Report Date: 21 July 2003

Test Period: 27 May through 19 June 2003

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

Security Classification: NA

TEST REPORT

FOR

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

TESTING PERFORMED BY:

QUALTEST, INC.
5325 Old Winter Garden Road
Orlando, Florida 32811-1520

Website: www.qualtest.com

FOR:

L3 COMMUNICATIONS
6000 Fruitville Road
Sarasota, FL 34232-6499

TEST REPORT PREPARED BY:

Mary Webb, Technical Documentation Specialist

QUALITY ASSURANCE:

Mike McCord, Quality Assurance Manager

"CQA Performed IAW One Book"

Not Required
Bill Kennedy, DCM Orlando QAS, S1002A

APPROVED BY:

Todd Scarborough, General 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,

Susan Kingdon Fields, Notary Public in and for the State of Florida at large, this

21st 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.

TABLE OF CONTENTS

A2LA Certificate No. 1805.01

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±3°C at a rate ≤ 1°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±3°C at a rate ≤ 1°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±3°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±3°C beyond the specified 16 hours (total time at temperature of 21 hours).

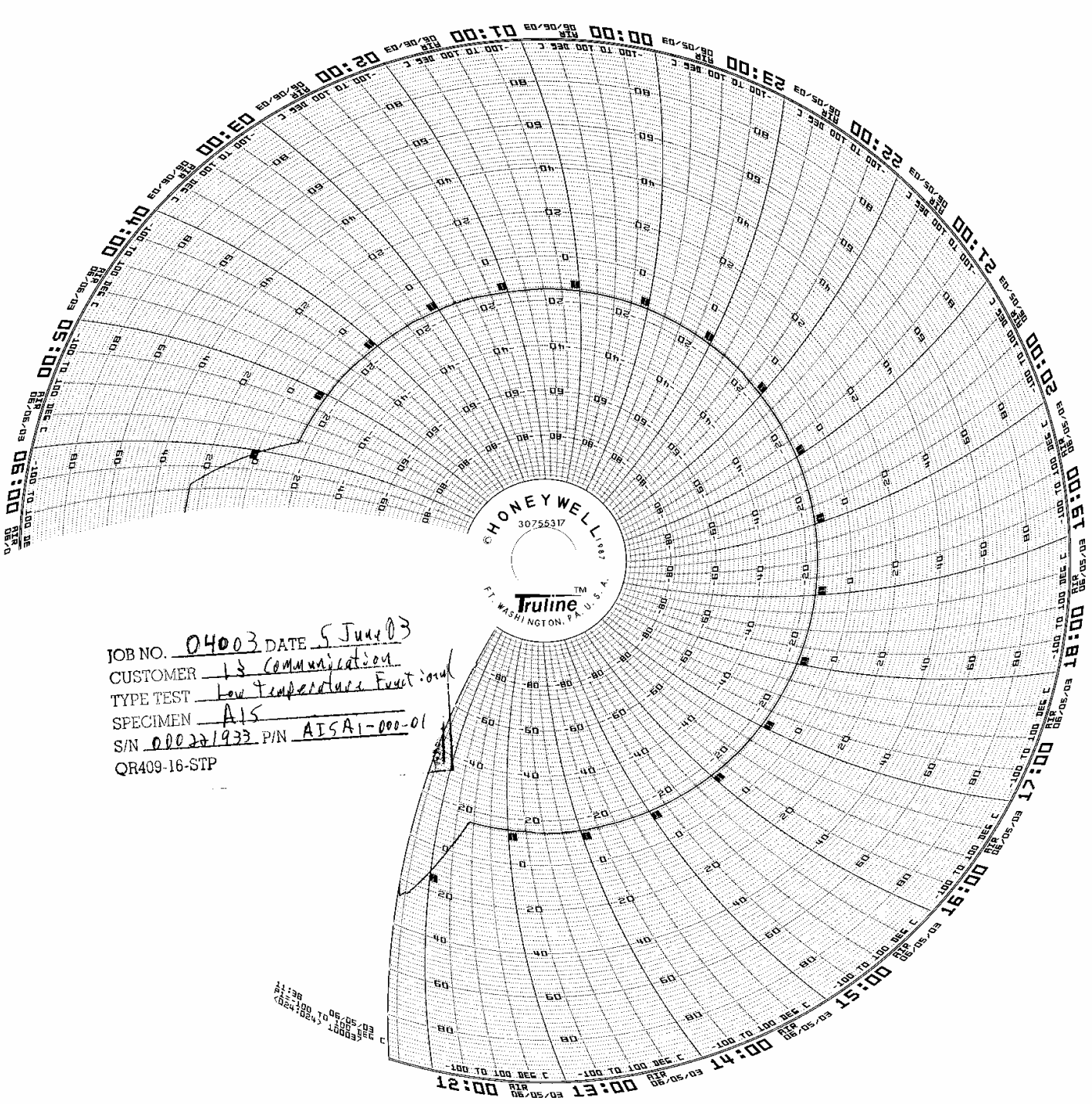
5-1 ENVIRONMENTAL TEST DATA

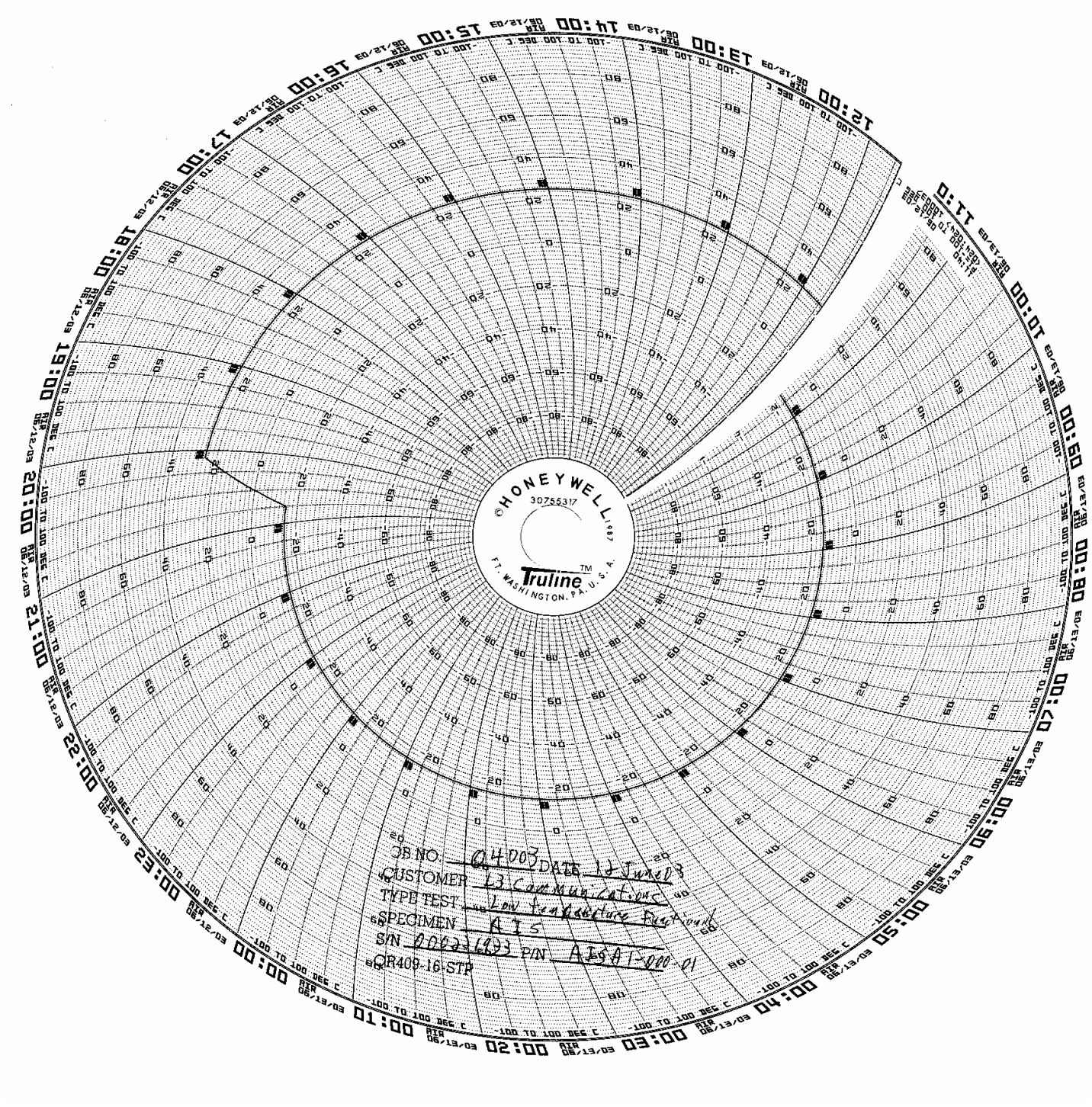
No anomalies were observed. Chart recorder temperature data are located after Figure 2-1.

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.


HONEYWELL
30755317
©1987
Truline™
FT. WASHINGTON, PA. U.S.A.
JOB NO. 04003 DATE 5 June 03
CUSTOMER L3 Communication
TYPE TEST Low Temperature Functional
SPECIMEN A15
S/N 00021933 P/N A15A1-000-01
QR409-16-STP



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. Perforamnce 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.

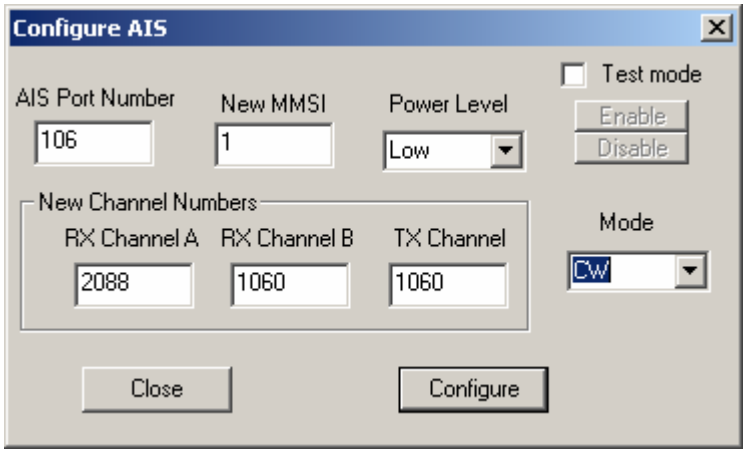
Performance Tests

Criteria for Pass

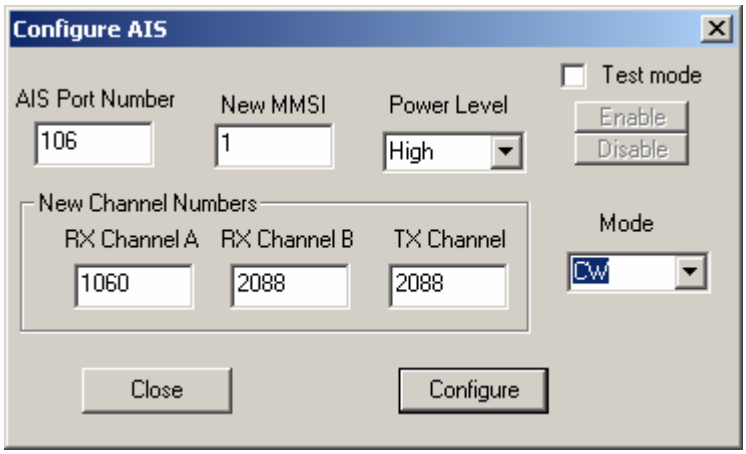
1) IEC 61993-2 Paragraph 15.1.1 – The frequency error shall not exceed ±1kHz measured at +30% power under Dry Heat and –10% power under Low Temperature.
2) IEC 61993-2 Paragraph 15.1.2 – The carrier power (conducted) shall be within +2.0dB and -3.0dB of the rated output power measured at +30% power under 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 ±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)

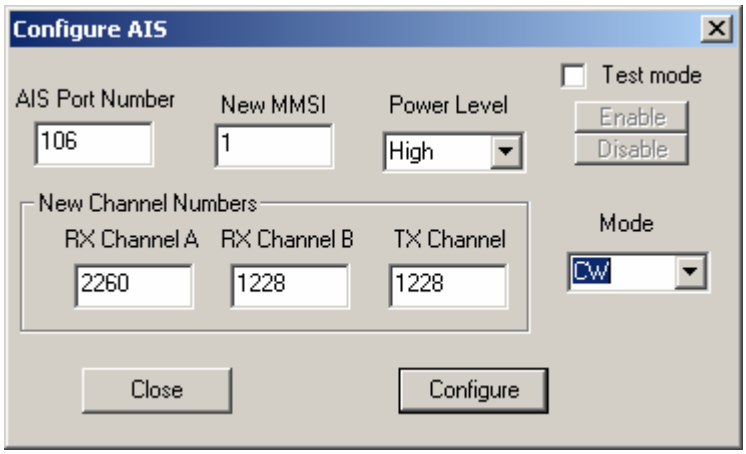
Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 156.025



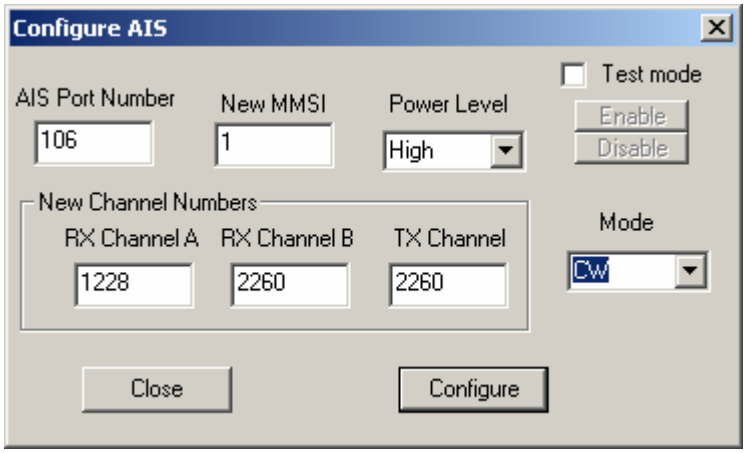
Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 162.025



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



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



Transmit Frequency Error, Test Results, Section 15.1.1

Frequency Error Test

Test Equipment Required:

- Frequency Counter — Cal Due: 5-21-04
- 30db Attenuater (Black & Green)

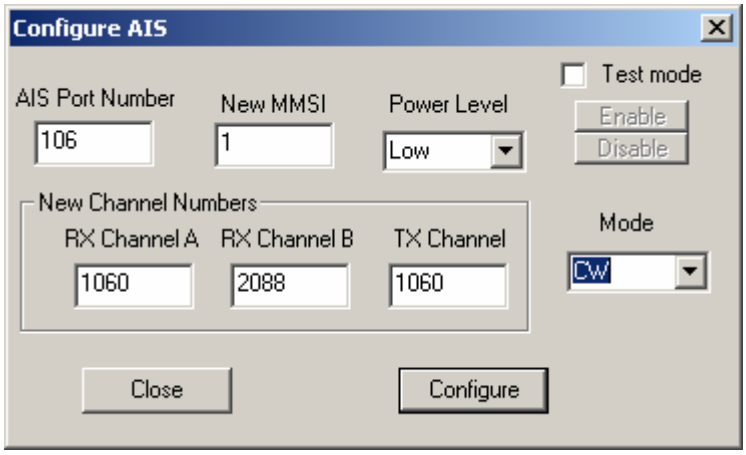
Setup Instructions:

- See Photo(s):

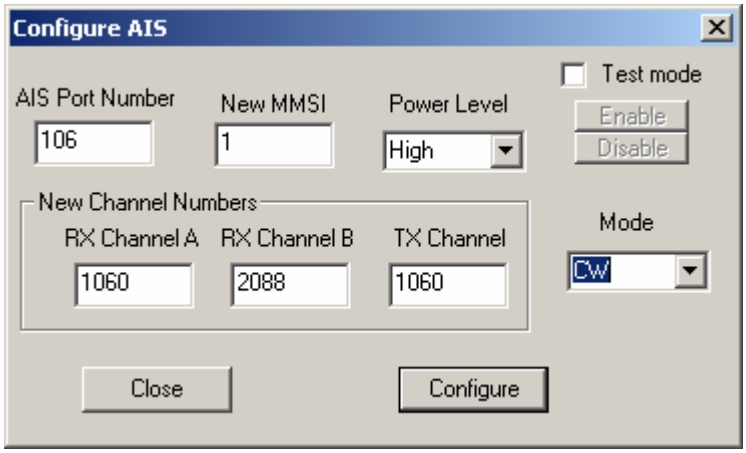
Procedure:

- Connect Frequency Counter to EUT through Attenuater
- 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: 157.4357 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



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



Transmit Carrier Power, Test Results, Section 15.1.2

Carrier Power Test

Test Equipment Required:

- Power Meter Cal Due: 5.22.04
- Power Sensor
- Black Attenuater (Number matches Power Sensor connector)

Setup Instructions:

- See Photo(s):

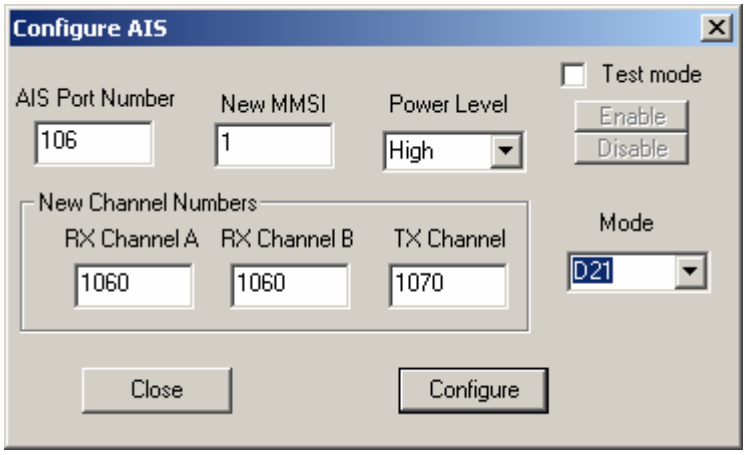
Procedure:

- Connect black attenuater 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)

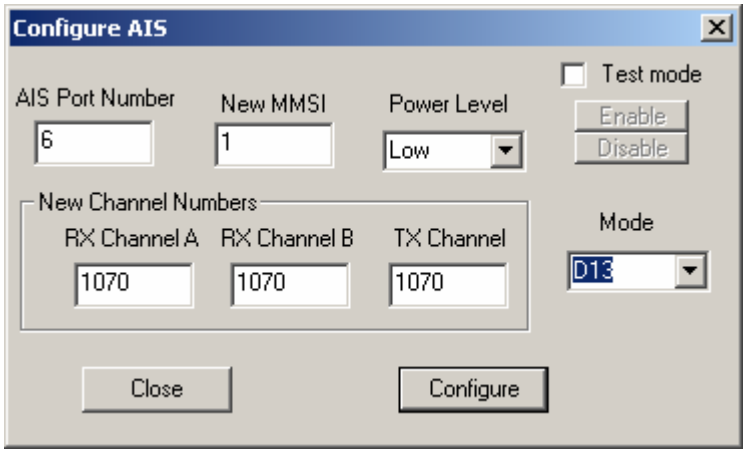
- Using the Configuration Tool, set EUT the following:
  Rx1 = 1070
  Rx2 = 1070
  Tx = 1070
  Power = High
  Mode = CW
- Record value: +10.81 dBm
  +11dBm (+/- 3 dB)

- Using the Configuration Tool, set EUT the following:
  Rx1 = 1070
  Rx2 = 1070
  Tx = 1070
  Power = Low
  Mode = CW
- Record value: +2.765 dBm
  +3dBm (+/- 3 dB)

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



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



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

DSC Frequency Error

Test Equipment Required:

- Marconi (Tx Mode) Receiving Signal — Cal Due: 10.05.03
- Frequency Counter — Cal Due: 5.22.04
- 30db Attenuater (Black & Green)

Setup Instructions:

See Photo(s):

Procedure:

