons under "Select Receiver Test": "Receiver Test A - EUT off | TE on" and "Receiver Test B - EUT on | TE off", with the second one selected. There are "Start" and "Stop" buttons on the right.

Performance Check

How long to monitor messages? 60 Seconds

EUT MMSI 1

EUT Serial 000221933

Select Receiver Test

☐ Receiver Test A - EUT off | TE on

☒ Receiver Test B - EUT on | TE off

Start

Stop

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Saturday June 14, 2003

Total VDO Messages Transmitted: 36

Average reporting rate: 1.99 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test B

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Saturday June 14, 2003

=====

Unmatched Messages

=====

SECTION 3**DAMP HEAT FUNCTIONAL TEST SUMMARY**

Test Start-Finish Dates: 14 through 15 June 2003

Responsible Test Technician: David Carpenter

1-3 TEST HARDWARE

One (1) P/N AISA1-000-01 Automatic Identification System (AIS), S/N 000221933

2-3 TEST REQUIREMENTS

With the test hardware configured for operation, ascend to $40\pm 2^{\circ}\text{C}$ and $93\pm 3\%$ relative humidity (RH) in 3.0 ± 0.5 hours. Maintain these environmental conditions for 10 to 16 hours. Once the customer has completed any operational requirements, return the chamber to laboratory ambient conditions over a period of 1-hour or more.

2.1-4 Test Specification:

Primary: Section 8.3.1 of CEI IEC 60945, Fourth Edition, 2002-08

Reference: L3 Communications "Certification Test Matrix for the Automatic Identification System Part Number AISA1-000-00" number 905-M0151-54, Rev. A

3-3 TEST SETUP**QUALTEST FURNISHED MEASUREMENT AND TEST EQUIPMENT**

QTI #	Item	Manufacturer	Model Number	Calibration Due
100037	Chart Recorder	Honeywell	DR45AT-1111-0	11/22/2003
100279	Humidity Transmitter	Vaisala	HMP243	2/18/2004
100970	Temp/Humidity Chamber	Blue M	LRH-361EX219	NA

CHART RECORDER SETUP

Channel	Function	Type of sensor
1	Monitor chamber air temperature	100 Ω Bulb
3	Monitor chamber relative humidity	Solid State

The test item was placed on a rack in the temperature/humidity chamber with power cables routed through a porthole to customer support equipment located outside the chamber (Reference Figures 1-3 and 2-3).

4-3 TEST DESCRIPTION

4.1-3 Laboratory Ambient Conditions:

Temperature (°C): NA
Relative Humidity (%): NA
Atmospheric Pressure: Site Ambient

4.2-4 Non-Qualtest Personnel, Including Organization, Present for All or Part of the Test:

Todd White, a representative from L3 Communications

4.3-3 Powered/Operational State of the Hardware and by Whom:

Test item operation and functional testing was conducted by Todd White, L3 Communications. David Carpenter, Qualtest test technician, periodically observed functional test activities and was provided test data on digital media by the customer.

4.4-3 Test Activities and Resulting Measurements from Observed/Recorded Data:

Activity	Start Date/Time	End Date/Time	Duration
Ramp to 40±2°C with 93±3% RH	06/14/03 at 1735	06/14/03 at 2052	3-hrs 17-min
40±2°C with 93±3% RH	06/14/03 at 2052	06/15/03 at 0906	12-hrs 15-min
Ramp to 25±3°C	06/15/03 at 0906	06/15/03 at 1006	1-hour

5-3 ENVIRONMENTAL TEST DATA

No anomalies were observed. Chart recorder temperature and humidity data are located after Figure 2-3.

Screenshots related to the functional testing performed by the customer are presented in Enclosure III.



Figure 1-3. Typical chamber test setup for damp heat functional test.



Figure 2-3. Typical overall test setup for damp heat functional test.

JOB NO. 04003 DATE 14 Jun 03
CUSTOMER L3 COMMUNICATIONS
TYPE TEST DAMP HEAT
SPECIMEN A15
S/N 00221933 P/N AISA1-008-01
QR409-16-STP

ENCLOSURE III***L3 COMMUNICATIONS AUTOMATIC IDENTIFICATION SYSTEM (AIS) SCREEN SHOTS******FOR THE******DAMP HEAT FUNCTIONAL TEST*****PREFACE**

These data are the results of the IEC 60945 required Performance Checks and Performance Tests conducted by L3 Communications personnel. Customer data was supplied to Qualtest in Microsoft Word format on digital media, which was inserted into this Enclosure unaltered, including the descriptions with the accompanying graphics.

Criteria Statement

L3 Communications used the following criteria for Performance Checks.

Performance Check**Criteria for Pass**

- 1) IEC 61993-2 Paragraph 14.1.1.1 -Transmit Position Reports needs to be every 2 +/- 0.3 seconds.
- 2) IEC 61993-2 Paragraph 14.1.1.2 -Receipt Position Reports needs to be continuous for the duration of the test. No unmatched messages indicate successful continuous reception.

DAMP HEAT FUNCTIONAL TEST (SECTION 8.3.1 OF CEI IEC 60945)**(14 June 2003)**

Damp (93% Humidity) Performance Check

Receiver Test A

Performance Check

How long to monitor messages? 105 Seconds

Select Receiver Test

☒ Receiver Test A - EUT off | TE on

☐ Receiver Test B - EUT on | TE off

EUT MMSI 1

EUT Serial 000221933

Start

Stop

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Sunday June 15, 2003

Total VDO Messages Transmitted: 66

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test A

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

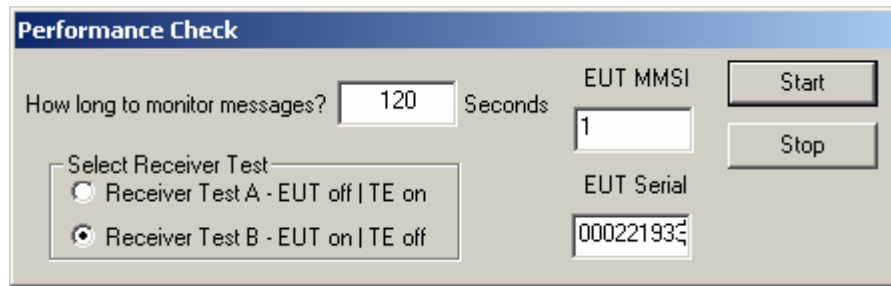
Date: Sunday June 15, 2003

=====

Unmatched Messages

=====

Receiver Test B



The image shows a 'Performance Check' dialog box with a blue title bar. It contains several input fields and buttons. The 'How long to monitor messages?' field is set to '120' with the unit 'Seconds'. The 'EUT MMSI' field is set to '1'. The 'EUT Serial' field is set to '000221933'. There are two radio buttons under 'Select Receiver Test': 'Receiver Test A - EUT off | TE on' and 'Receiver Test B - EUT on | TE off', with the second one selected. There are 'Start' and 'Stop' buttons on the right.

Field	Value
How long to monitor messages?	120 Seconds
EUT MMSI	1
EUT Serial	000221933
Select Receiver Test	Receiver Test B - EUT on TE off

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Sunday June 15, 2003

Total VDO Messages Transmitted: 67

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test B

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Sunday June 15, 2003

=====

Unmatched Messages

=====

SECTION 4

SINUSOIDAL VIBRATION TEST SUMMARY

Test Start-Finish Dates: 19 June 2003

Responsible Test Technician: Don Henderson

1-4 TEST HARDWARE

One (1) P/N AISA1-000-01 Automatic Identification System (AIS), S/N 000221933

2-4 TEST REQUIREMENTS

With the test hardware configured for operation, perform the following activities:

Resonance Search ($\pm 10\%$ amplitude and $\pm 2\%$ frequency tolerance):

- One (1) sinusoidal upswEEP at a rate of 0.5 octave per minute in each of the three (3) orthogonal axes
 - 2 to 13.2 Hz at ± 1 mm (± 0.03937 inches)
 - 13.2 to 100 Hz at 7 m/s^2 ($0.714 G_{pk}$)

Endurance ($\pm 10\%$ amplitude and $\pm 2\%$ frequency tolerance):

- Two (2) hours of sinusoidal dwell at a single resonant frequency, as designated by the customer, in each of the three (3) orthogonal axes. A resonant frequency is defined as $Q \geq 5$. Use 30Hz if no resonant frequency is found.