- Connect attenuater 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

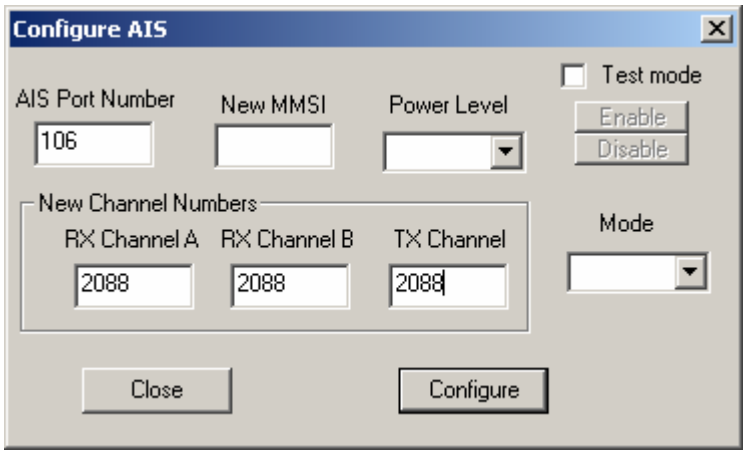
- Select Run on frequency counter
- Using the Configuration Tool, set EUT the following:
  - Rx1 = 1070
  - Rx2 = 1070
  - Tx = 1070
  - Power = High
  - **Mode = D13**
- Select "Stop/Single" on Frequency Counter
- Record value: 1301.320661 Hz

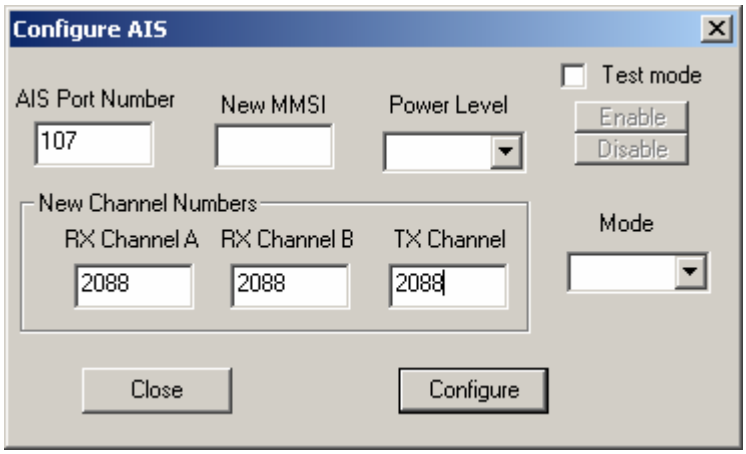
1300 Hz (+/- 13 Hz)

- 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

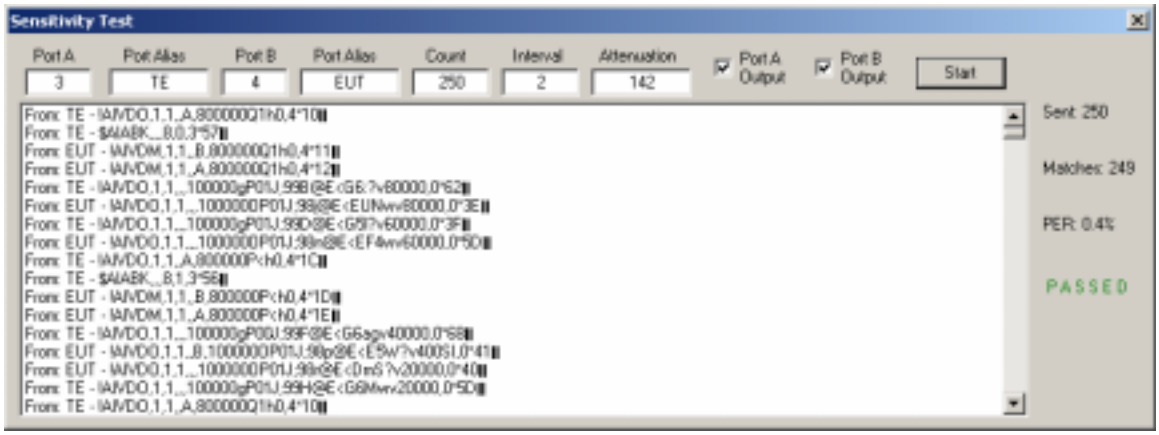




Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

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

Run 1



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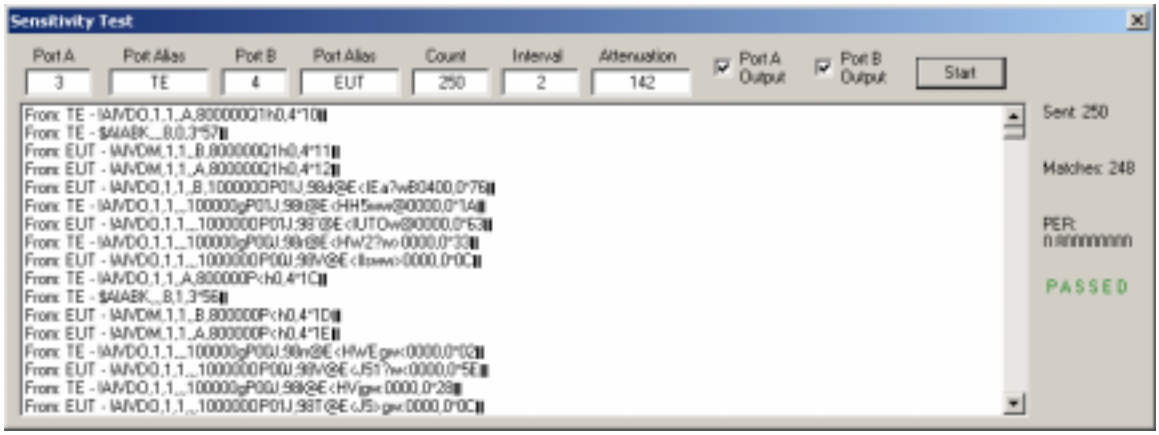
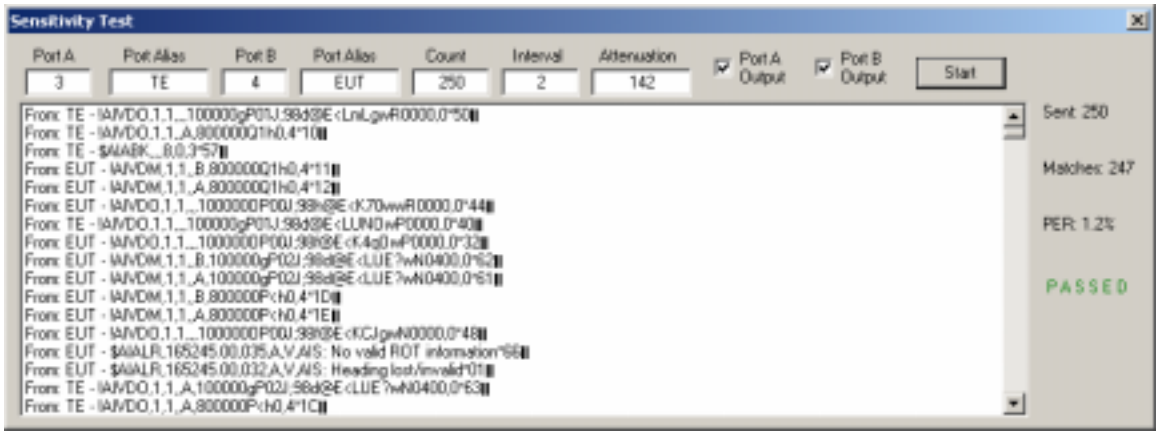
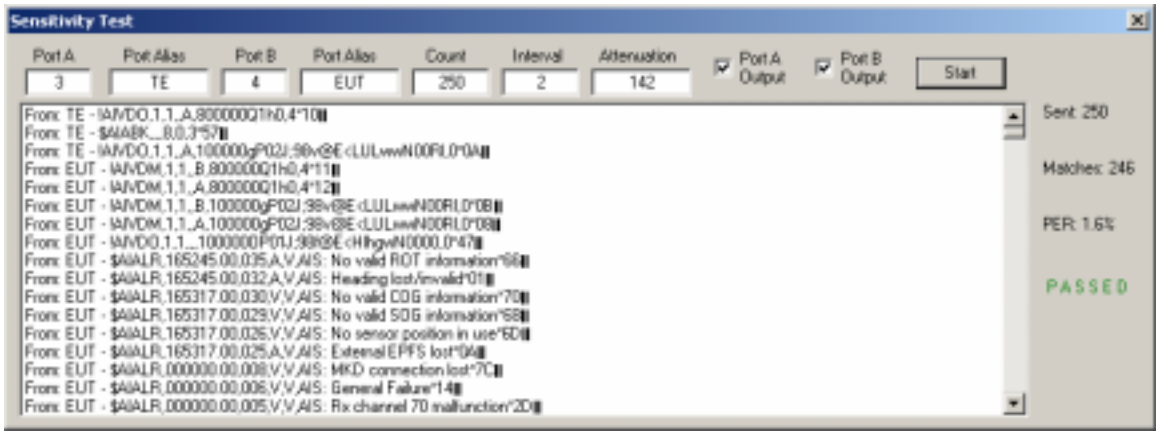


Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 162.025

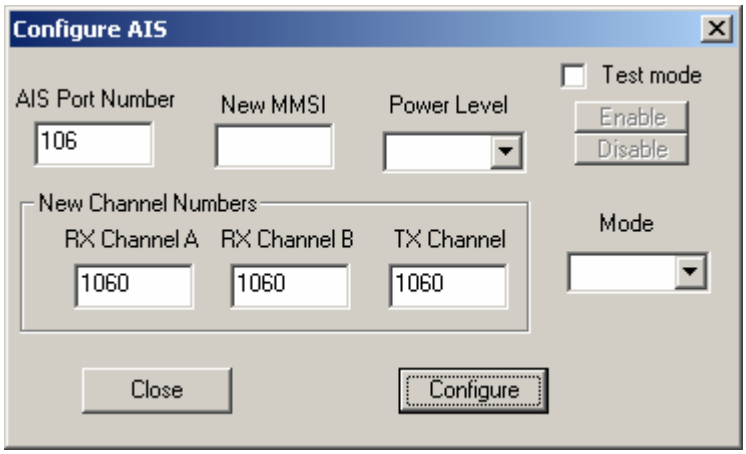
Run 3

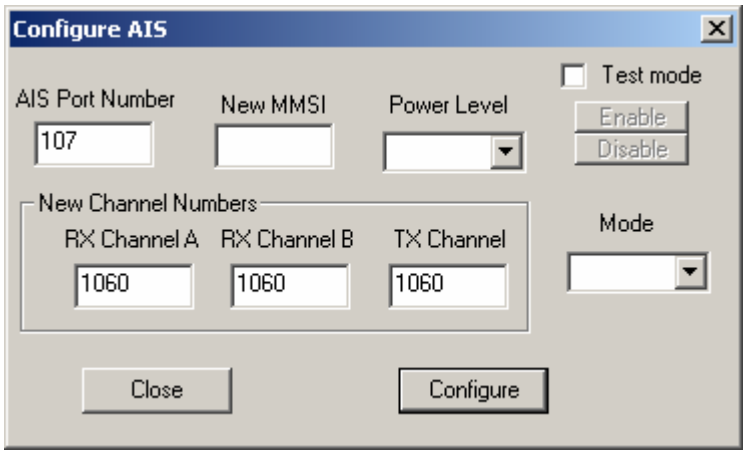


Run 4



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

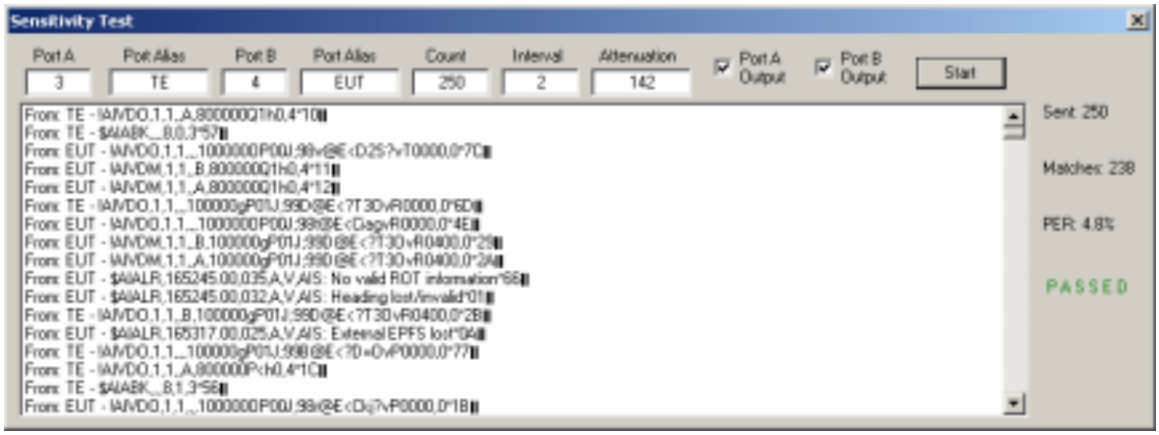




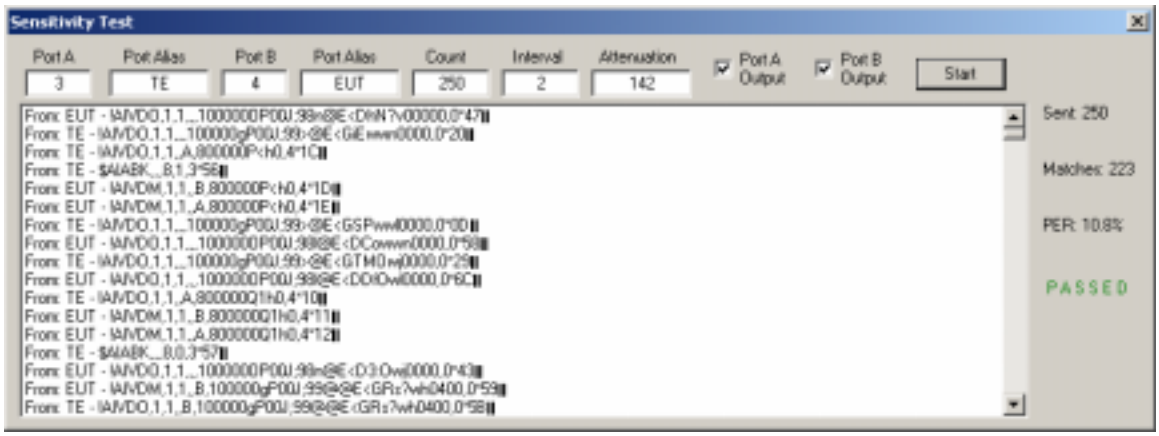
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

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

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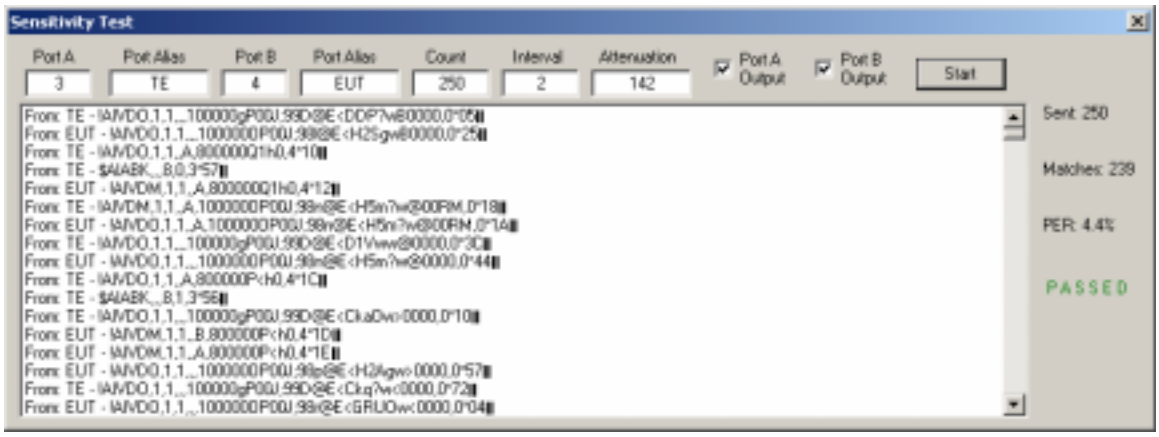
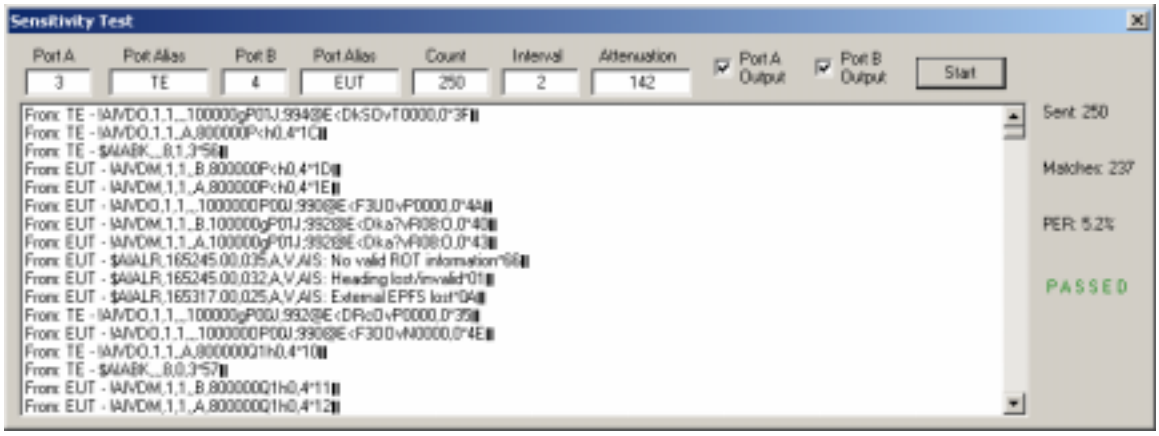
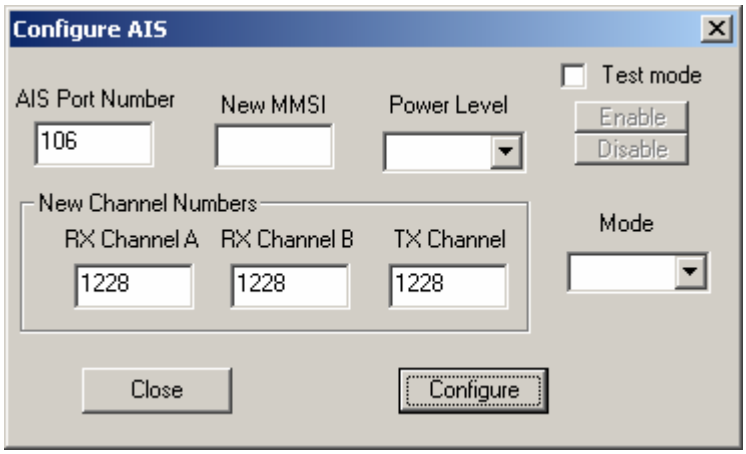
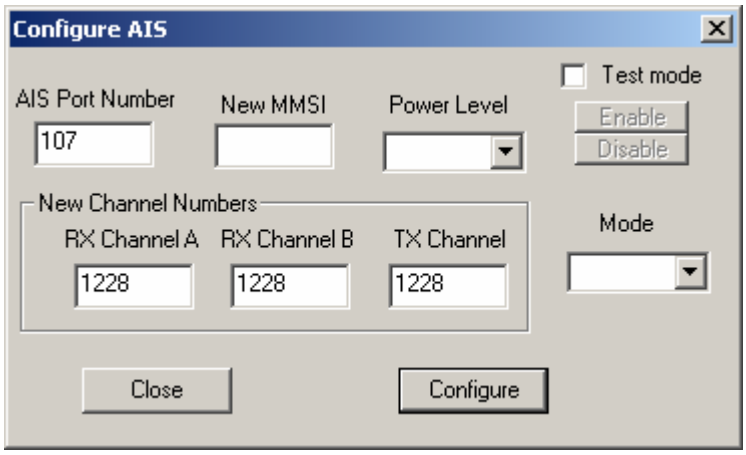


Run 4



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

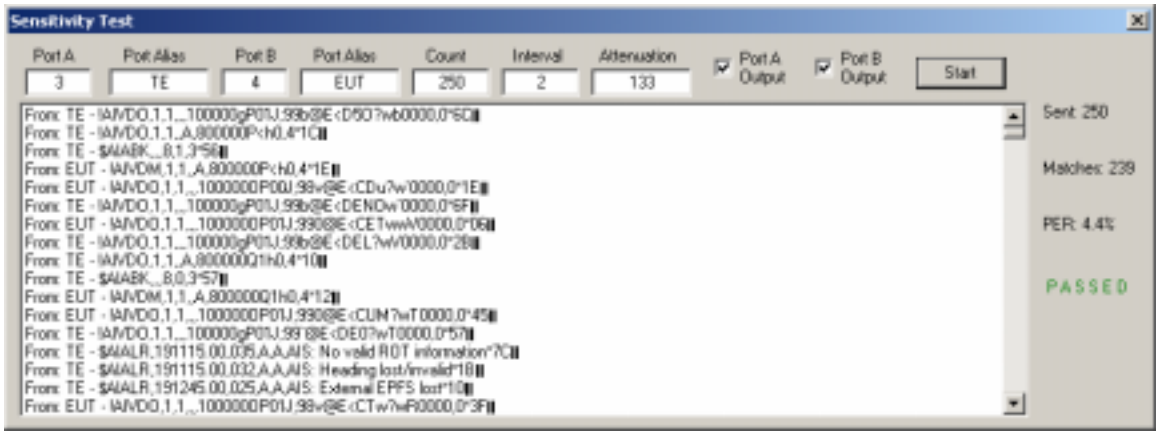




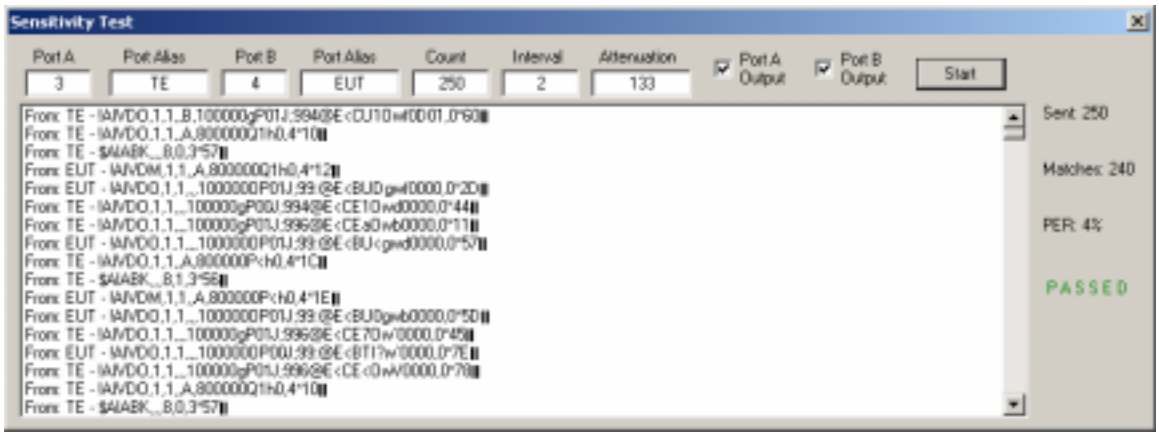
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

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

Run 1

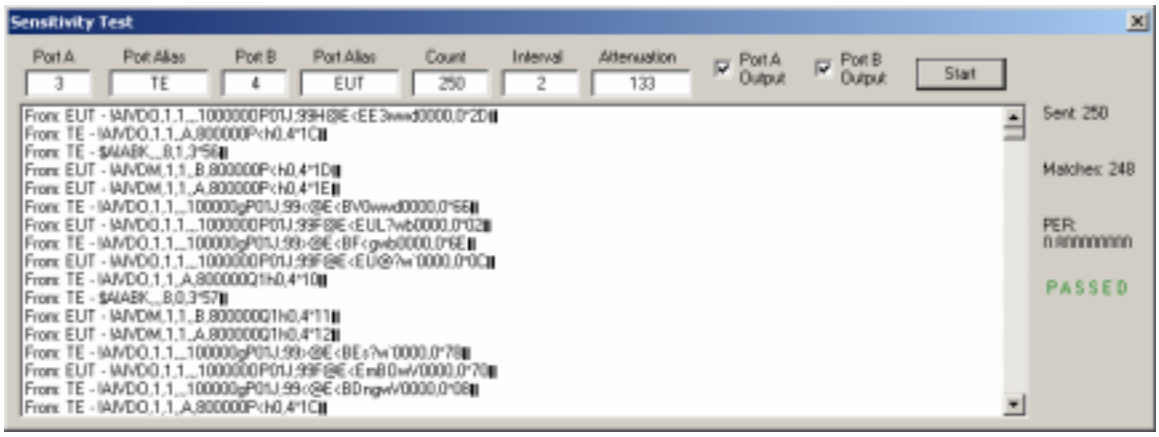


Run 2

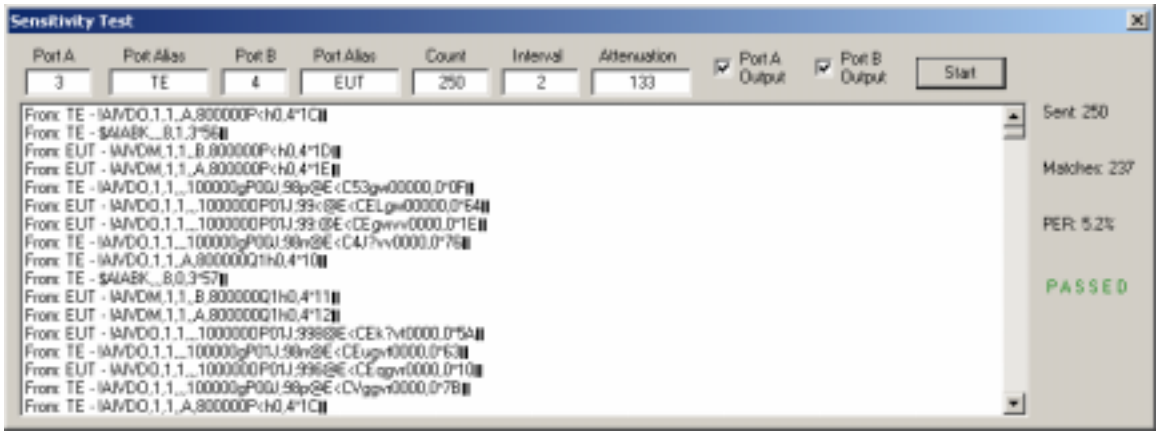


Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 157.4125

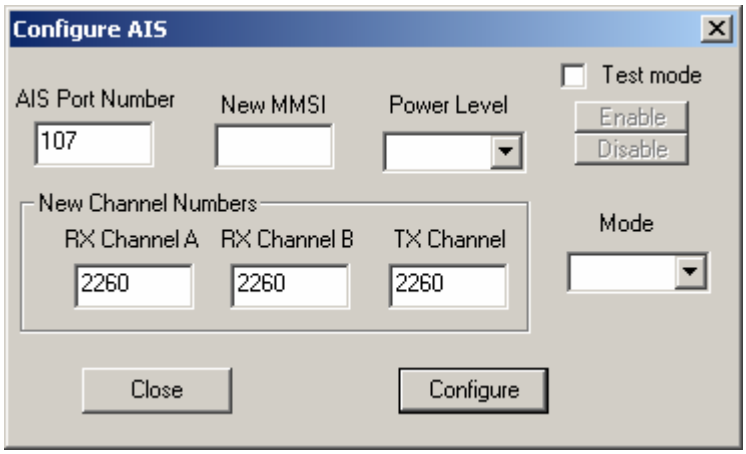
Run 3

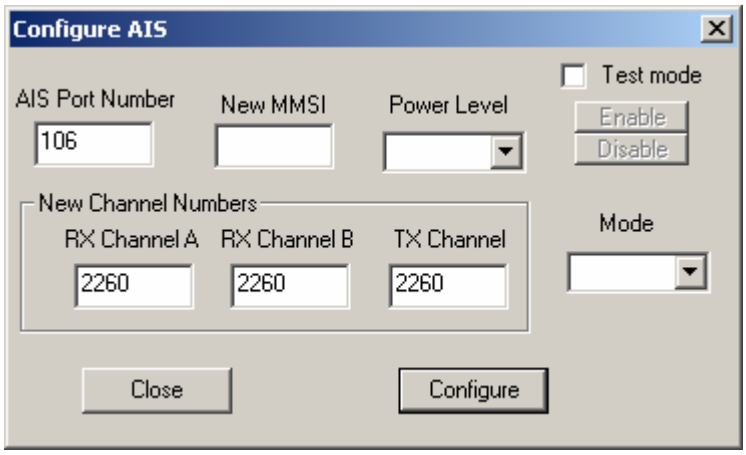


Run 4



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

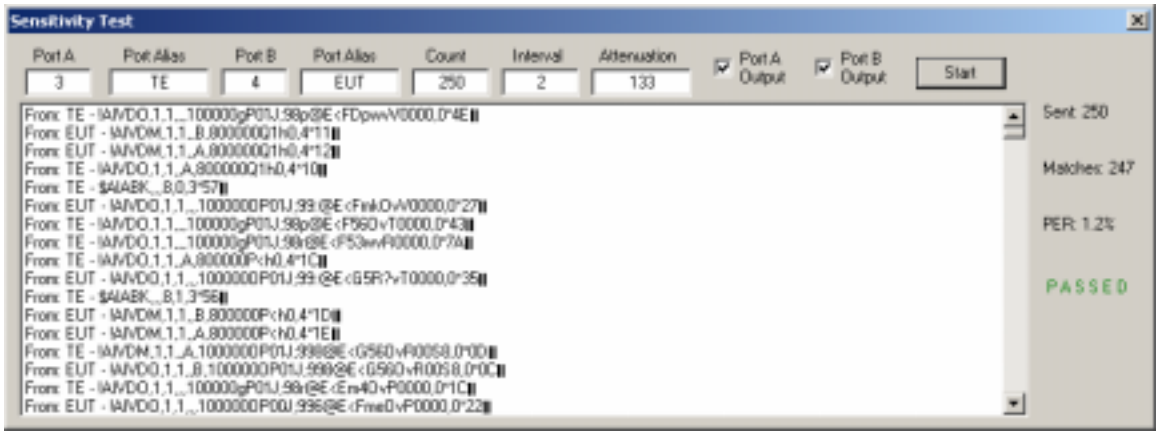




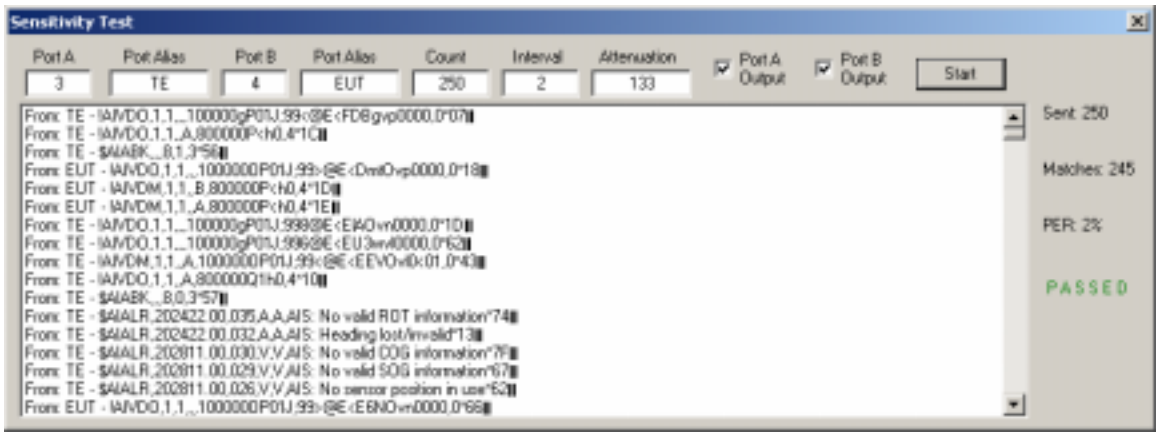
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

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

Run 1

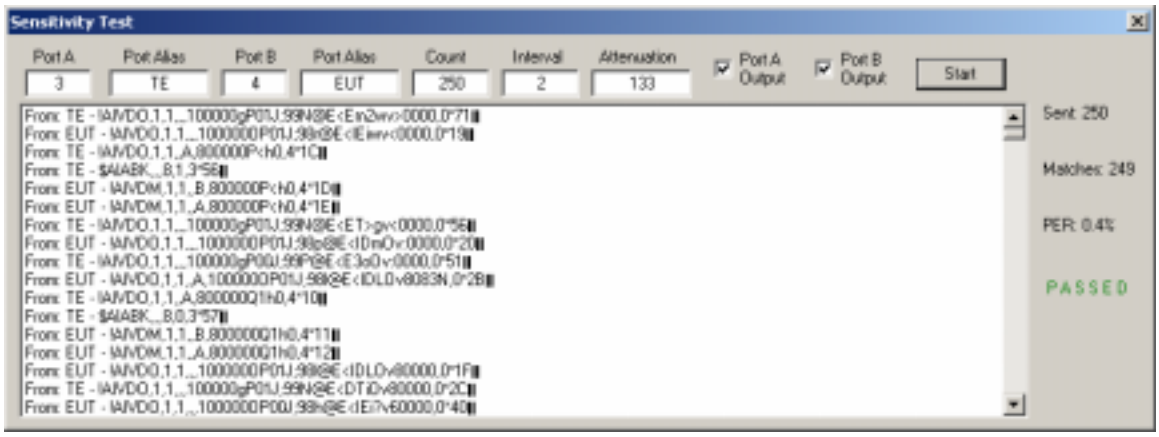


Run 2

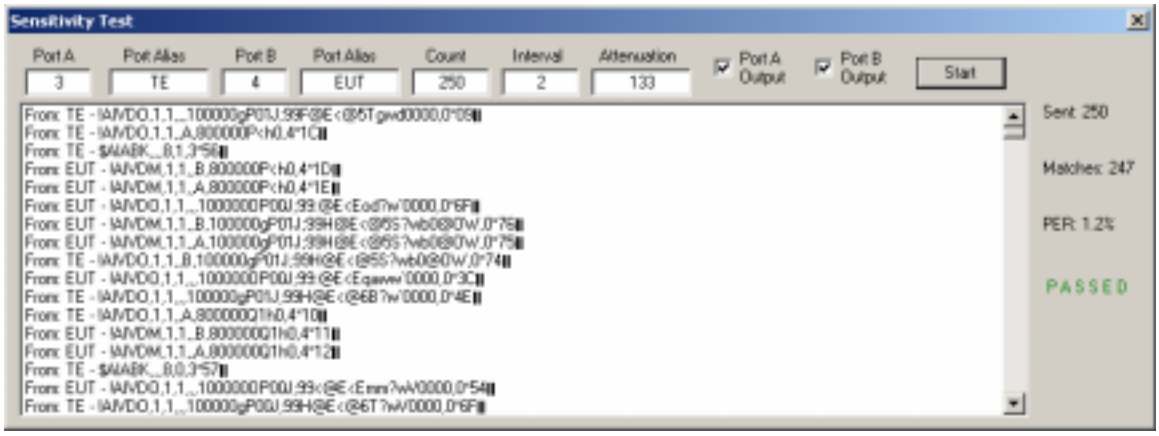


Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 160.6375

Run 3



Run 4



Receiver Sensitivity (DSC), Section 15.4.1

DSC Sensitivity

Test Equipment Required:

- UAIS Test Equipment (TE)
- Frequency Counter — Cal Due: 5.22.04
- Logic Analyzer — Cal Due: 2.19.04
- 30db Attenuater (Black & Green)
- Tuning Tool

Setup Instructions:

See Photo(s):

Procedure:

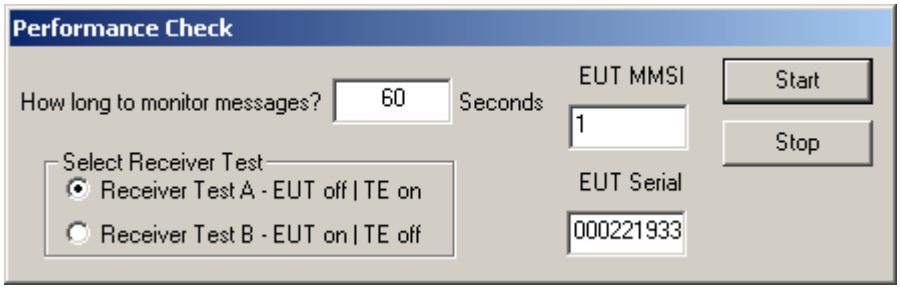
Note: PC not needed for this test (only Logic Analyzer)

- Set variable attenuaters 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 156.525 MHz
  12. Record value: 156.525007 MHz

Perform same test with TE1 (156.5265 MHz) → ~~156.6250~~ 156.5264 MHz
Perform same test with TE1 (156.5235 MHz) 156.5233 MHz

Performance Check at Low Temperature

Receiver Test A



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

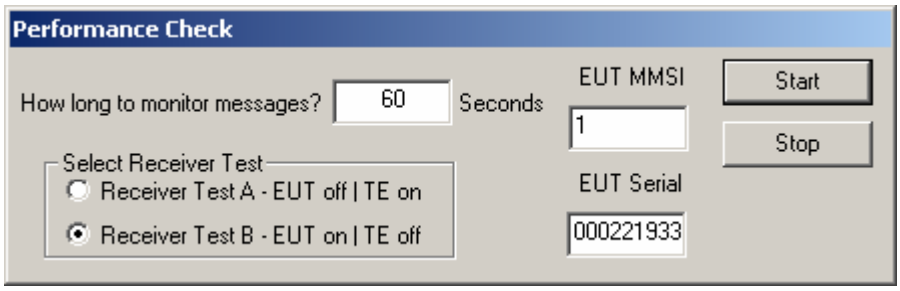
Average reporting rate: 2.00 Seconds

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



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±3°C at a rate ≤ 1°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±3°C at a rate ≤ 1°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±3°C beyond the specified 16 hours (total time at temperature of 18 hours 31 minutes).