2.1-4 Test Specification:

Primary: Section 8.7 of CEI IEC 60945, Fourth Edition, 2002-08

Reference: L3 Communications "Certification Test Matrix for the Automatic Identification System Part Number AISA1-000-00" number 905-M0151-54, Rev. A

3-4 TEST SETUP (Reference Figures 1-4 through 3-4)**QUALTEST FURNISHED MEASUREMENT AND TEST EQUIPMENT**

QTI #	Item	Manufacturer	Model Number	Calibration Due
100002	Thermo/Hygrometer	Amprobe	TH-2	4/28/2004
100079	Accelerometer	Endevco	7703A-50	12/5/2003
100082	Accelerometer	Endevco	2229C	7/3/2003
100123	Charge Amplifier	Endevco	104	8/30/2003
100127	Power Supply	Endevco	109	8/30/2003
100208	Vibration Control System	Data Physics	DP550	2/5/2004
100941	Power Amplifier	Ling Electronics	DMA5/A395-5	NA
100942	Vibration Exciter	Ling Electronics	A395	NA

CUSTOMER FURNISHED MEASUREMENT AND TEST EQUIPMENT

S/N	Calibration Due Date	Nomenclature (description, ID, P/N, model, manufacturer etc.)
Not marked	NA	Trunion-Mounted Vibration Fixture (1 ea.)

ACCELEROMETER IDENTIFICATION

#	Accelerometer ID	Charge Amp. ID/CH #	Controller CH #	Function/Location
1	100079	100123/ CH 9	1	Control on Fixture
2	100082	100123/ CH 10	2	Monitor on Test Item

4-4 TEST DESCRIPTION**4.1-5 Laboratory Ambient Conditions:**

Temperature (°C): 23
 Relative Humidity (%): 45
 Atmospheric Pressure: Site Ambient

4.2-4 Non-Qualtest Personnel, Including Organization, Present for All or Part of the Test:

Francis Wozniak, a representative from L3 Communications

4.3-4 Powered/Operational State of the Hardware and by Whom:

Test item operation and functional testing was conducted by Francis Wozniak, L3 Communications, during the sinusoidal vibration.

4.4-4 Test Activities and Resulting Measurements from Observed/Recorded Data:

Run #	Test	Axis	End Time	Duration
1	Resonance Search	Longitudinal	0959	11-min 17-sec
2	Endurance	Longitudinal	1211	2-hours
3	Resonance Search	Lateral	1318	11-min 17-sec
4	Endurance	Lateral	1522	2-hours
5	Resonance Search	Vertical	1610	11-min 17-sec
6	Endurance	Vertical	1813	2-hours

Endurance Test Frequencies at 7 m/s²:

Longitudinal-axis: 30Hz; Lateral-axis: 48.9Hz; Vertical-axis: 30Hz

5-4 ENVIRONMENTAL TEST DATA

No anomalies were observed. Representative data plots for each vibration profile and axis are located after Figure 3-4.

Screenshots related to the functional testing performed by the customer are presented in Enclosure IV.



Figure 1-4. Test setup for longitudinal-axis sinusoidal vibration.



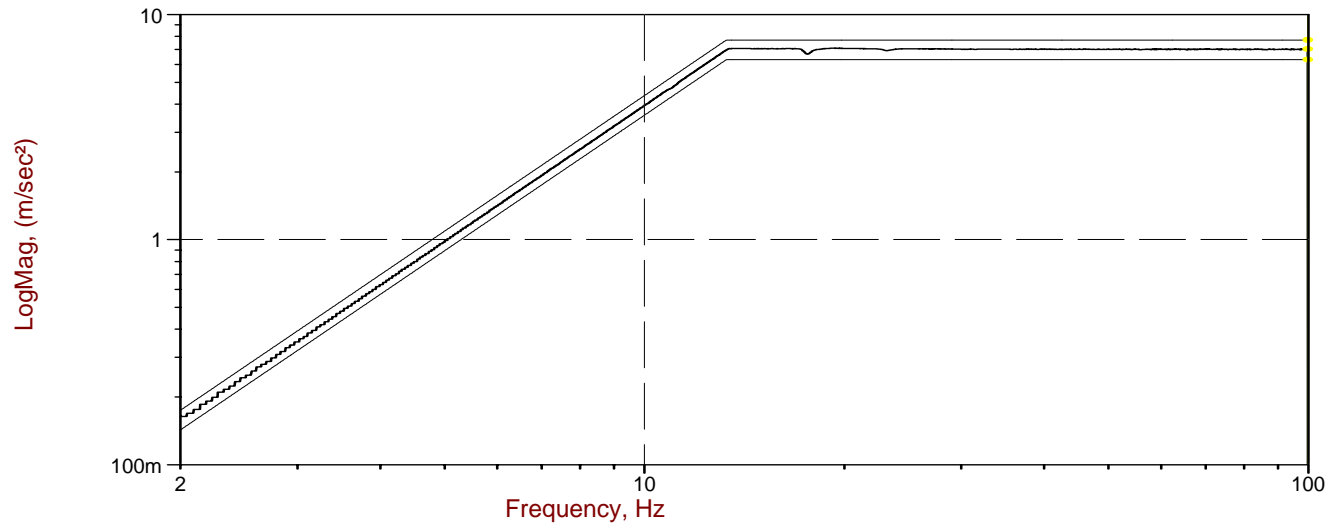
Figure 2-4. Test setup for lateral-axis sinusoidal vibration.



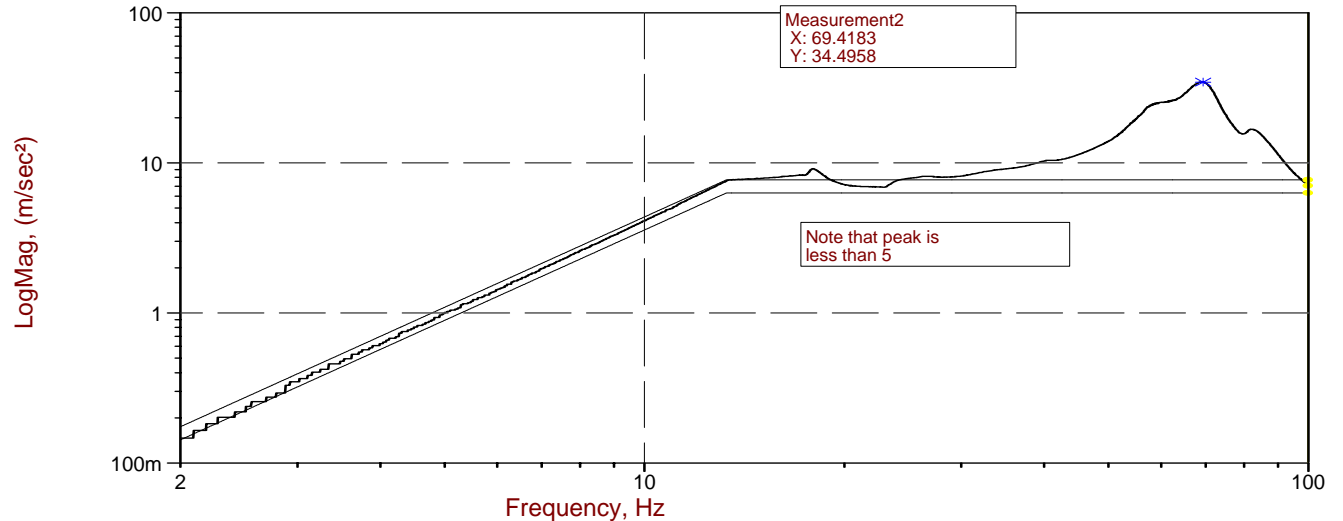
Figure 3-4. Test setup for vertical-axis sinusoidal vibration.

Qualtest, Inc. 5325 Old Winter Garden Road Orlando, Florida 32811 Tel. (407) 293-5844 Fax (407) 297-7376	Customer:		L3 Communications			
	Test Hardware:		Automated Identification System (1 ea.)		Job #:	04003
	P/N:		AISA1-000-01		Run #:	1
	S/N:		000221933		Axis:	Longitudinal
	Date:	19 Jun 03	Time:	0959	Duration:	11 min 17 sec

Control

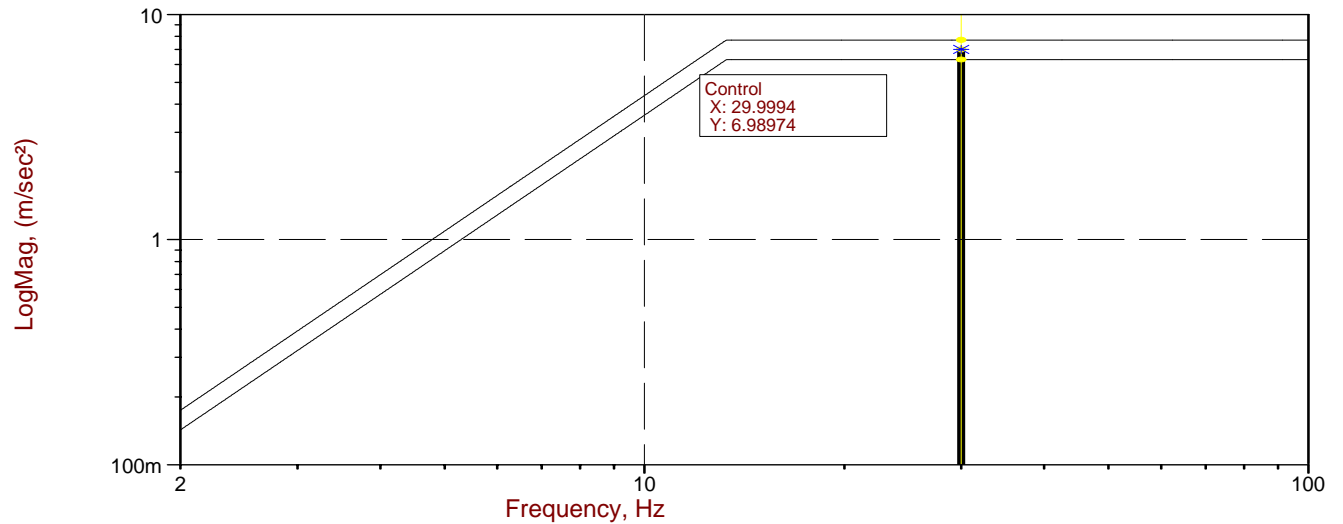


Monitor

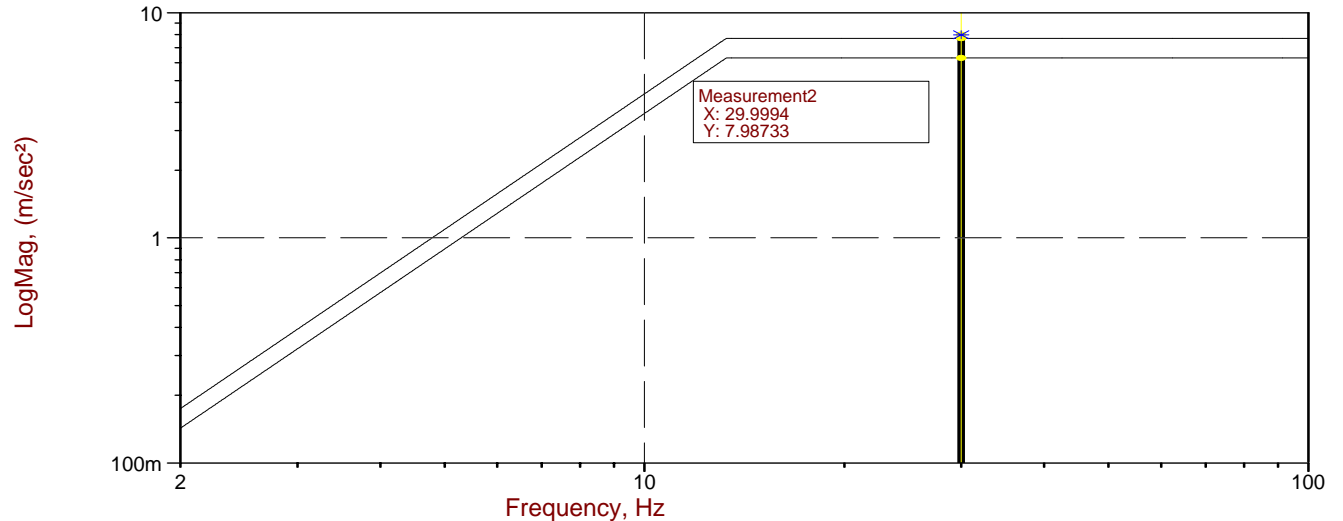


Qualtest, Inc. 5325 Old Winter Garden Road Orlando, Florida 32811 Tel. (407) 293-5844 Fax (407) 297-7376	Customer:		L3 Communications			
	Test Hardware:		Automated Identification System (1 ea.)		Job #:	04003
	P/N:		AISA1-000-01		Run #:	2
	S/N:		000221933		Axis:	Longitudinal
	Date:	19 Jun 03	Time:	1211	Duration:	2 hours