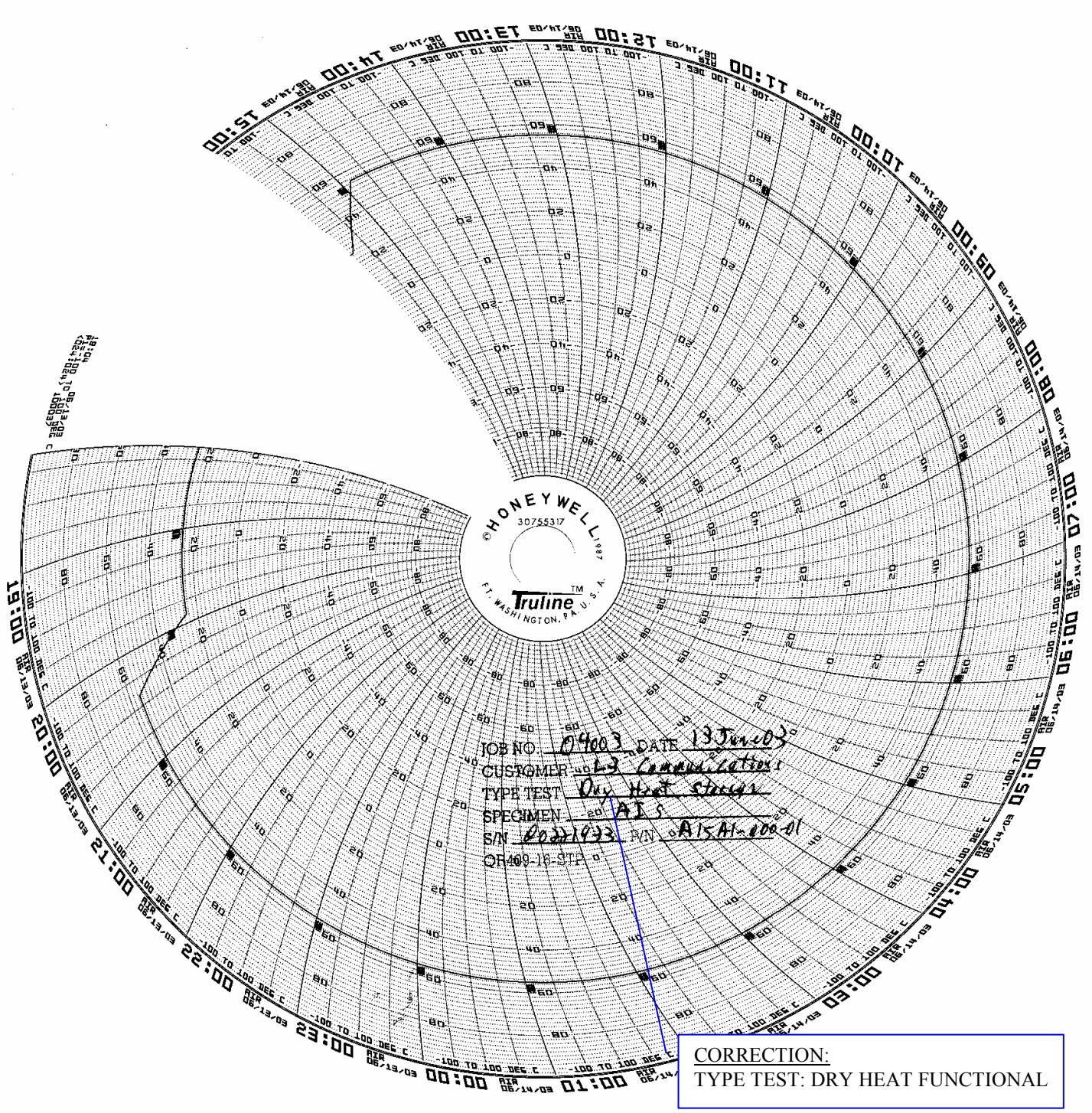
5-2 ENVIRONMENTAL TEST DATA

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.


HONEYWELL
30755317
©1987
Truline TM
FT. WASHINGTON, PA. U.S.A.
JOB NO. 04003 DATE 13 Jun 03
CUSTOMER L-3 Communications
TYPE TEST Dry Heat Storage
SPECIMEN AIS
S/N 0221933 P/N A15A1-100-01
QR409-16-9TP 0
CORRECTION:
TYPE TEST: DRY HEAT FUNCTIONAL

ENCLOSURE II

L3 COMMUNICATIONS AUTOMATIC IDENTIFICATION SYSTEM (AIS) SCREEN SHOTS

FOR THE

DRY HEAT FUNCTONAL 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.

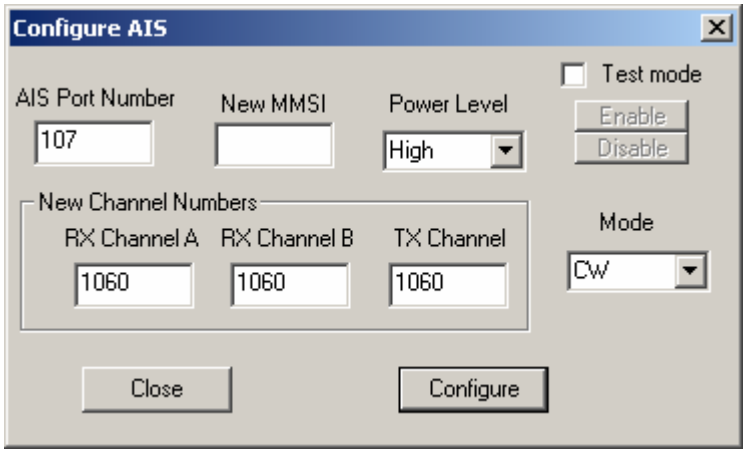
Performance Tests

Criteria for Pass

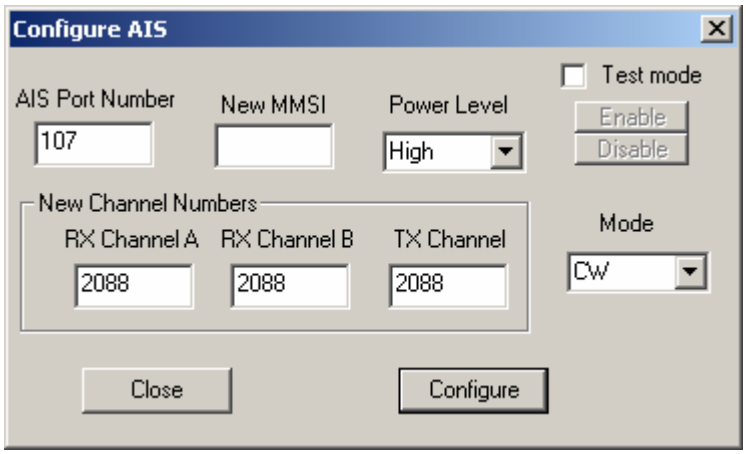
1) IEC 61993-2 Paragraph 15.1.1 – The frequency error shall not exceed ±1kHz measured at +30% power under Dry Heat and –10% power under Low Temperature.
2) IEC 61993-2 Paragraph 15.1.2 – The carrier power (conducted) shall be within +2.0dB and -3.0dB of the rated output power measured at +30% power under 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 ±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)

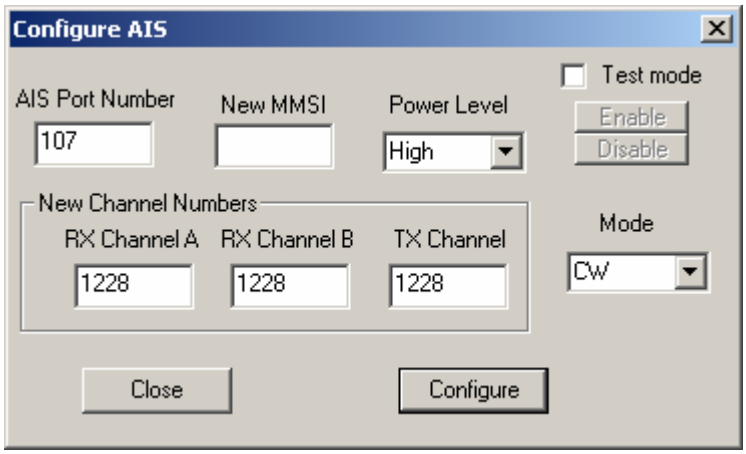
Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 156.025



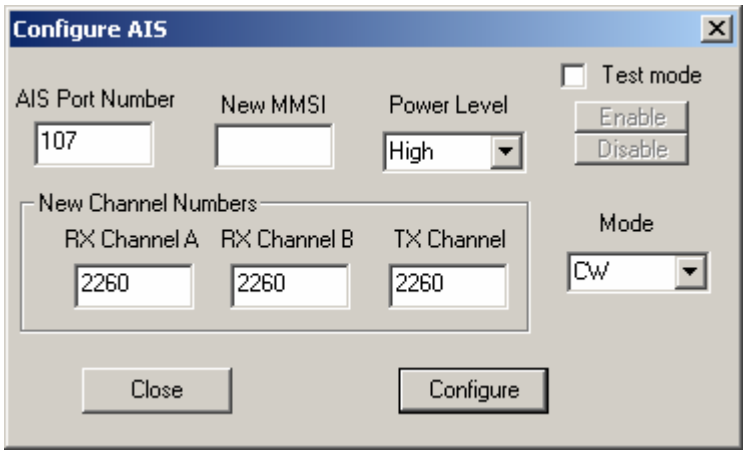
Transmit Frequency Error, Setup Screen, Section 15.1.1, Channel 162.025



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



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



Transmit Frequency Error, Test Results, Section 15.1.1

Frequency Error Test

Test Equipment Required:

- Frequency Counter Cal Due: 5-22-04
- 30db Attenuater (Black & Green)

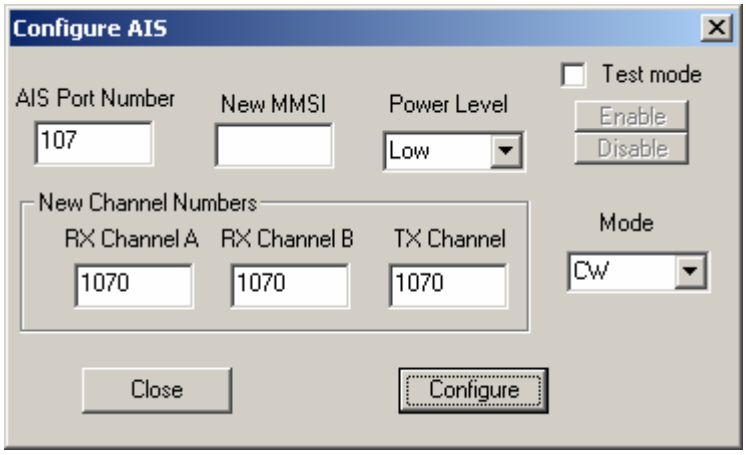
Setup Instructions: Mode = CW

- See Photo(s):

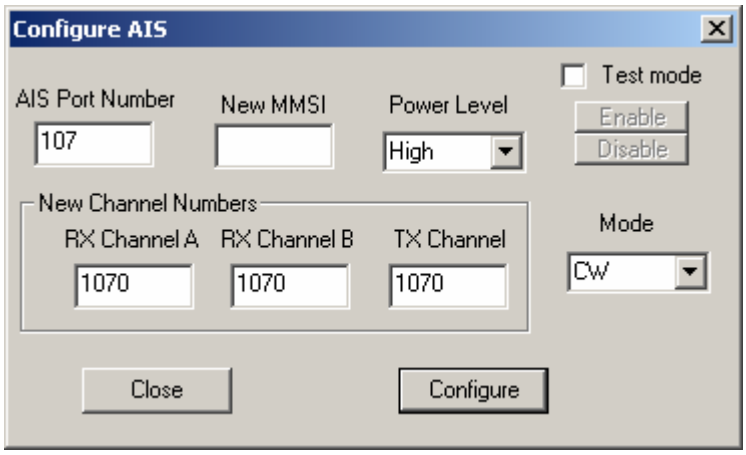
Procedure:

- Connect Frequency Counter to EUT through Attenuater
- 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



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



Transmit Carrier Power, Test Results, Section 15.1.2

Carrier Power Test

Test Equipment Required:

- Power Meter Cal Due: 5-22-04
- Power Sensor
- Black Attenuater (Number matches Power Sensor connector)

Setup Instructions:

- See Photo(s):

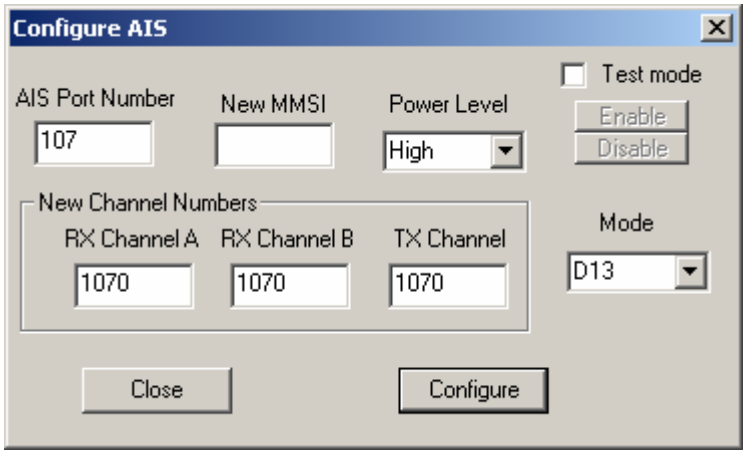
Procedure:

- Connect black attenuater 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)

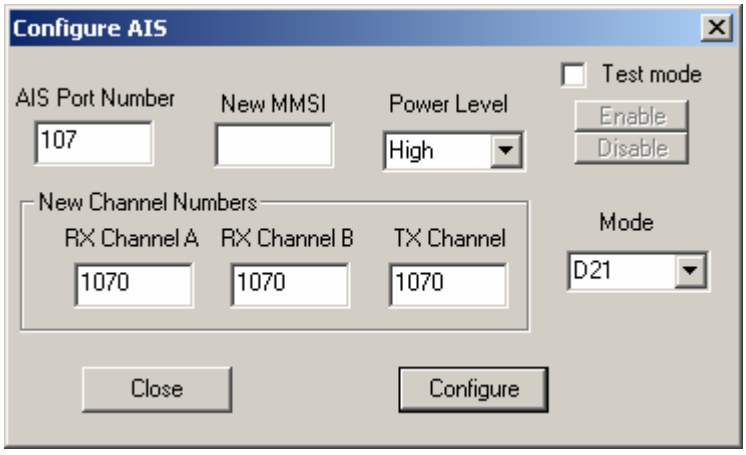
- Using the Configuration Tool, set EUT the following:
  Rx1 = 1070
  Rx2 = 1070
  Tx = 1070
  Power = High
  Mode = CW
- Record value: 10.2 dBm
  +11dBm (+/- 3 dB)

- Using the Configuration Tool, set EUT the following:
  Rx1 = 1070
  Rx2 = 1070
  Tx = 1070
  Power = Low
  Mode = CW
- Record value: 2.57 dBm
  +3dBm (+/- 3 dB)

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



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



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

DSC Frequency Error

Test Equipment Required:

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

Setup Instructions:

See Photo(s):

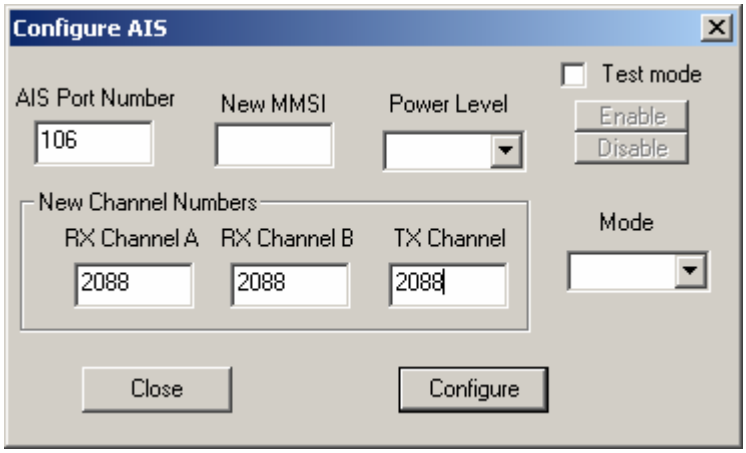
Procedure:

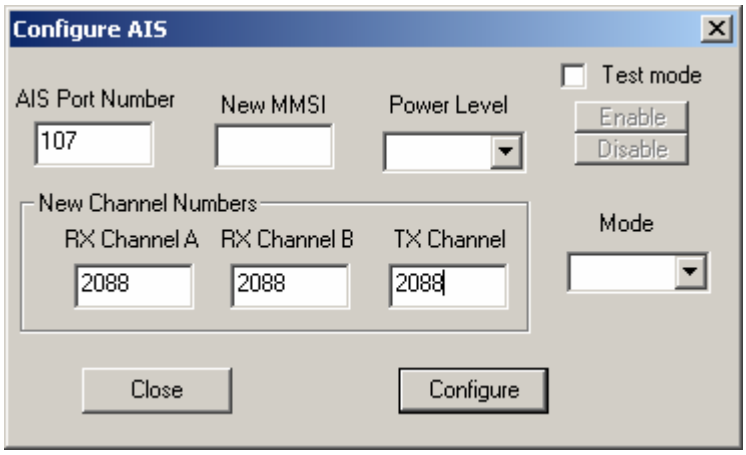
- Connect attenuater to Marconi (right input - look for light)
- Select Tx Button (Blue – Mode)
- Select Low Pass Filter (Under AF Filters)
- Connect Frequency Counter to DE Mod Out on back of Marconi

- Select Run on frequency counter
- Using the Configuration Tool, set EUT the following: ENTER TEST MODE
  - Rx1 = 1070
  - Rx2 = 1070
  - Tx = 1070
  - Power = High
  - **Mode = D13**
- 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

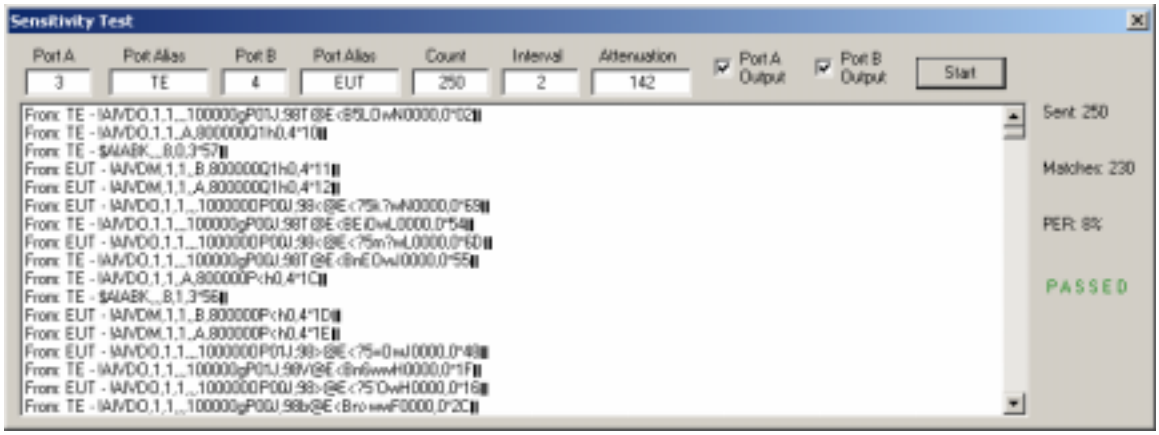




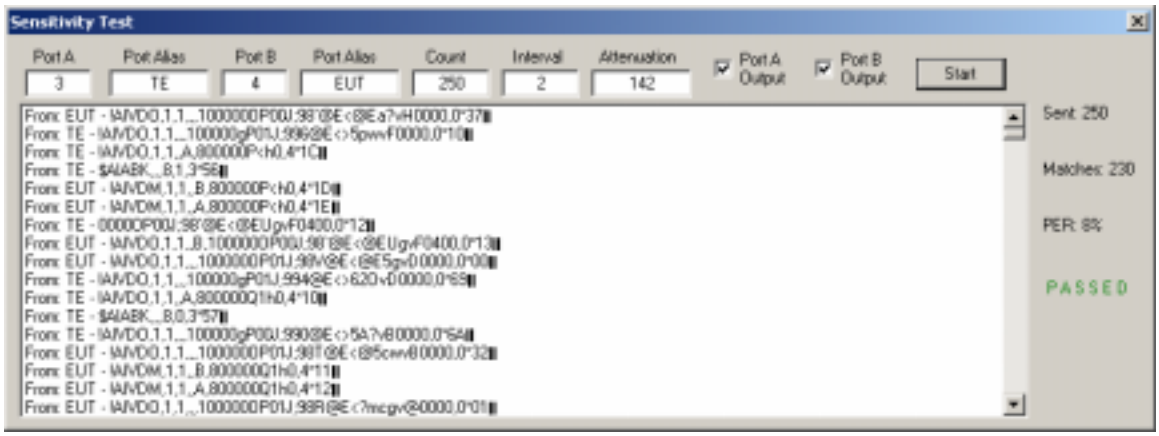
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