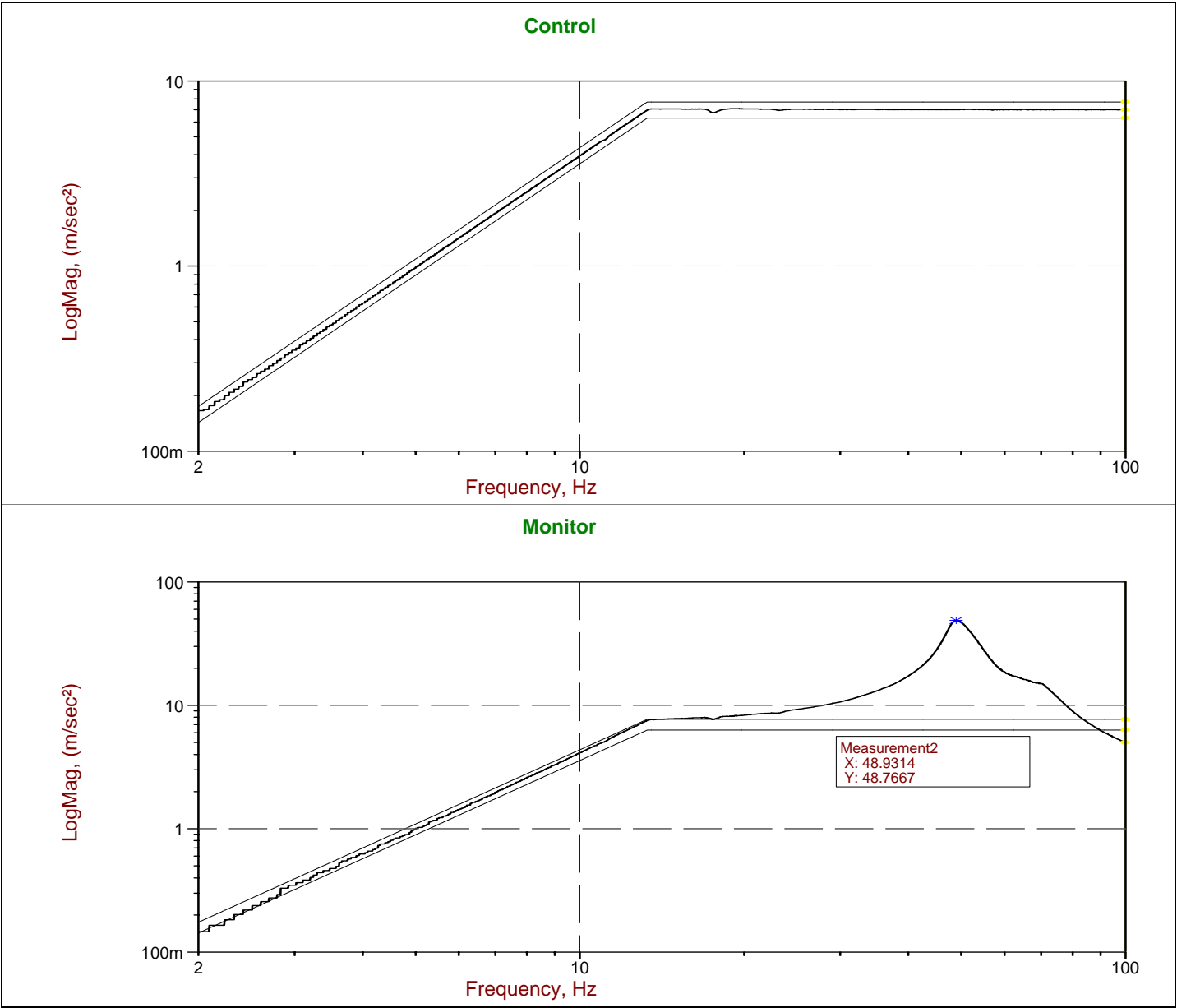
Control



Monitor

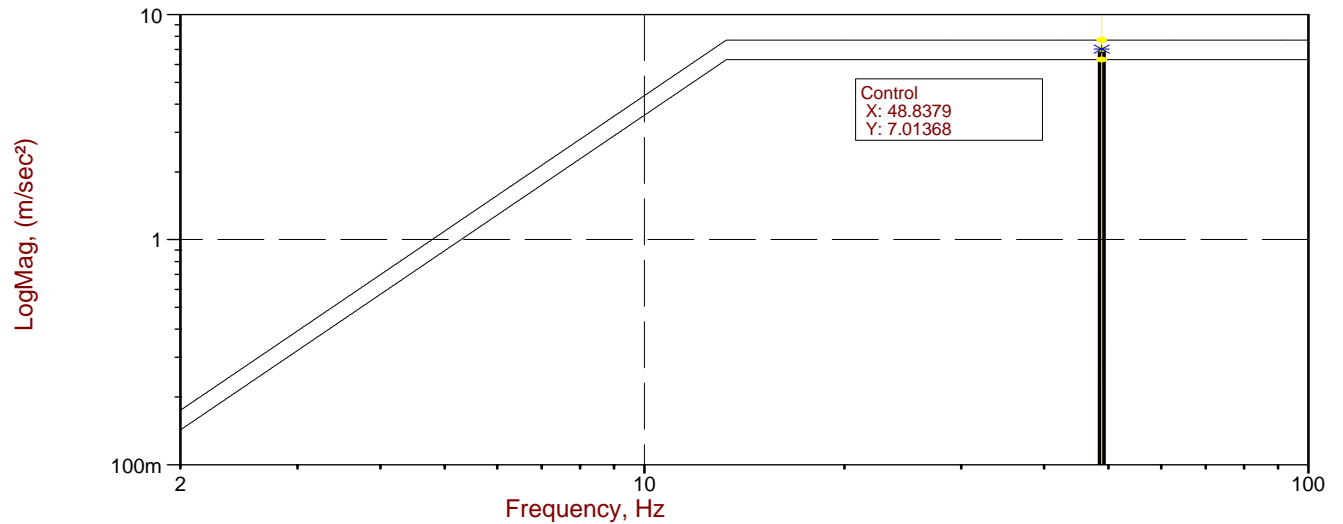


Qualtest, Inc. 5325 Old Winter Garden Road Orlando, Florida 32811 Tel. (407) 293-5844 Fax (407) 297-7376	Customer:		L3 Communications			
	Test Hardware:		Automated Identification System (1 ea.)	Job #:	04003	
	P/N:		AISA1-000-01	Run #:	3	
	S/N:		000221933	Axis:	Lateral	
	Date:	19 Jun 03	Time:	1318	Duration:	11 min 17 sec

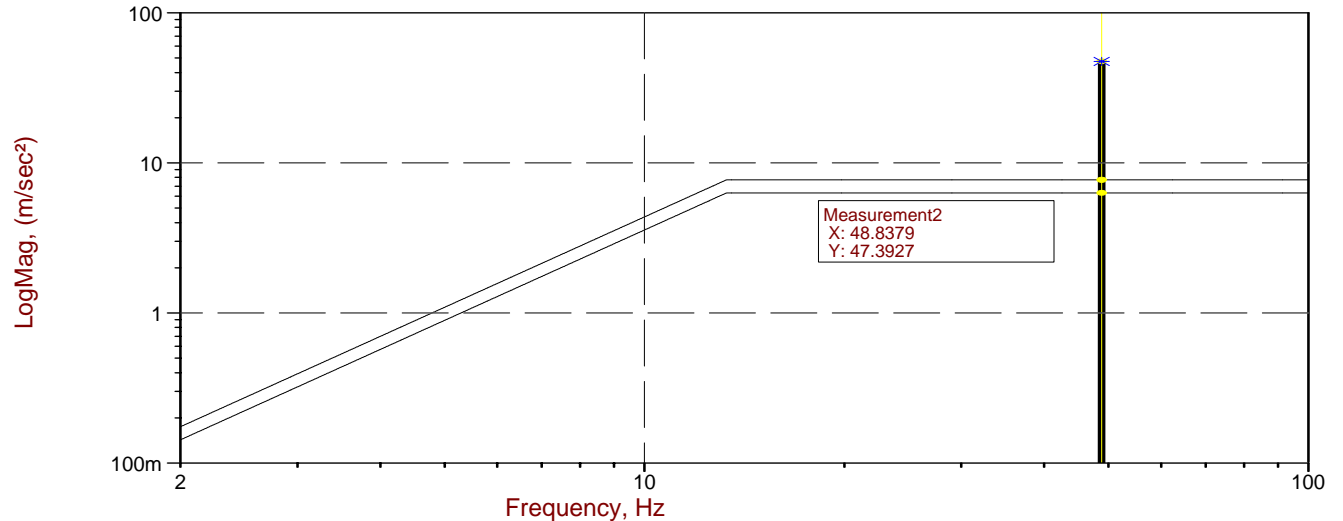


Qualtest, Inc. 5325 Old Winter Garden Road Orlando, Florida 32811 Tel. (407) 293-5844 Fax (407) 297-7376	Customer:		L3 Communications			
	Test Hardware:		Automated Identification System (1 ea.)		Job #:	04003
	P/N:		AISA1-000-01		Run #:	4
	S/N:		000221933		Axis:	Lateral
	Date:	19 Jun 03	Time:	1522	Duration:	2 hours

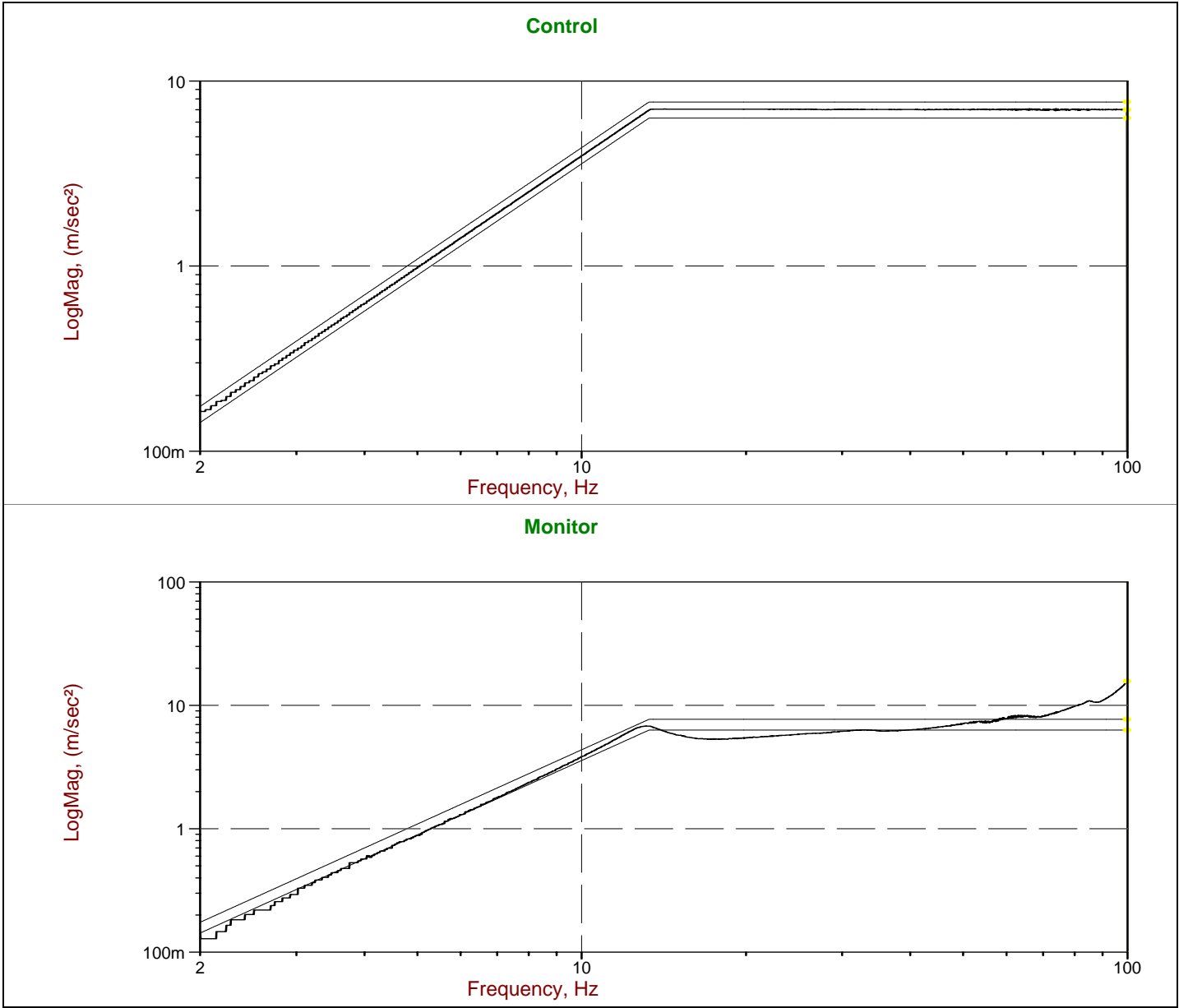
Control



Monitor

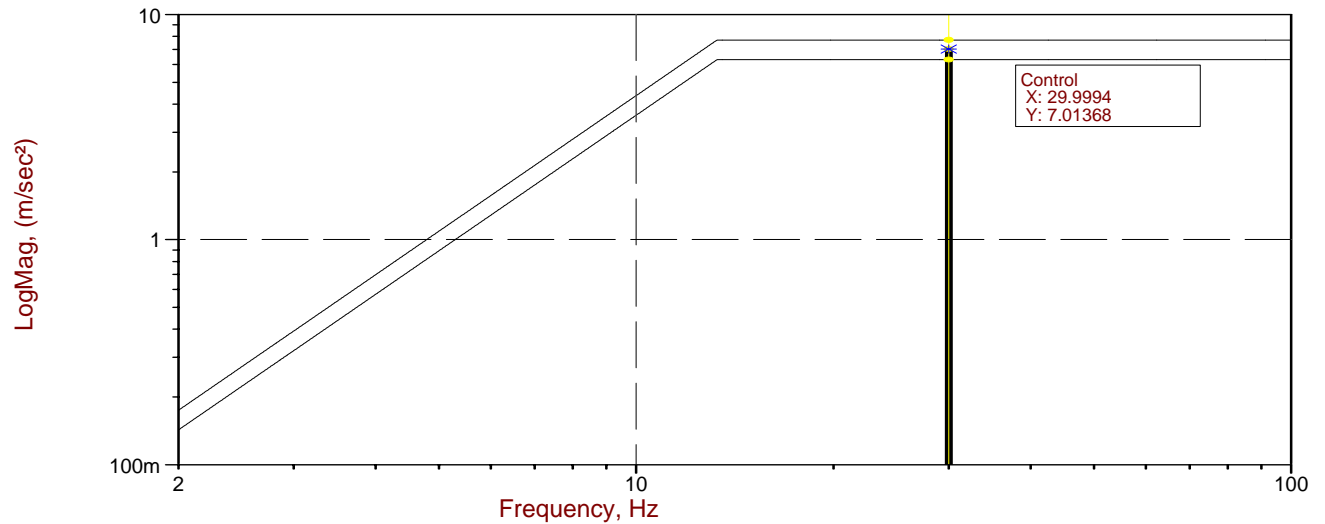


Qualtest, Inc. 5325 Old Winter Garden Road Orlando, Florida 32811 Tel. (407) 293-5844 Fax (407) 297-7376	Customer:		L3 Communications			
	Test Hardware:		Automated Identification System (1 ea.)	Job #:	04003	
	P/N:		AISA1-000-01	Run #:	5	
	S/N:		000221933	Axis:	Vertical	
	Date:	19 Jun 03	Time:	1610	Duration:	11 min 17 sec

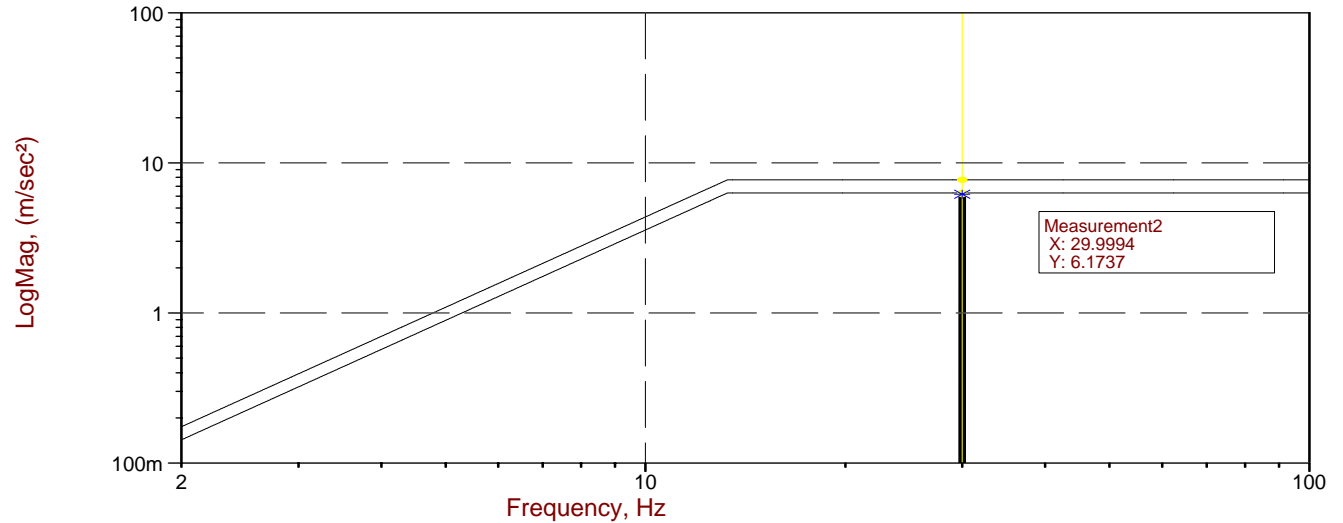


Qualtest, Inc. 5325 Old Winter Garden Road Orlando, Florida 32811 Tel. (407) 293-5844 Fax (407) 297-7376	Customer:		L3 Communications			
	Test Hardware:		Automated Identification System (1 ea.)		Job #:	04003
	P/N:		AISA1-000-01		Run #:	6
	S/N:		000221933		Axis:	Lateral
	Date:	19 Jun 03	Time:	1813	Duration:	2 hours

Control



Monitor



ENCLOSURE IV***L3 COMMUNICATIONS AUTOMATIC IDENTIFICATION SYSTEM (AIS) SCREEN SHOTS******FOR THE******SINUSOIDAL VIBRATION TEST*****PREFACE**

These data are the results of the IEC 60945 required Performance Checks and Performance Tests conducted by L3 Communications personnel. Customer data was supplied to Qualtest in Microsoft Word format on digital media, which was inserted into this Enclosure unaltered, including the descriptions with the accompanying graphics.