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

Run 1

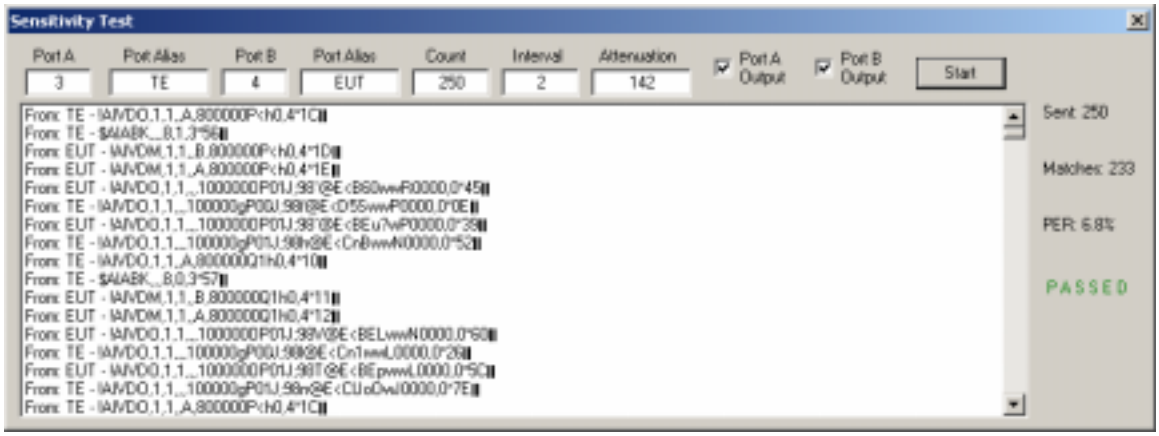


Run 2

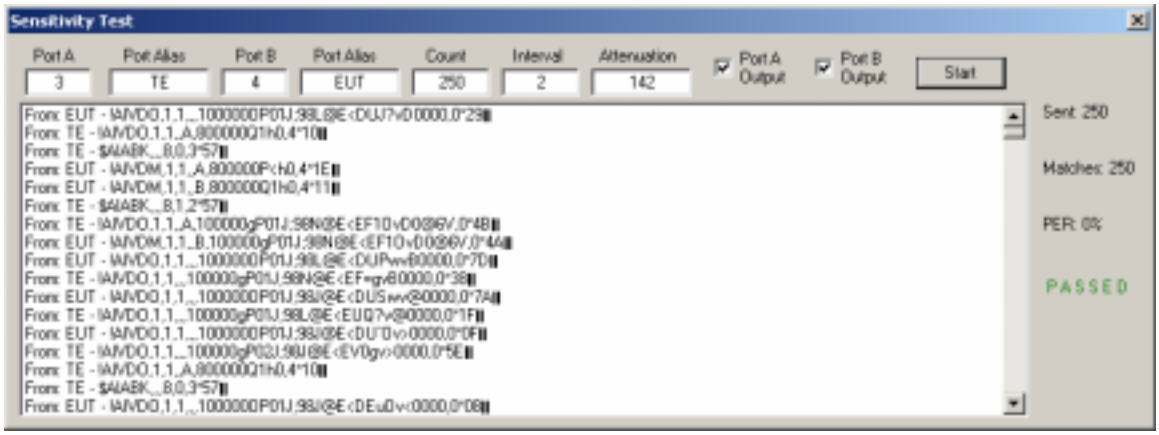


Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 162.025

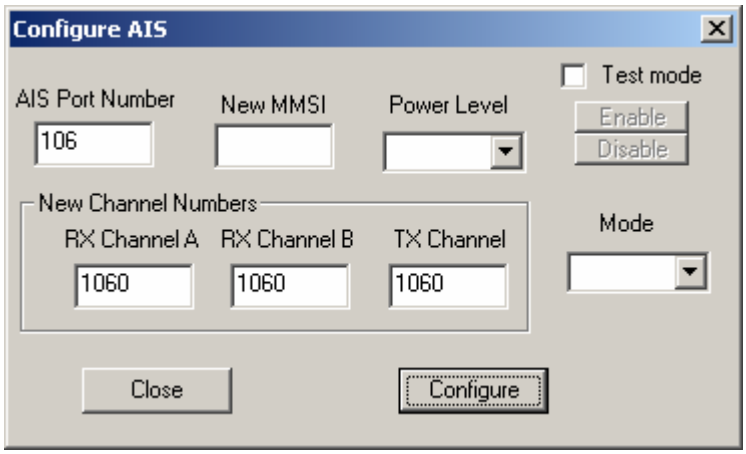
Run 3

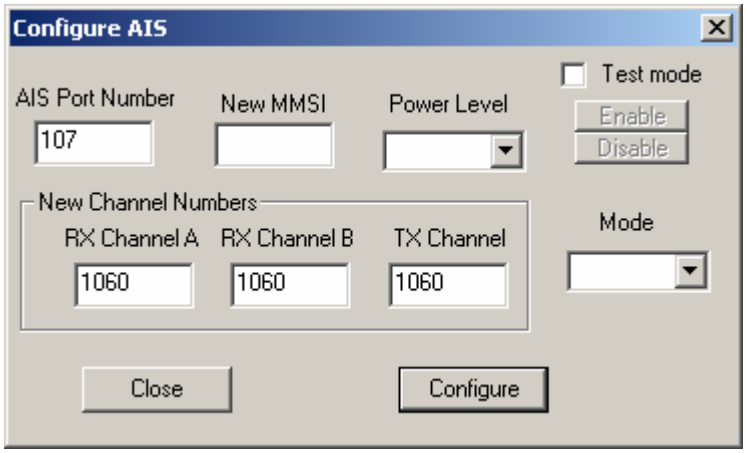


Run 4



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

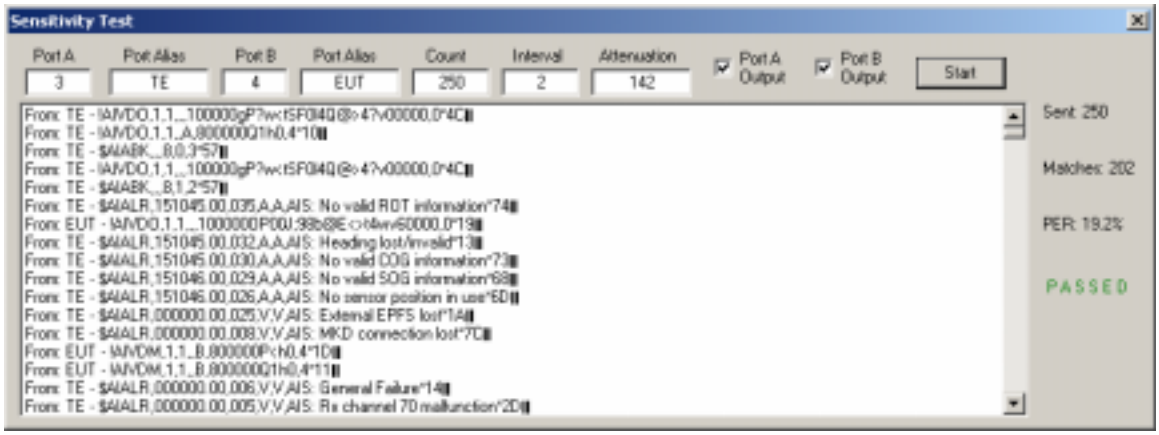




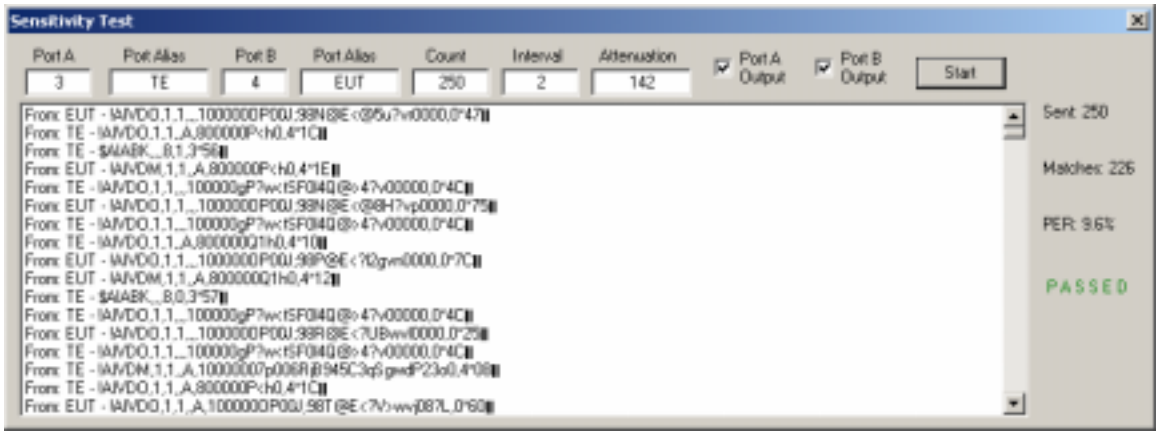
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

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

Run 1

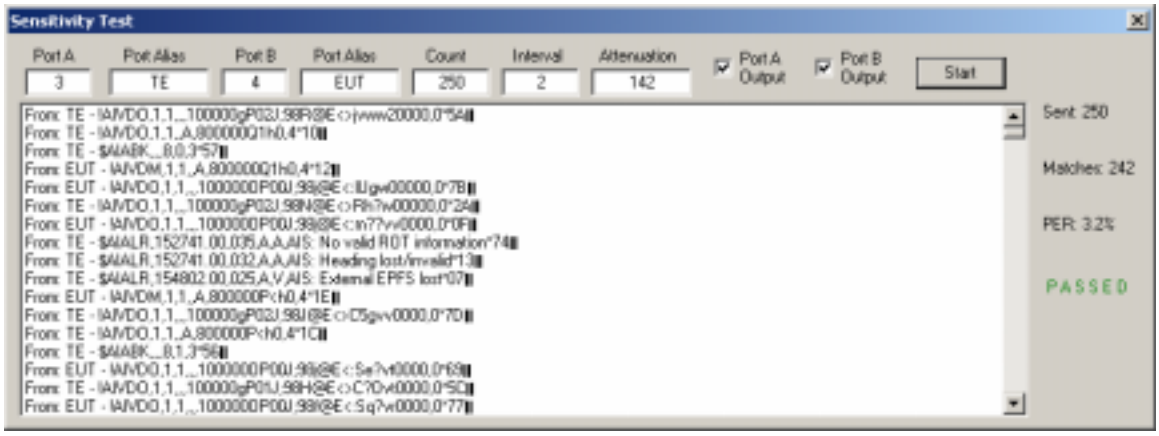


Run 2

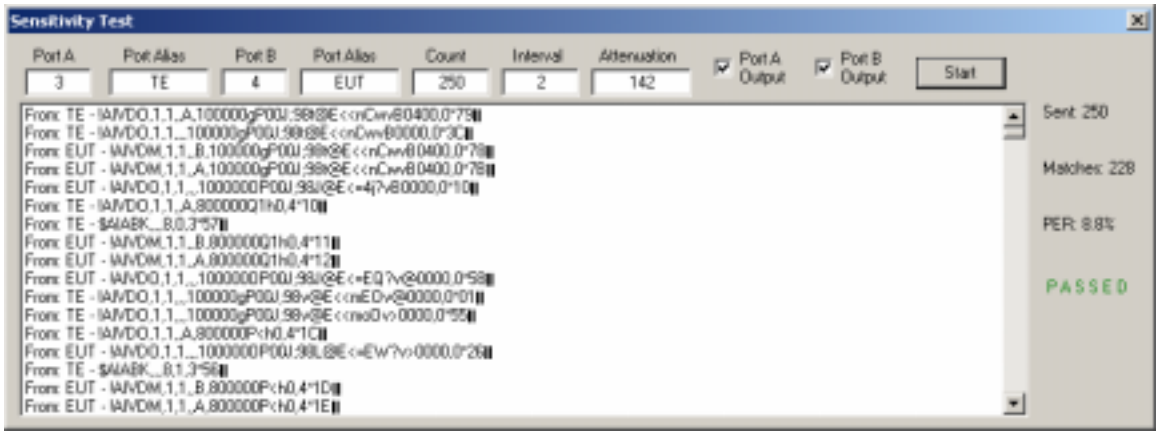


Receiver Sensitivity, Test Results, Section 15.3.1, 25kHz Channel 156.025

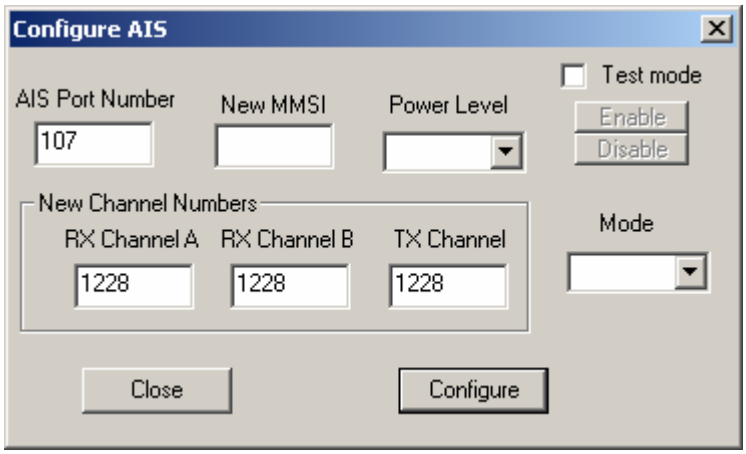
Run 3

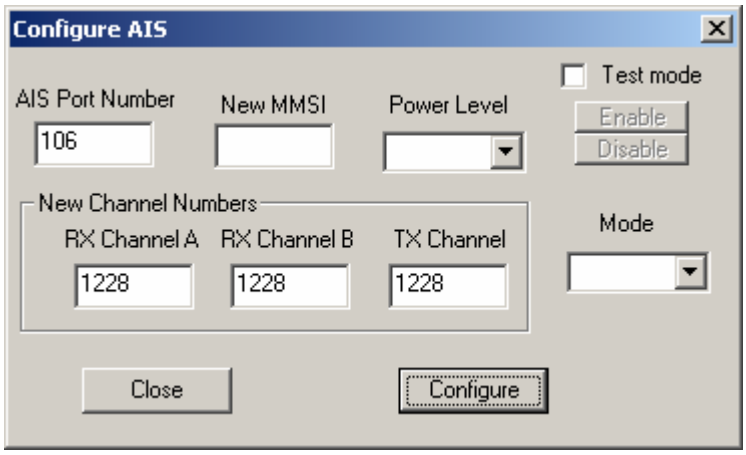


Run 4



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

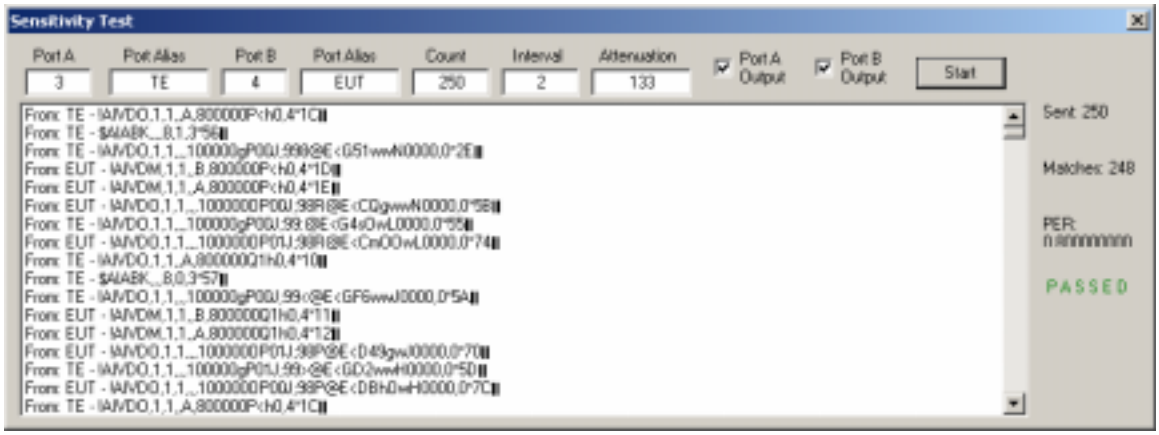




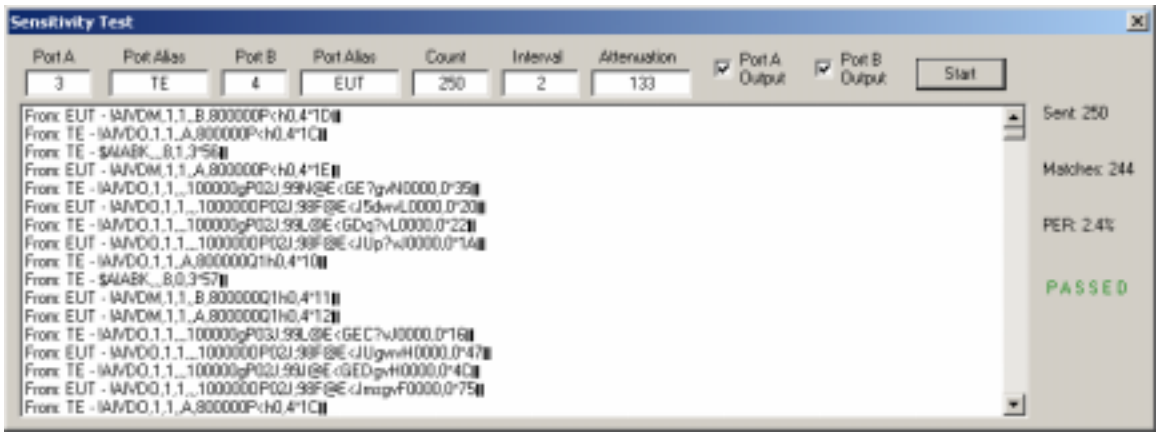
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

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

Run 1

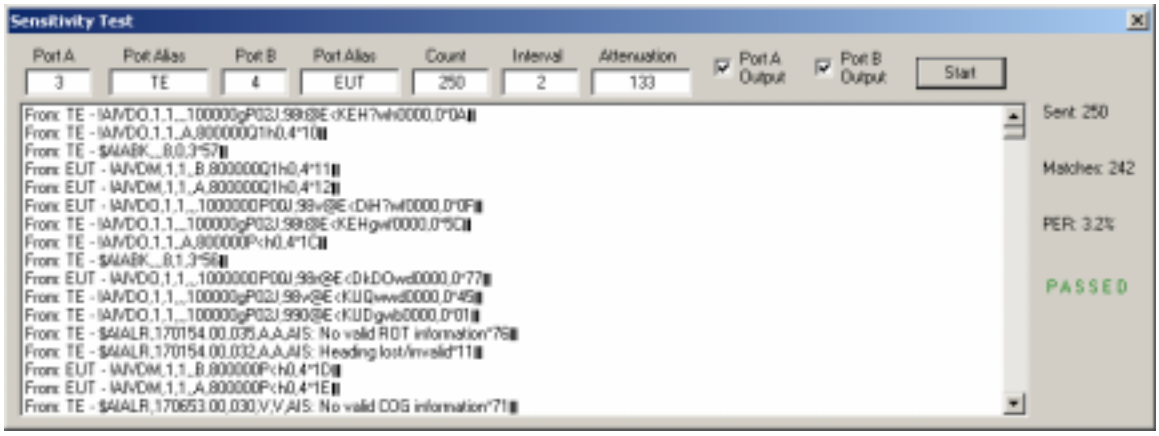


Run 2

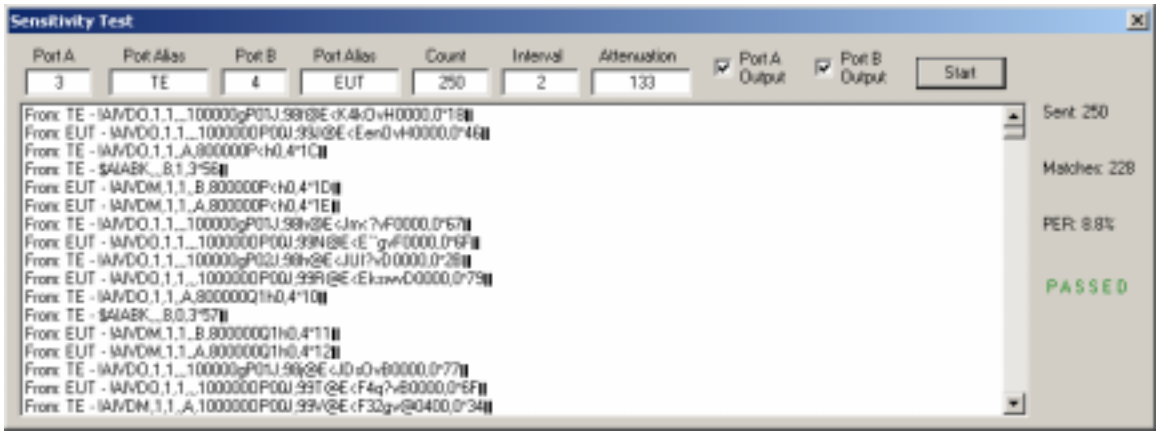


Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 157.4125

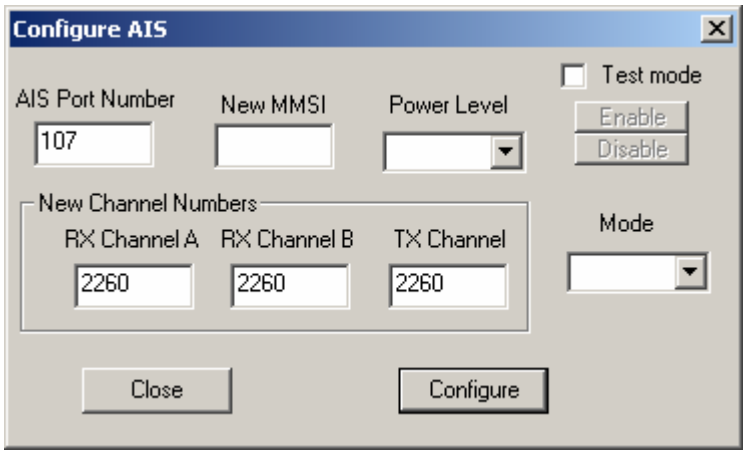
Run 3

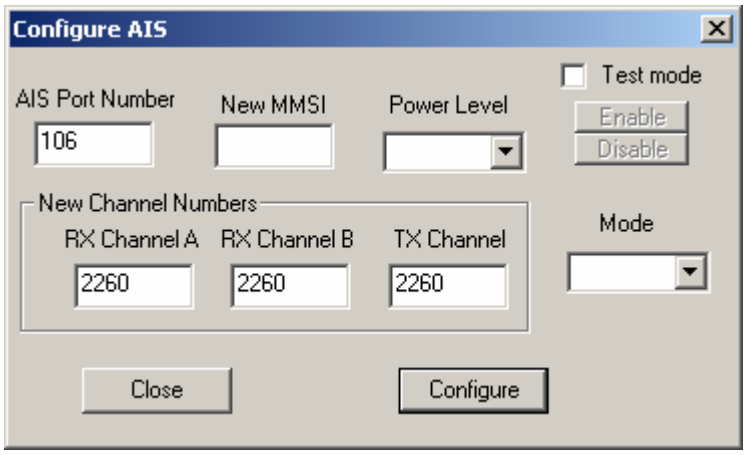


Run 4



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

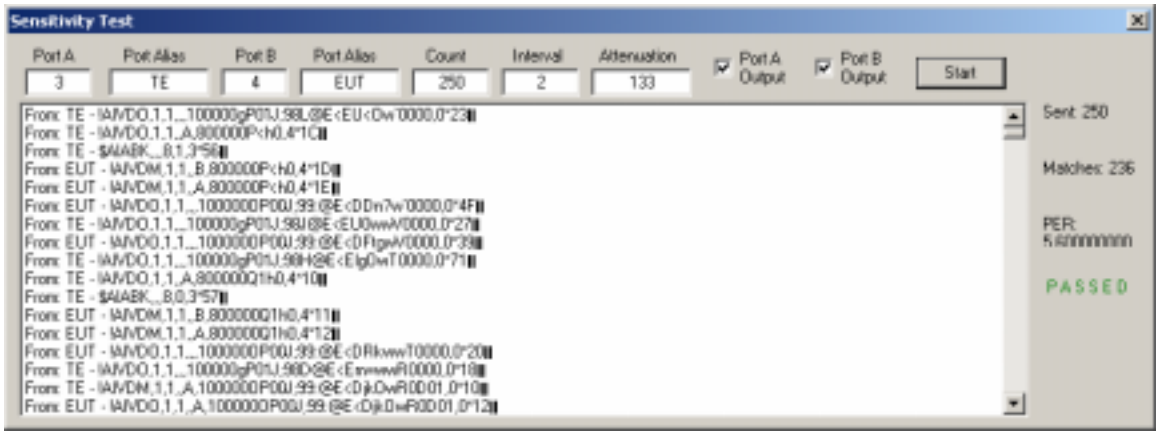




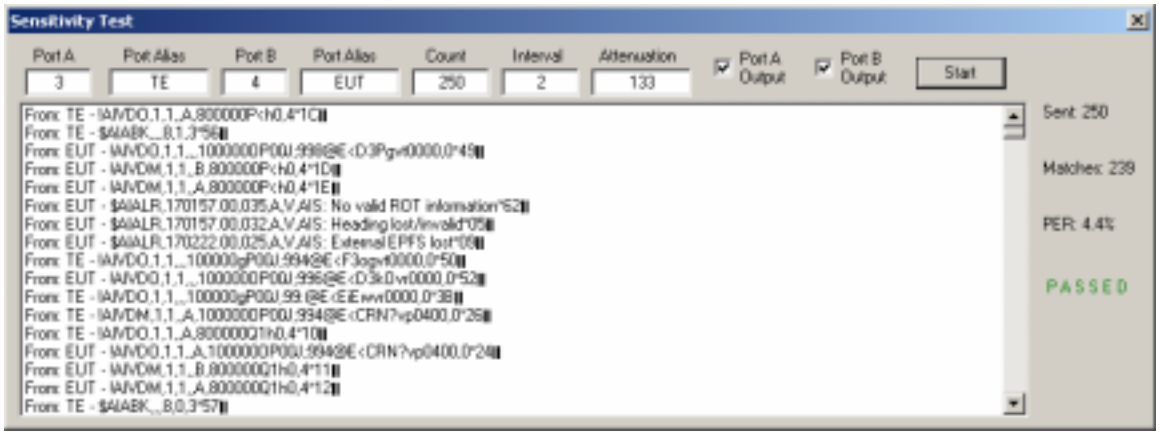
Due to a problem in the testing software, only 250 messages could be sent during a single run. Therefore, the sensitivity test software was run in 4 consecutive executions.

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

Run 1

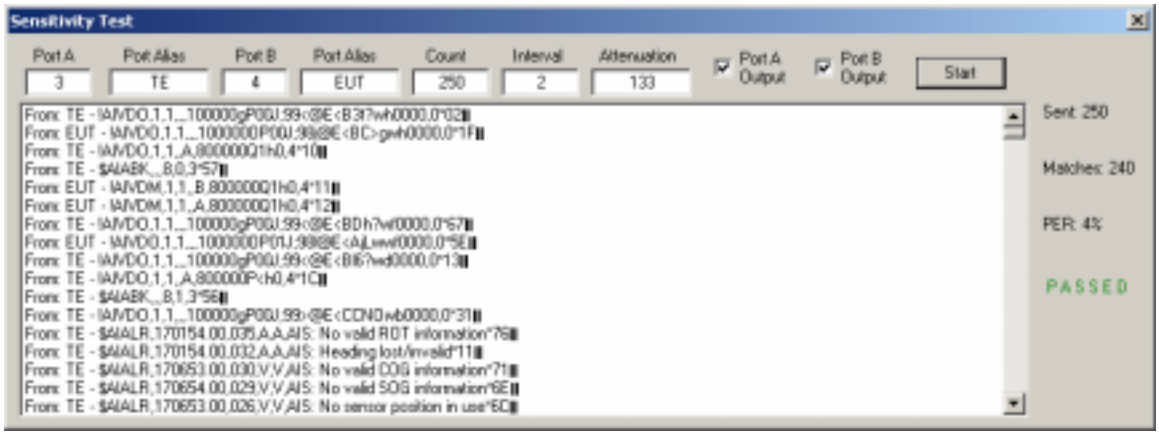


Run 2

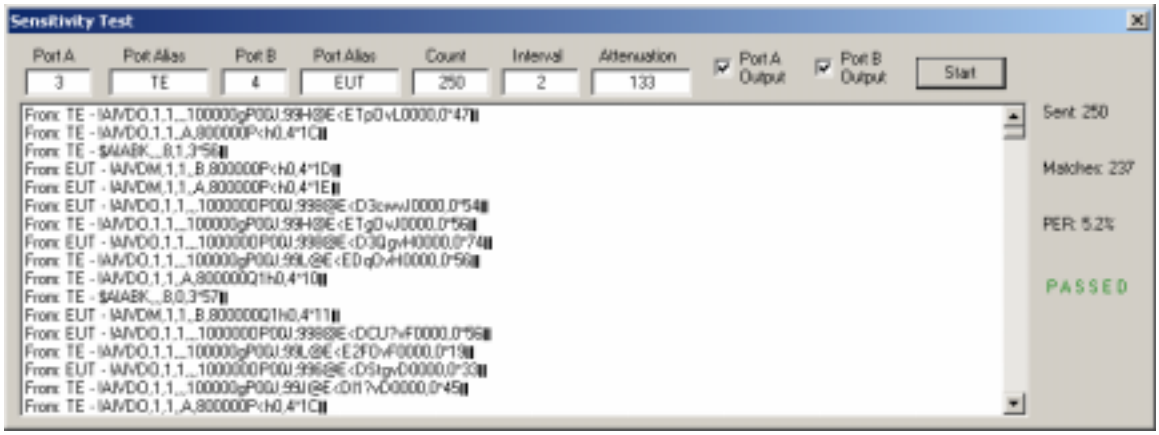


Receiver Sensitivity, Test Results, Section 15.3.2, 12.5kHz Channel 160.6375

Run 3



Run 4



Receiver Sensitivity (DSC), Section 15.4.1

DSC Sensitivity

Test Equipment Required:

- UAIS Test Equipment (TE)
- Frequency Counter — Cal Due: 5-22-04
- Logic Analyzer — Cal Due: 2-15-04
- 30db Attenuater (Black & Green)
- Tuning Tool

Setup Instructions:

See Photo(s):

Procedure:

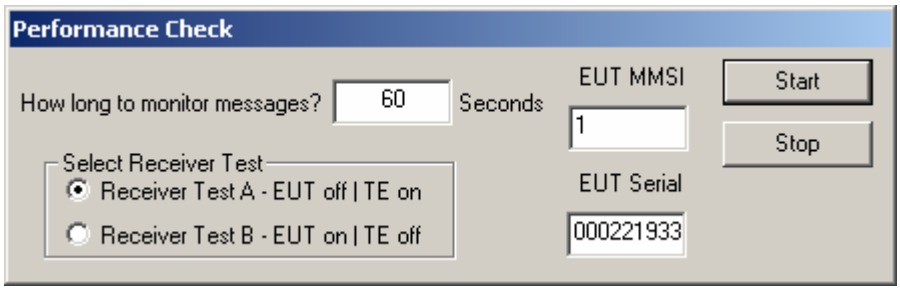
Note: PC not needed for this test (only Logic Analyzer)

- Set variable attenuaters 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 156.525 MHz
  12. Record value: See Files!

156.5250 } DSCSEN_H
Perform same test with TE1 (156.5265 MHz) } DSCSEN_L
Perform same test with TE1 (156.5235 MHz) } DSCSEN_N

Performance Check at Dry Heat

Receiver Test A



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

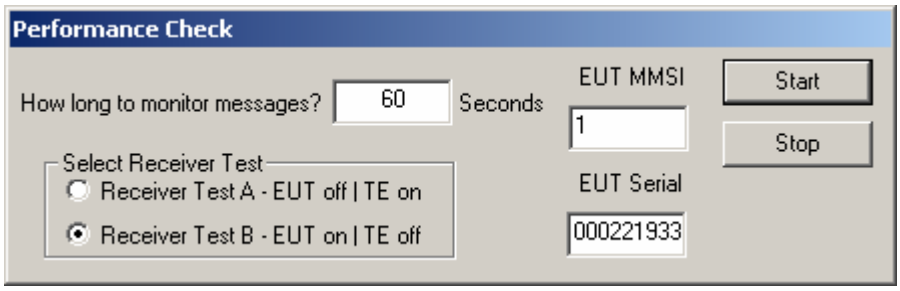
Average reporting rate: 2.00 Seconds

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



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±2°C and 93±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.

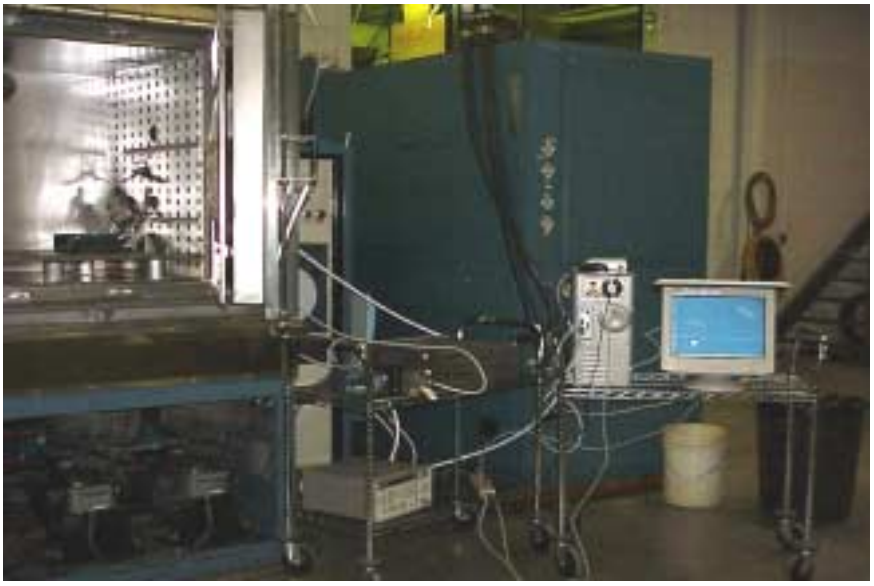
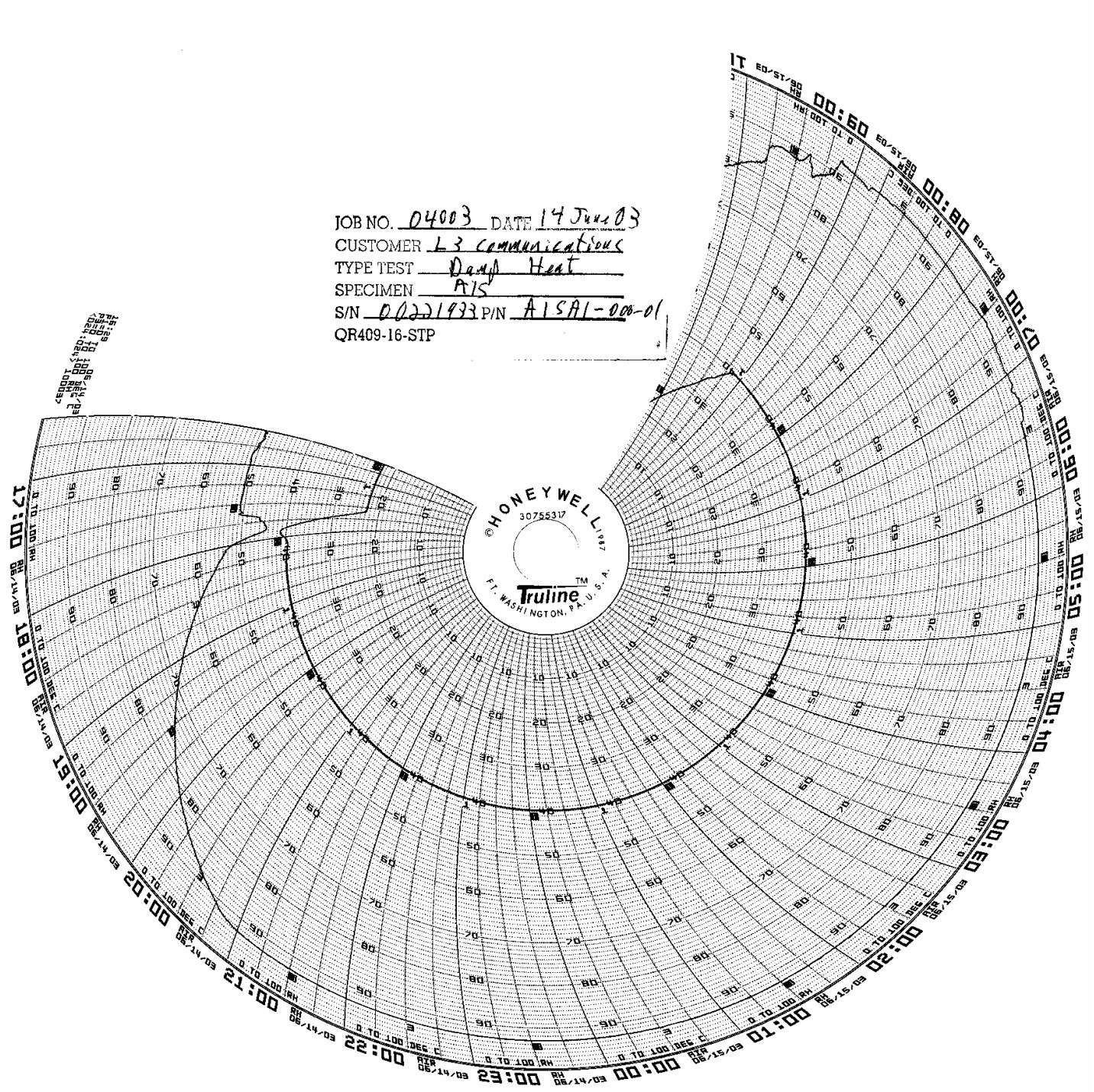


Figure 2-3. Typical overall test setup for damp heat functional test.


JOB NO. 04003 DATE 14 June 03
CUSTOMER L3 Communications
TYPE TEST Damp Heat
SPECIMEN A15
S/N 0022193 P/N A15A1-008-01
QR409-16-STP
HONEYWELL
30755317
Truline
FT. WASHINGTON, PA. U.S.A.

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

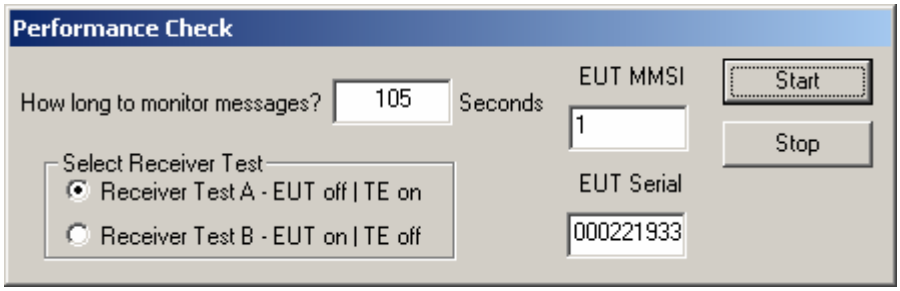
1) IEC 61993-2 Paragraph 14.1.1.1 -Transmit Position Reports needs to be every 2 +/- 0.3 seconds.
2) IEC 61993-2 Paragraph 14.1.1.2 -Receipt Position Reports needs to be continuous for the duration of the test. No unmatched messages indicate successful continuous reception.