Criteria Statement

L3 Communications used the following criteria for Performance Checks.

Performance Check**Criteria for Pass**

- 1) IEC 61993-2 Paragraph 14.1.1.1 -Transmit Position Reports needs to be every 2 +/- 0.3 seconds.
- 2) IEC 61993-2 Paragraph 14.1.1.2 -Receipt Position Reports needs to be continuous for the duration of the test. No unmatched messages indicate successful continuous reception.

VIBRATION TEST (SECTION 8.7 OF CEI IEC 60945)**(19 June 2003)*****Vertical***

Vertical Axis 3A1

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☐ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

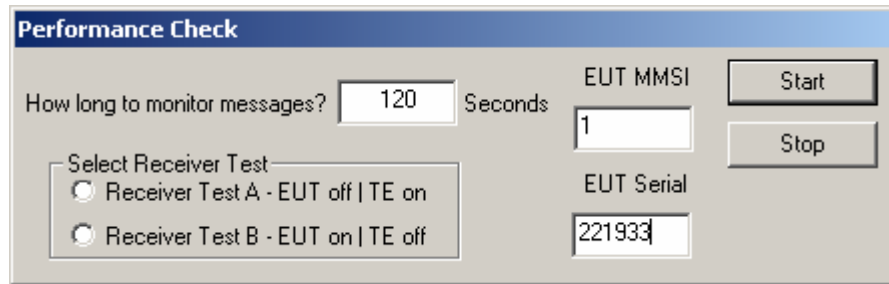
☒ RMC Lat: Lon: Status
Course Speed Mode

Writing to 105...

Serial Port Config...

Source ID

UTC = 21:06:00



The image shows a 'Performance Check' dialog box with a blue title bar. It contains several input fields and buttons. The first row has a label 'How long to monitor messages?' followed by a text box containing '120' and the word 'Seconds'. To the right of this is a label 'EUT MMSI' followed by a text box containing '1'. Further right are two buttons: 'Start' and 'Stop'. The second row has a label 'Select Receiver Test' followed by two radio button options: 'Receiver Test A - EUT off | TE on' and 'Receiver Test B - EUT on | TE off'. To the right of these is a label 'EUT Serial' followed by a text box containing '221933'.

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 66

Average reporting rate: 1.98 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test A

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

=====

Unmatched Messages

=====

Vertical Axis 3A2

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☐ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

☒ RMC Lat: Lon: Status
Course Speed Mode

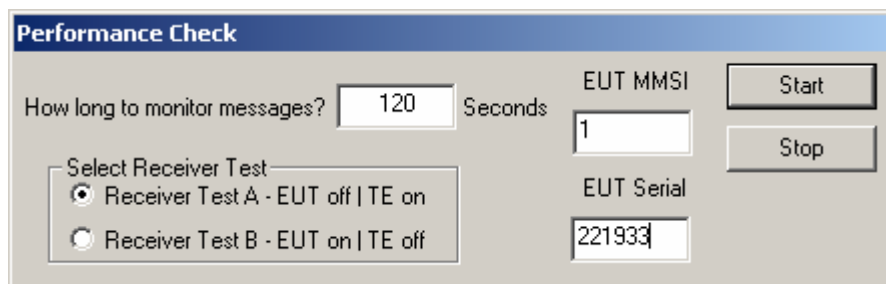
Writing to 105...

Serial Port Config...

Source ID

Start Stop Exit

UTC = 21:48:19



The image shows a 'Performance Check' dialog box. It has a title bar with the text 'Performance Check'. Inside, there are several fields and buttons. On the left, there is a label 'How long to monitor messages?' followed by a text box containing '120' and the word 'Seconds'. Below this is a section titled 'Select Receiver Test' with two radio button options: 'Receiver Test A - EUT off | TE on' (which is selected) and 'Receiver Test B - EUT on | TE off'. To the right of these are two more text boxes: 'EUT MMSI' containing '1' and 'EUT Serial' containing '221933'. On the far right, there are two buttons: 'Start' and 'Stop'.

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 67

Average reporting rate: 1.99 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test A

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

=====

Unmatched Messages

=====

Vertical Axis 3B1

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☐ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

☒ RMC Lat: Lon: Status
Course Speed Mode

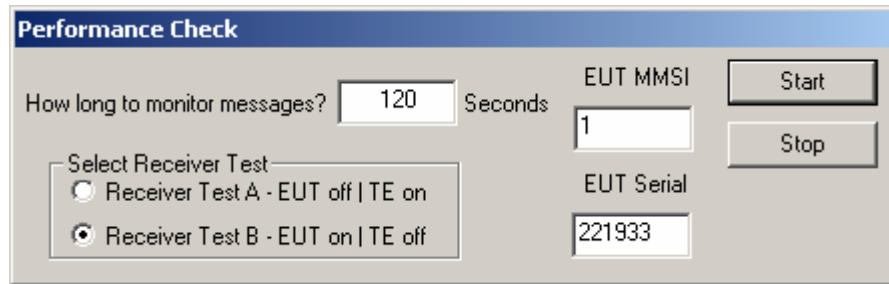
Writing to 105...

Serial Port Config...

Source ID

Start Stop Exit

UTC = 21:22:11



The image shows a 'Performance Check' dialog box with a blue title bar. It contains several input fields and buttons. The first row has a label 'How long to monitor messages?' followed by a text box containing '120' and the word 'Seconds'. To the right of this is a label 'EUT MMSI' followed by a text box containing '1'. Further right are two buttons: 'Start' and 'Stop'. The second row has a label 'Select Receiver Test' followed by two radio button options: 'Receiver Test A - EUT off | TE on' and 'Receiver Test B - EUT on | TE off'. To the right of these is a label 'EUT Serial' followed by a text box containing '221933'.

Field	Value
How long to monitor messages?	120
Seconds	
EUT MMSI	1
EUT Serial	221933

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 41

Average reporting rate: 2.05 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test B

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

=====

Unmatched Messages

=====

Vertical Axis 3B2

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☐ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

☒ RMC Lat: Lon: Status
Course Speed Mode

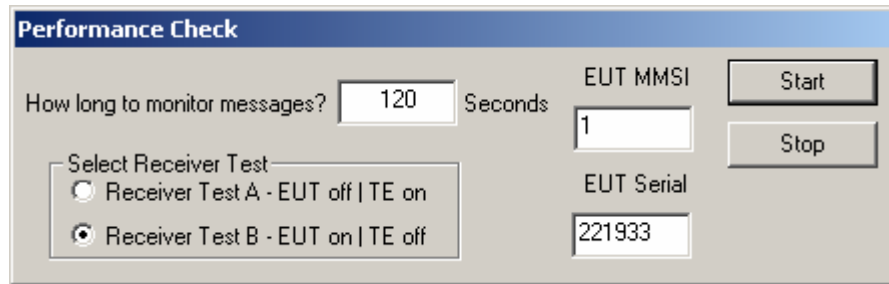
Writing to 105...

Serial Port Config...

Source ID

Start Stop Exit

UTC = 21:56:30



The image shows a 'Performance Check' dialog box with a blue title bar. It contains several input fields and buttons. The first row has a label 'How long to monitor messages?' followed by a text box containing '120' and the word 'Seconds'. To the right of this is a label 'EUT MMSI' followed by a text box containing '1'. Further right are two buttons: 'Start' and 'Stop'. The second row has a label 'Select Receiver Test' followed by two radio button options: 'Receiver Test A - EUT off | TE on' and 'Receiver Test B - EUT on | TE off'. To the right of these is a label 'EUT Serial' followed by a text box containing '221933'.

How long to monitor messages?	120	Seconds	EUT MMSI	1	Start	Stop
Select Receiver Test	<input type="radio"/> Receiver Test A - EUT off TE on <input checked="" type="radio"/> Receiver Test B - EUT on TE off		EUT Serial	221933		

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 66

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test B

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

=====

Unmatched Messages

=====

Longitudinal

Longitudinal Axis 1A1

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☒ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

☒ RMC Lat: Lon: Status
Course Speed Mode

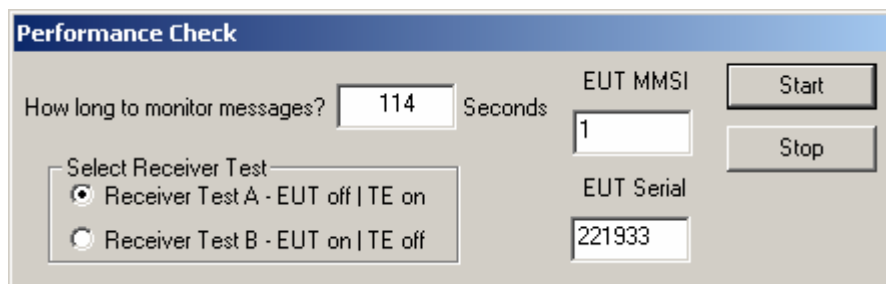
Writing to 105...

Serial Port Config...

Source ID

Start Stop Exit

UTC = 15:13:14



The image shows a 'Performance Check' dialog box with a blue title bar. It contains several input fields and buttons. The first row has a label 'How long to monitor messages?' followed by a text box containing '114' and the word 'Seconds'. To the right of this is a label 'EUT MMSI' followed by a text box containing '1'. Further right are two buttons: 'Start' and 'Stop'. The second row has a label 'Select Receiver Test' followed by two radio button options: 'Receiver Test A - EUT off | TE on' (which is selected) and 'Receiver Test B - EUT on | TE off'. To the right of these is a label 'EUT Serial' followed by a text box containing '221933'.

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 67

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test A

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

=====

Unmatched Messages

=====

Longitudinal Axis 1A2

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☒ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

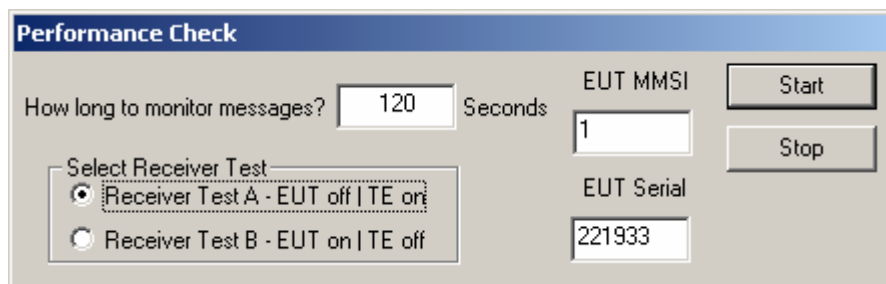
☒ RMC Lat: Lon: Status
Course Speed Mode

Writing to 105...

Serial Port Config...

Source ID

UTC = 15:52:00



The image shows a 'Performance Check' dialog box. It has a title bar with the text 'Performance Check'. Inside, there are several fields and buttons. On the left, there is a label 'How long to monitor messages?' followed by a text box containing '120' and the word 'Seconds'. Below this is a section titled 'Select Receiver Test' with two radio buttons. The first radio button is selected and is labeled 'Receiver Test A - EUT off | TE on'. The second radio button is labeled 'Receiver Test B - EUT on | TE off'. To the right of these fields, there are two more text boxes: 'EUT MMSI' containing '1' and 'EUT Serial' containing '221933'. On the far right, there are two buttons: 'Start' and 'Stop'.

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 110

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test A

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

=====

Unmatched Messages

=====

Longitudinal Axis 1B1

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☒ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

☒ RMC Lat: Lon: Status
Course Speed Mode

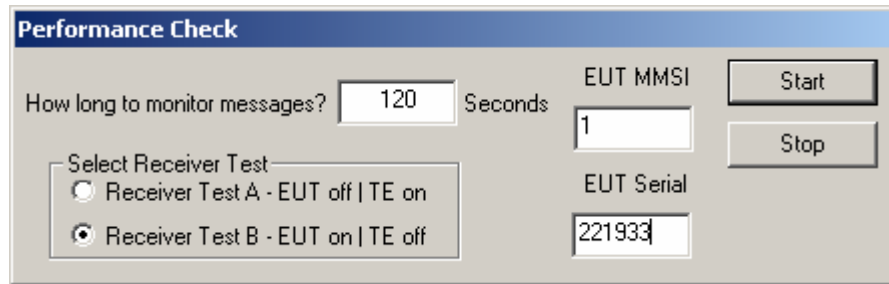
Writing to 105...

Serial Port Config...

Source ID

Start Stop Exit

UTC = 15:23:12



The image shows a 'Performance Check' dialog box. It has a title bar with the text 'Performance Check'. Inside, there are several fields and buttons. On the left, there is a label 'How long to monitor messages?' followed by a text box containing '120' and the word 'Seconds'. Below this is a section titled 'Select Receiver Test' with two radio button options: 'Receiver Test A - EUT off | TE on' and 'Receiver Test B - EUT on | TE off'. To the right of these are two more text boxes: 'EUT MMSI' containing '1' and 'EUT Serial' containing '221933'. On the far right, there are two buttons: 'Start' and 'Stop'.

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 66

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test B

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

=====

Unmatched Messages

=====

Longitudinal test 1B2

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☒ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

☒ RMC Lat: Lon: Status
Course Speed Mode

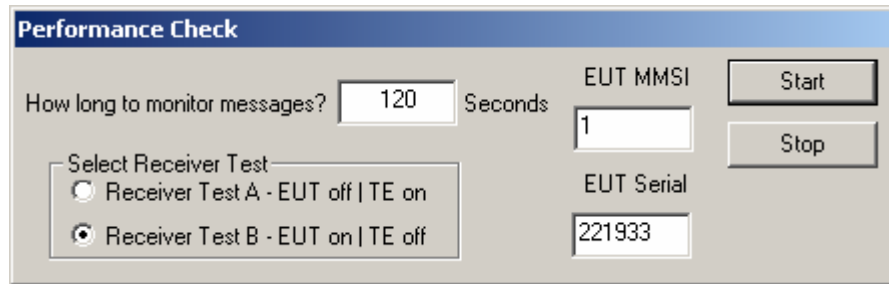
Writing to 105...

Serial Port Config...

Source ID

Start Stop Exit

UTC = 16:04:44



The image shows a 'Performance Check' dialog box with a blue title bar. It contains several input fields and buttons. The first row has a label 'How long to monitor messages?' followed by a text box containing '120' and the word 'Seconds'. To the right of this is a label 'EUT MMSI' followed by a text box containing '1'. Further right are two buttons: 'Start' and 'Stop'. The second row has a label 'Select Receiver Test' followed by two radio button options: 'Receiver Test A - EUT off | TE on' and 'Receiver Test B - EUT on | TE off'. To the right of these is a label 'EUT Serial' followed by a text box containing '221933'.