DAMP HEAT FUNCTIONAL TEST (SECTION 8.3.1 OF CEI IEC 60945)

(14 June 2003)

Damp (93% Humidity) Performance Check

Receiver Test A



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

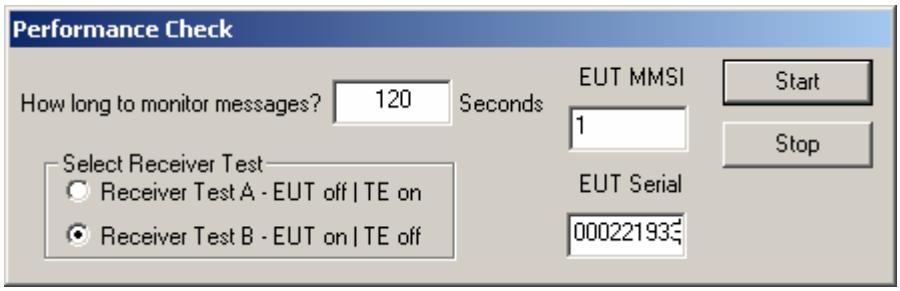
Total VDO Messages Transmitted: 66

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



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 (±10% amplitude and ±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/s² (0.714 G_{pk})

Endurance (±10% amplitude and ±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/s^2:
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.

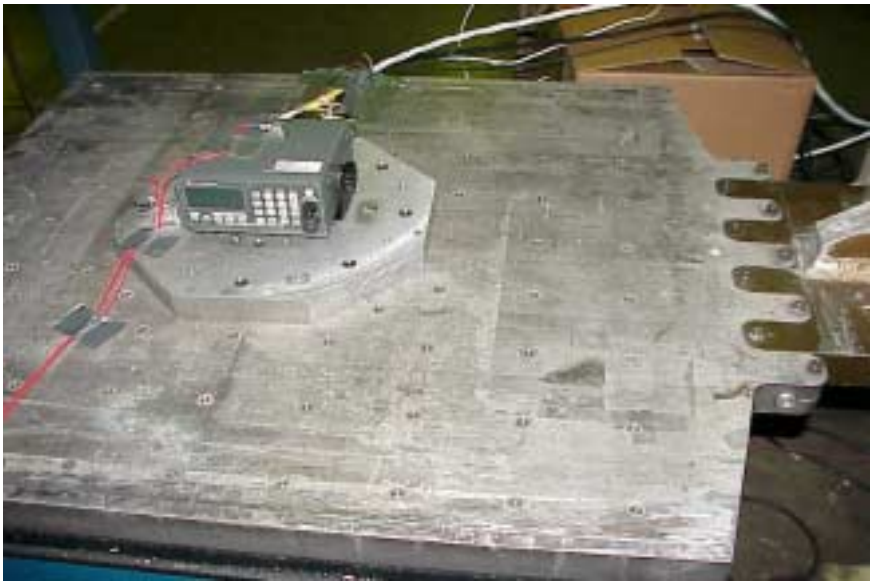
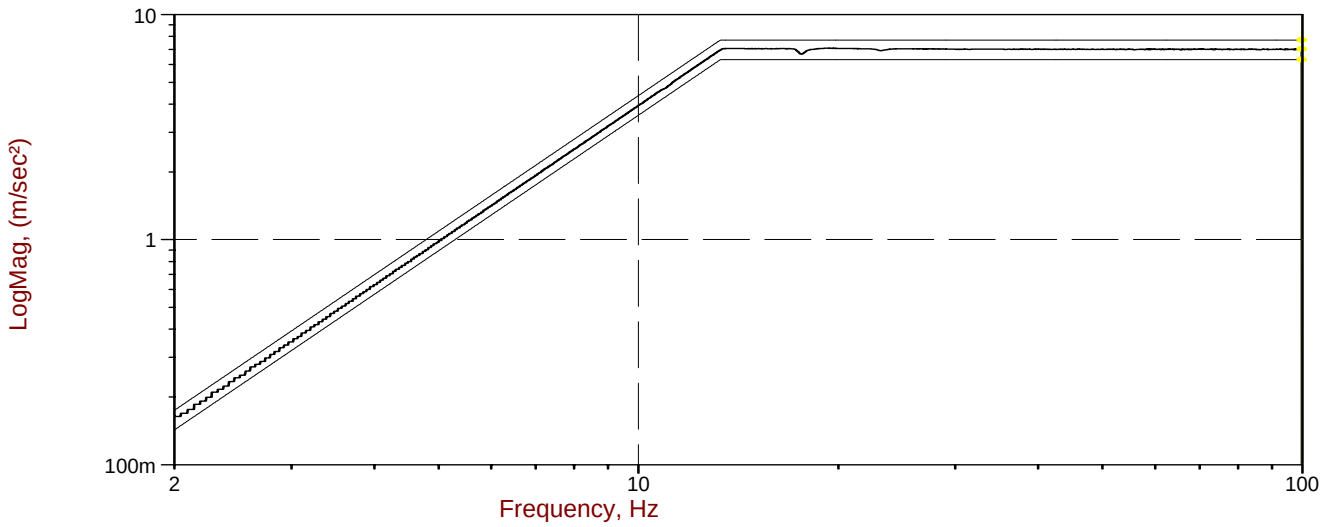


Figure 2-4. Test setup for lateral-axis sinusoidal vibration.

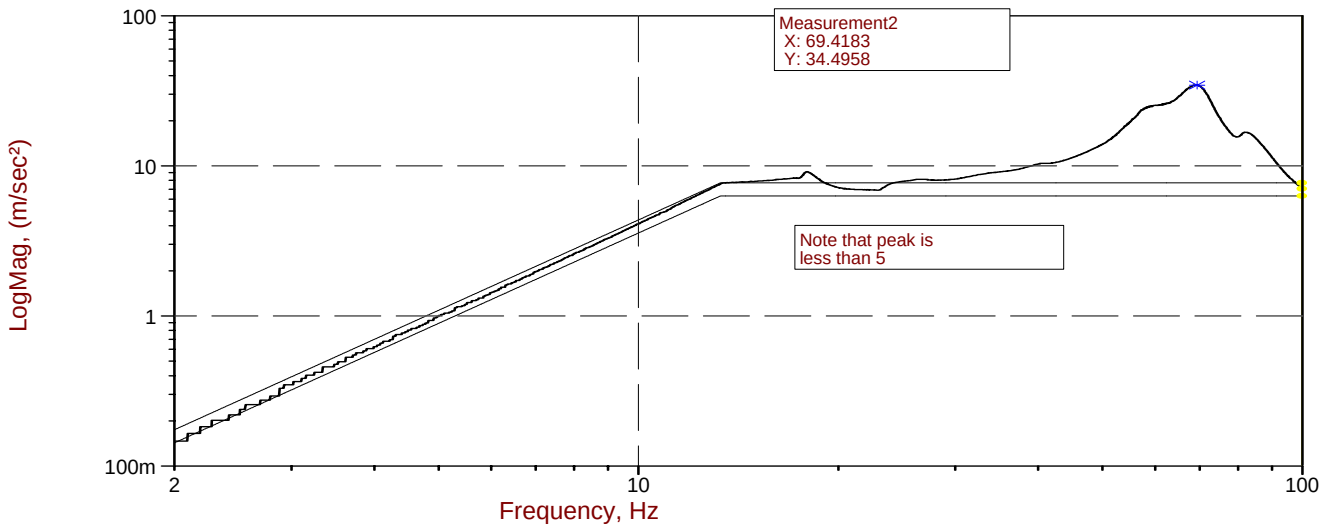
Figure 3-4. Test setup for vertical-axis sinusoidal vibration.

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

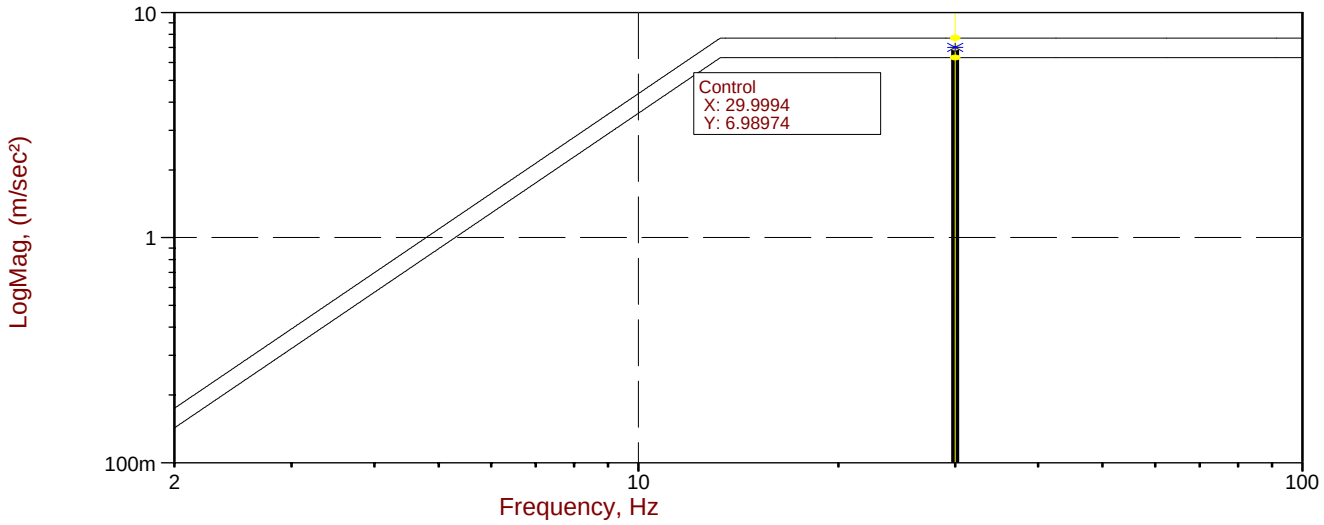


Monitor

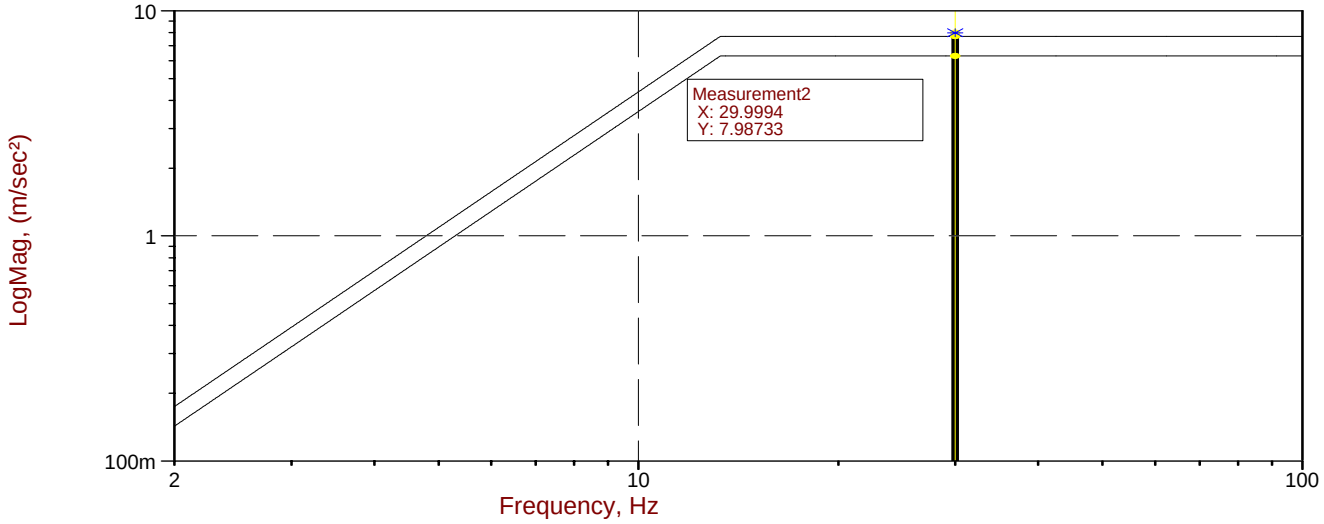


Qualtest, Inc. 5325 Old Winter Garden Road Orlando, Florida 32811 Tel. (407) 293-5844 Fax (407) 297-7376	Customer:	L3 Communications			
	Test Hardware:	Automated Identification System (1 ea.)		Job #:	04003
	P/N:	AISA1-000-01		Run #:	2
	S/N:	000221933		Axis:	Longitudinal
	Date:	19 Jun 03	Time: 1211	Duration: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

Control

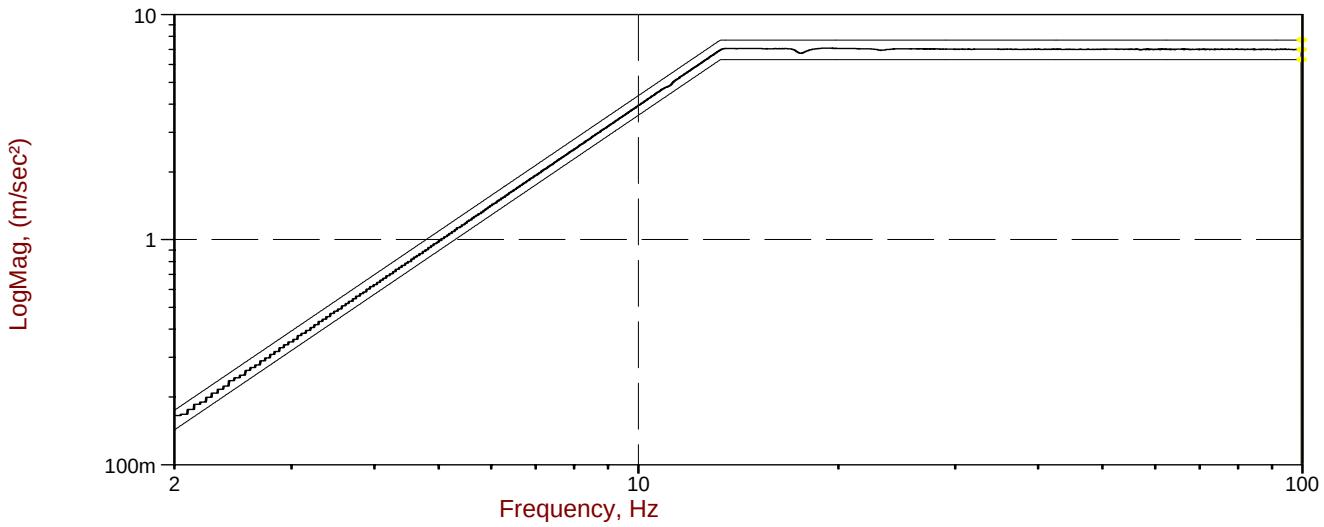


Monitor

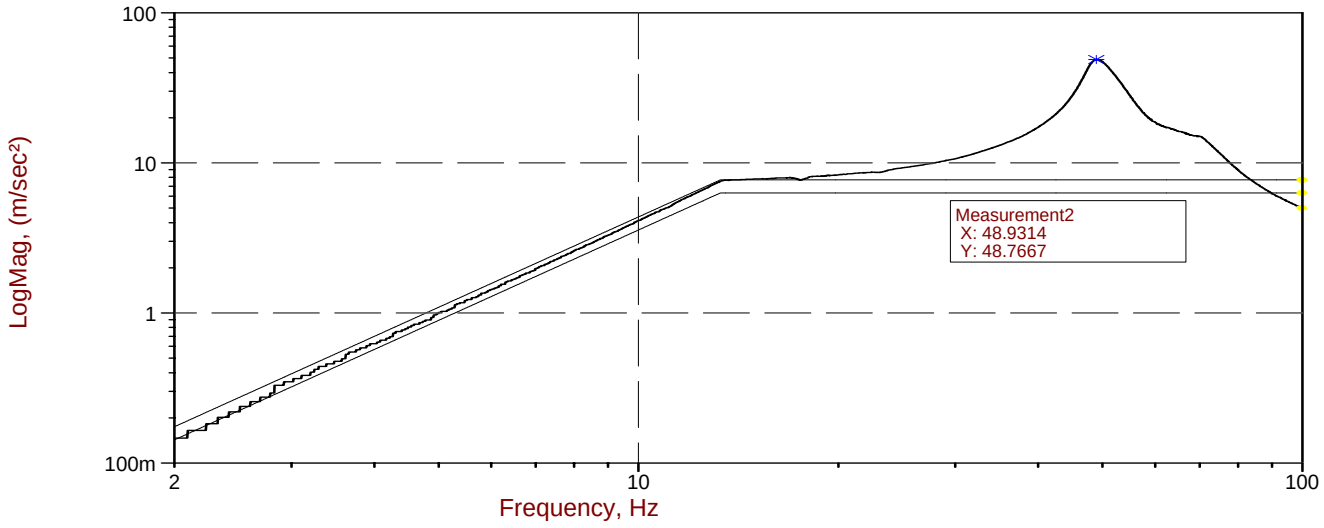


Qualtest, Inc. 5325 Old Winter Garden Road Orlando, Florida 32811 Tel. (407) 293-5844 Fax (407) 297-7376	Customer:	L3 Communications			
	Test Hardware:	Automated Identification System (1 ea.)		Job #:	04003
	P/N:	AISA1-000-01		Run #:	3
	S/N:	000221933		Axis:	Lateral
	Date:	19 Jun 03	Time: 1318	Duration: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

Control

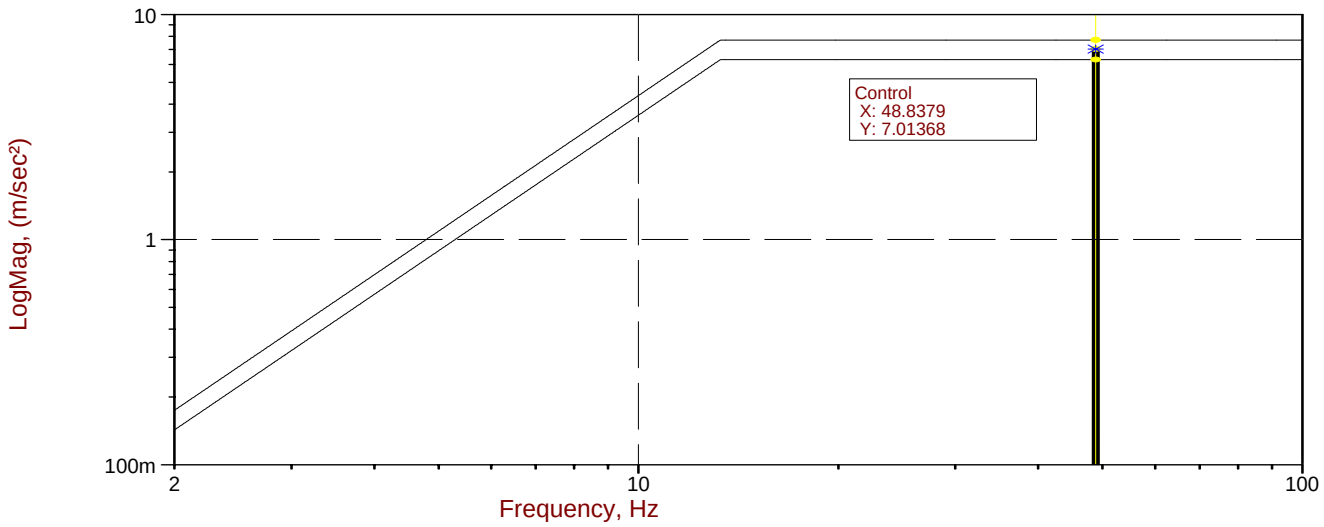


Monitor

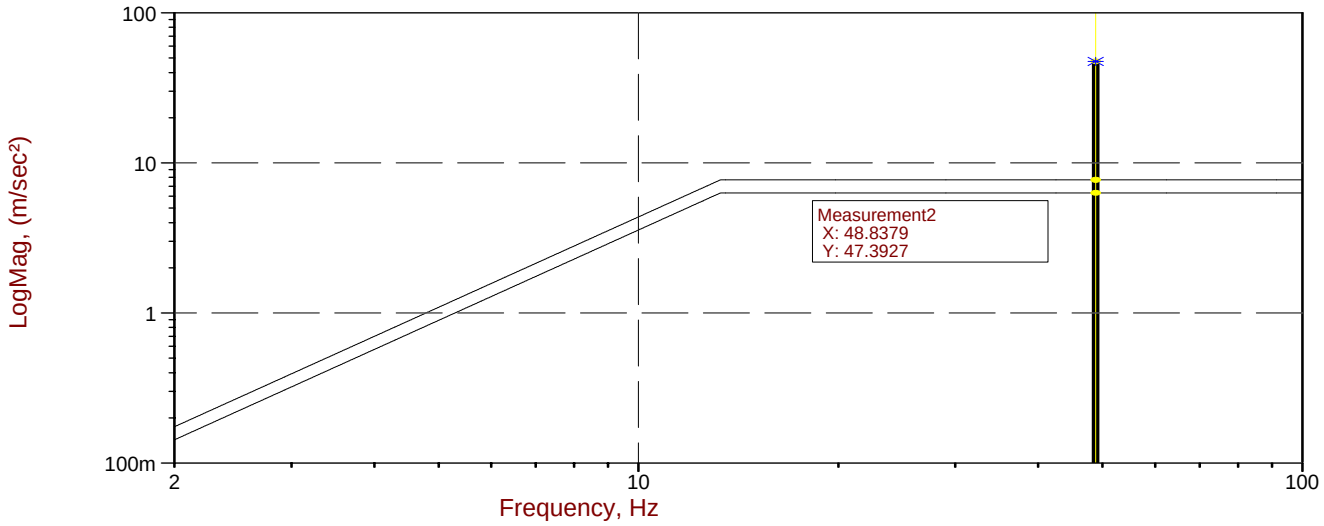


Qualtest, Inc. 5325 Old Winter Garden Road Orlando, Florida 32811 Tel. (407) 293-5844 Fax (407) 297-7376	Customer:	L3 Communications			
	Test Hardware:	Automated Identification System (1 ea.)		Job #:	04003
	P/N:	AISA1-000-01		Run #:	4
	S/N:	000221933		Axis:	Lateral
	Date:	19 Jun 03	Time: 1522	Duration: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