Field	Value
How long to monitor messages?	120
Seconds	
EUT MMSI	1
EUT Serial	221933

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 53

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test B

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

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Unmatched Messages

=====

Lateral

Lateral Axis 2A1

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☐ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

☒ RMC Lat: Lon: Status
Course Speed Mode

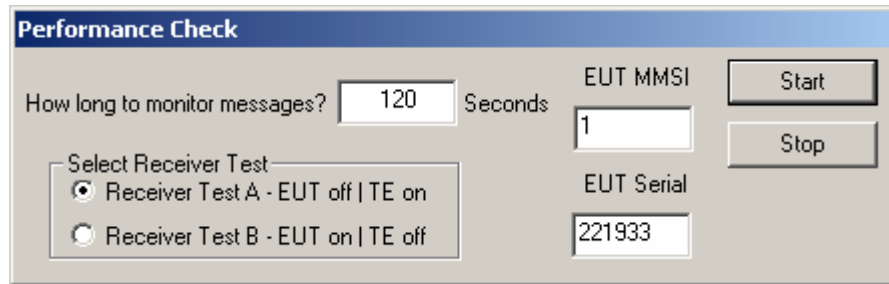
Writing to 105...

Serial Port Config...

Source ID

Start Stop Exit

UTC = 17:47:17



The image shows a 'Performance Check' dialog box. It has a title bar with the text 'Performance Check'. Inside, there are several fields and buttons. On the left, there is a label 'How long to monitor messages?' followed by a text box containing '120' and the word 'Seconds'. Below this is a section titled 'Select Receiver Test' with two radio button options: 'Receiver Test A - EUT off | TE on' (which is selected) and 'Receiver Test B - EUT on | TE off'. To the right of these, there are two more text boxes: 'EUT MMSI' containing '1' and 'EUT Serial' containing '221933'. On the far right, there are two buttons: 'Start' and 'Stop'.

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 67

Average reporting rate: 1.97 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test A

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

=====

Unmatched Messages

=====

Lateral Axis 2A2

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☐ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

☒ RMC Lat: Lon: Status
Course Speed Mode

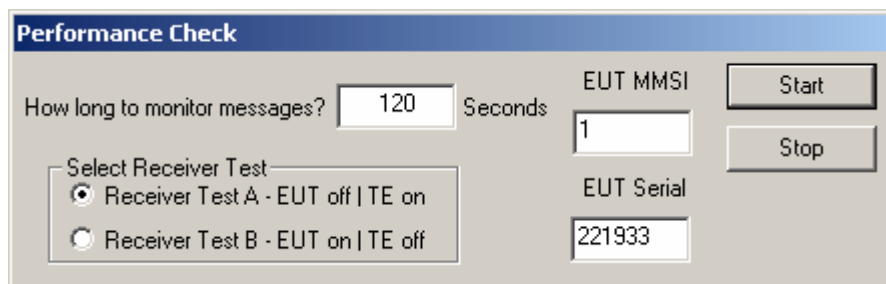
Writing to 105...

Serial Port Config...

Source ID

Start Stop Exit

UTC = 18:49:40



The image shows a 'Performance Check' dialog box. It has a title bar with the text 'Performance Check'. Inside, there are several fields and buttons. On the left, there is a label 'How long to monitor messages?' followed by a text box containing '120' and the word 'Seconds'. Below this is a section titled 'Select Receiver Test' with two radio button options: 'Receiver Test A - EUT off | TE on' (which is selected) and 'Receiver Test B - EUT on | TE off'. To the right of these are two more text boxes: 'EUT MMSI' containing '1' and 'EUT Serial' containing '221933'. On the far right, there are two buttons: 'Start' and 'Stop'.

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 67

Average reporting rate: 2.00 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test A

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

=====

Unmatched Messages

=====

Lateral Axis 2B1

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☐ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

☒ RMC Lat: Lon: Status
Course Speed Mode

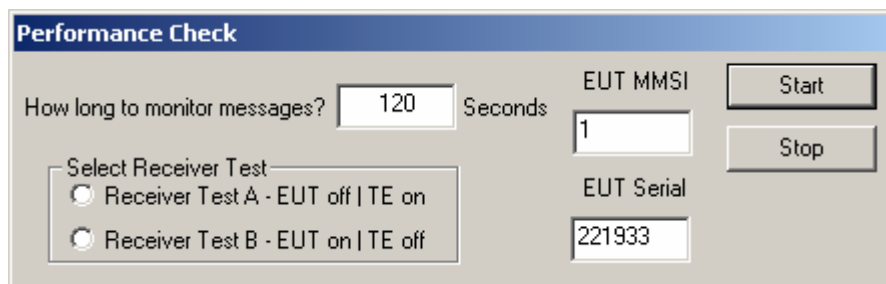
Writing to 105...

Serial Port Config...

Source ID

Start Stop Exit

UTC = 17:55:08



The image shows a 'Performance Check' dialog box with a blue title bar. It contains several input fields and buttons. The first row has a label 'How long to monitor messages?' followed by a text box containing '120' and the word 'Seconds'. To the right of this is a label 'EUT MMSI' followed by a text box containing '1'. Further right are two buttons: 'Start' and 'Stop'. The second row has a label 'Select Receiver Test' followed by two radio button options: 'Receiver Test A - EUT off | TE on' and 'Receiver Test B - EUT on | TE off'. To the right of these is a label 'EUT Serial' followed by a text box containing '221933'.

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 66

Average reporting rate: 1.98 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test B

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

=====

Unmatched Messages

=====

Lateral Axis 2B2

PiSim2

☒ HDT Heading Period (in seconds)

☒ ROT Rate of turn ☐ Valid

☐ GLL Lat: Lon: Status Mode

☐ VTG COG: T SOG: N Mode

☐ OSD Heading ☒ Valid
Course Speed

☐ GNS Lat: Lon: Mode

☐ GGA Lat: Lon: GPS quality:

☒ RMC Lat: Lon: Status
Course Speed Mode

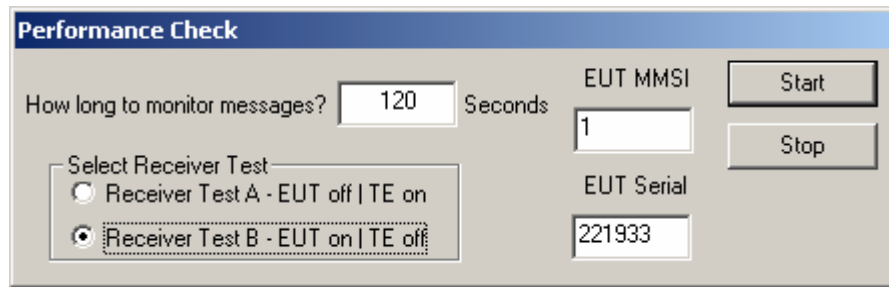
Writing to 105...

Serial Port Config...

Source ID

Start Stop Exit

UTC = 18:58:26



The image shows a 'Performance Check' dialog box. It has a blue title bar. Inside, there's a section 'How long to monitor messages?' with a text box containing '120' and the word 'Seconds'. To the right, there's a section 'EUT MMSI' with a text box containing '1'. Below that is 'EUT Serial' with a text box containing '221933'. On the left, there's a 'Select Receiver Test' section with two radio buttons. The first is 'Receiver Test A - EUT off | TE on' and the second is 'Receiver Test B - EUT on | TE off', which is selected. To the right of these are 'Start' and 'Stop' buttons.

Transmit Position Reports

Section 14.1.1.1

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

Total VDO Messages Transmitted: 67

Average reporting rate: 1.99 Seconds

Receive Position Reports

Section 14.1.1.2

Receiver Test B

Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00

Unit Under Test Serial Number: 000221933

Date: Thursday June 19, 2003

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Unmatched Messages

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