Control



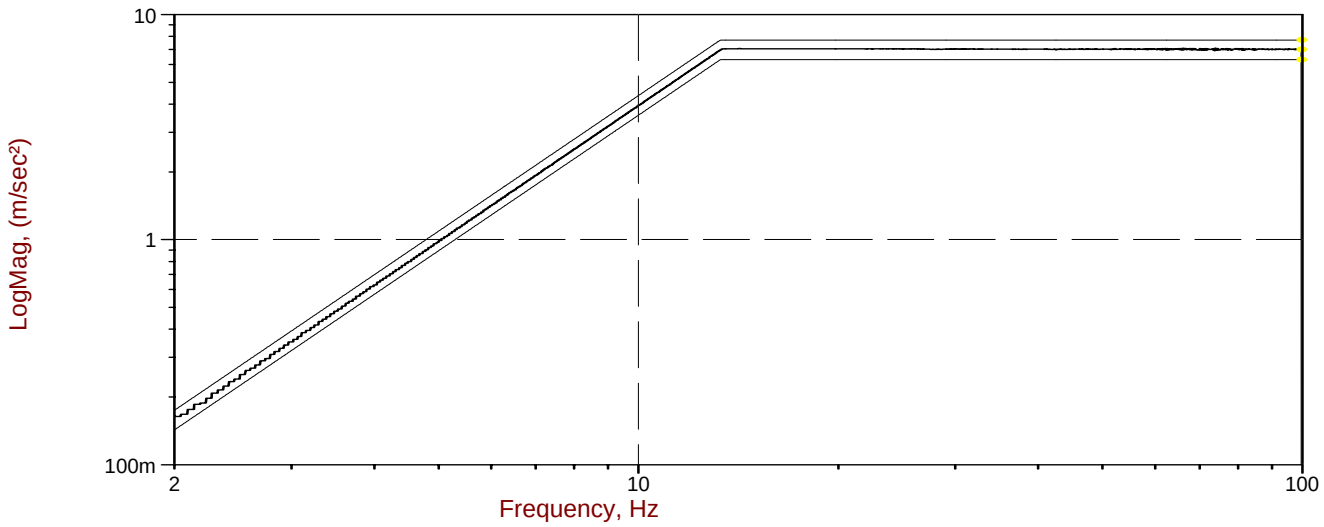
Monitor



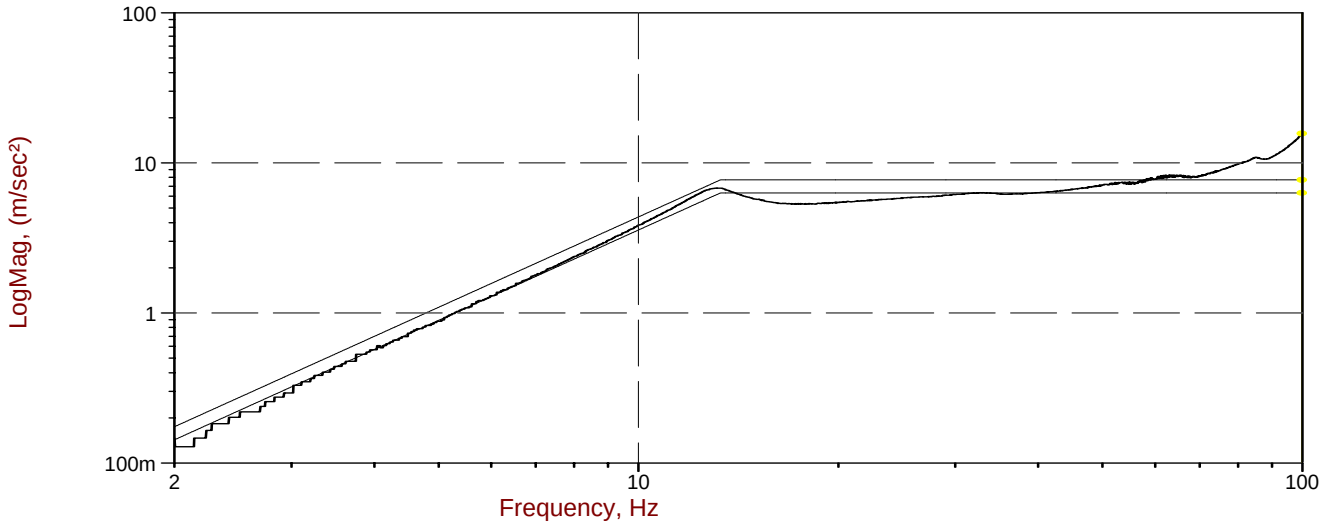
Qualtest, Inc.
5325 Old Winter Garden Road
Orlando, Florida 32811
Tel. (407) 293-5844
Fax (407) 297-7376

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

Control



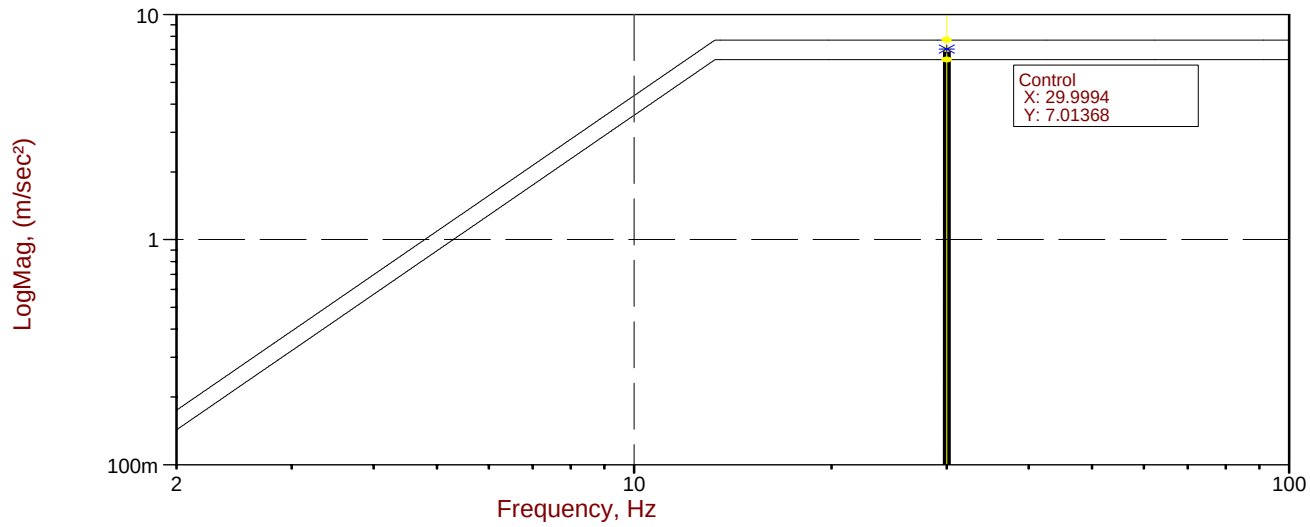
Monitor



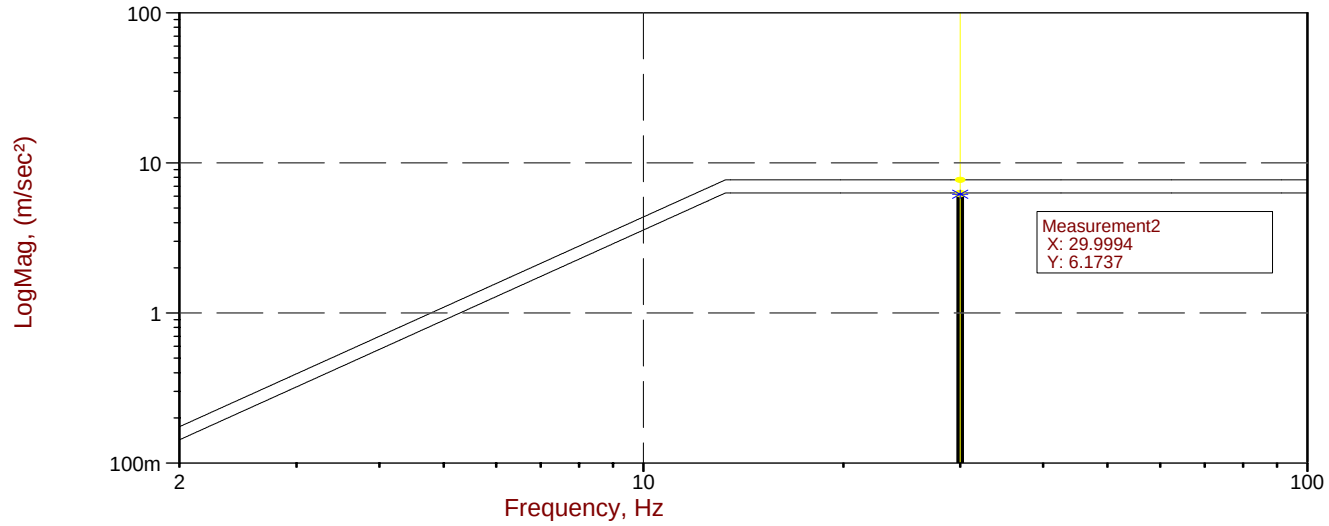
Qualtest, Inc.
5325 Old Winter Garden Road
Orlando, Florida 32811
Tel. (407) 293-5844
Fax (407) 297-7376

Customer:	L3 Communications				
Test Hardware:	Automated Identification System (1 ea.)			Job #:	04003
P/N:	AISA1-000-01			Run #:	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

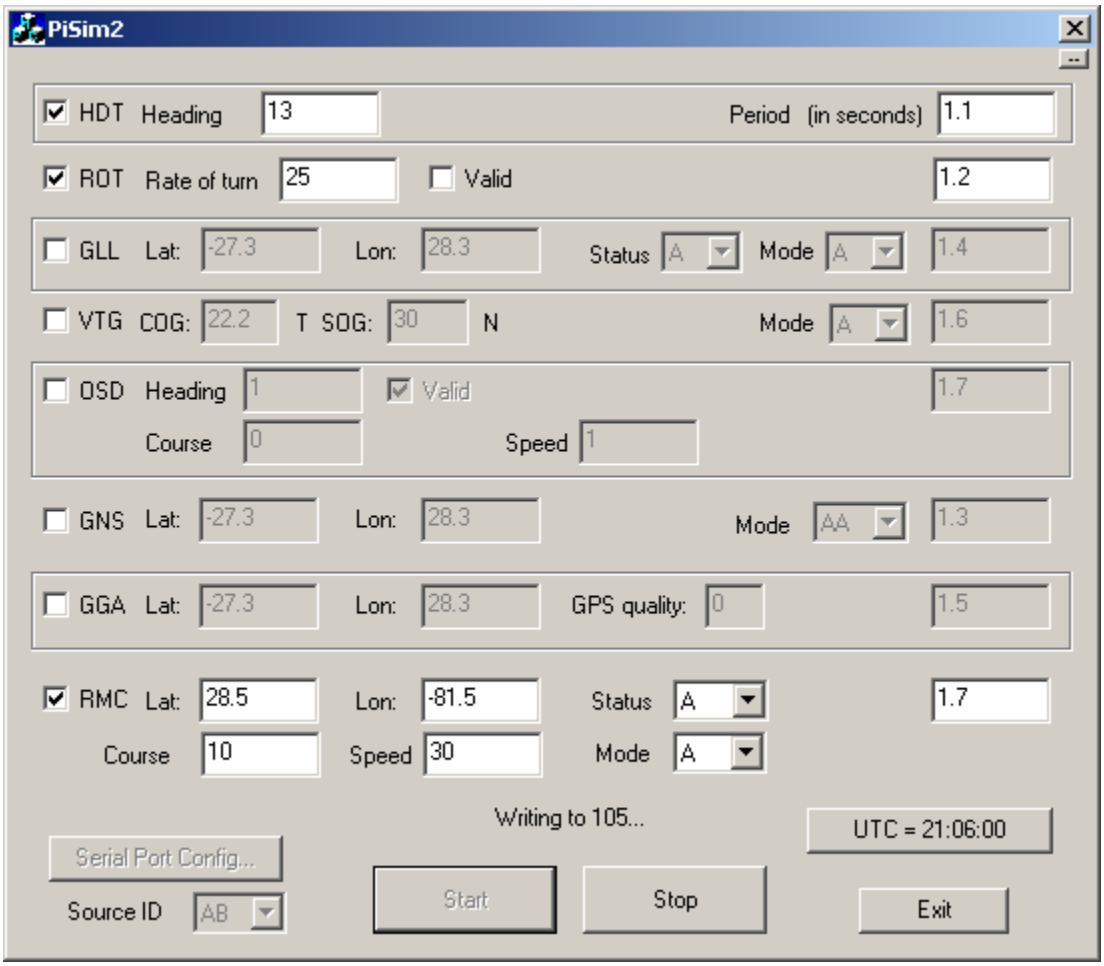
1) IEC 61993-2 Paragraph 14.1.1.1 -Transmit Position Reports needs to be every 2 +/- 0.3 seconds.
2) IEC 61993-2 Paragraph 14.1.1.2 -Receipt Position Reports needs to be continuous for the duration of the test. No unmatched messages indicate successful continuous reception.

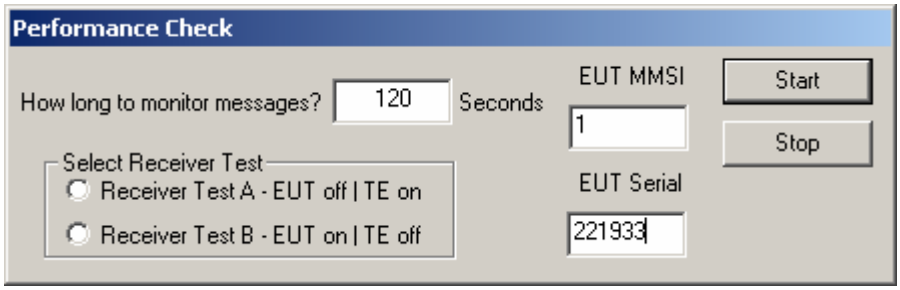
VIBRATION TEST (SECTION 8.7 OF CEI IEC 60945)

(19 June 2003)

Vertical

Vertical Axis 3A1





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

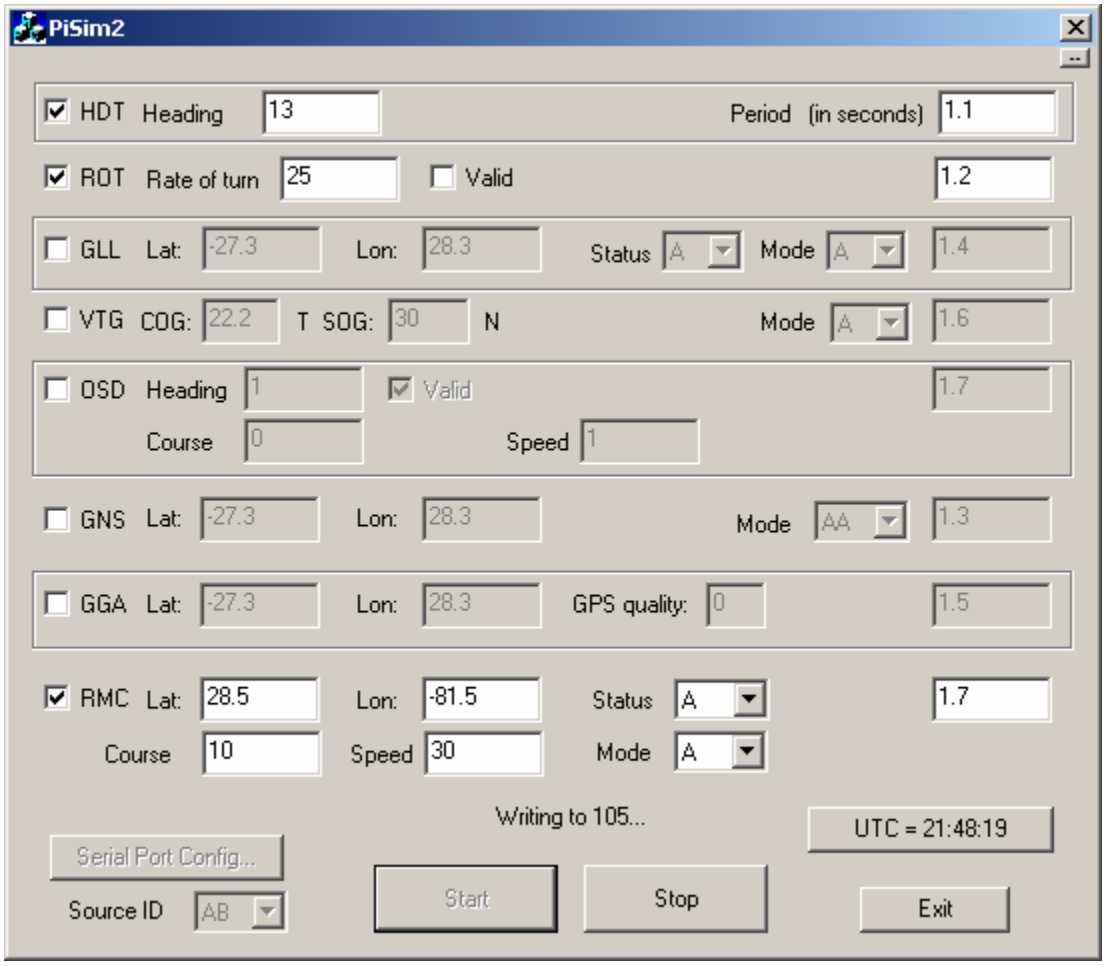
Total VDO Messages Transmitted: 66

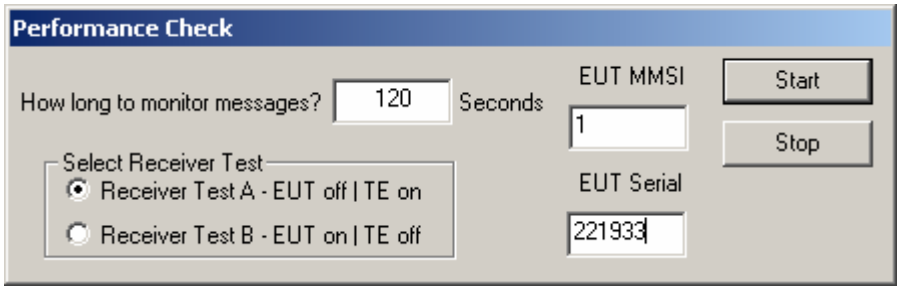
Average reporting rate: 1.98 Seconds

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





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

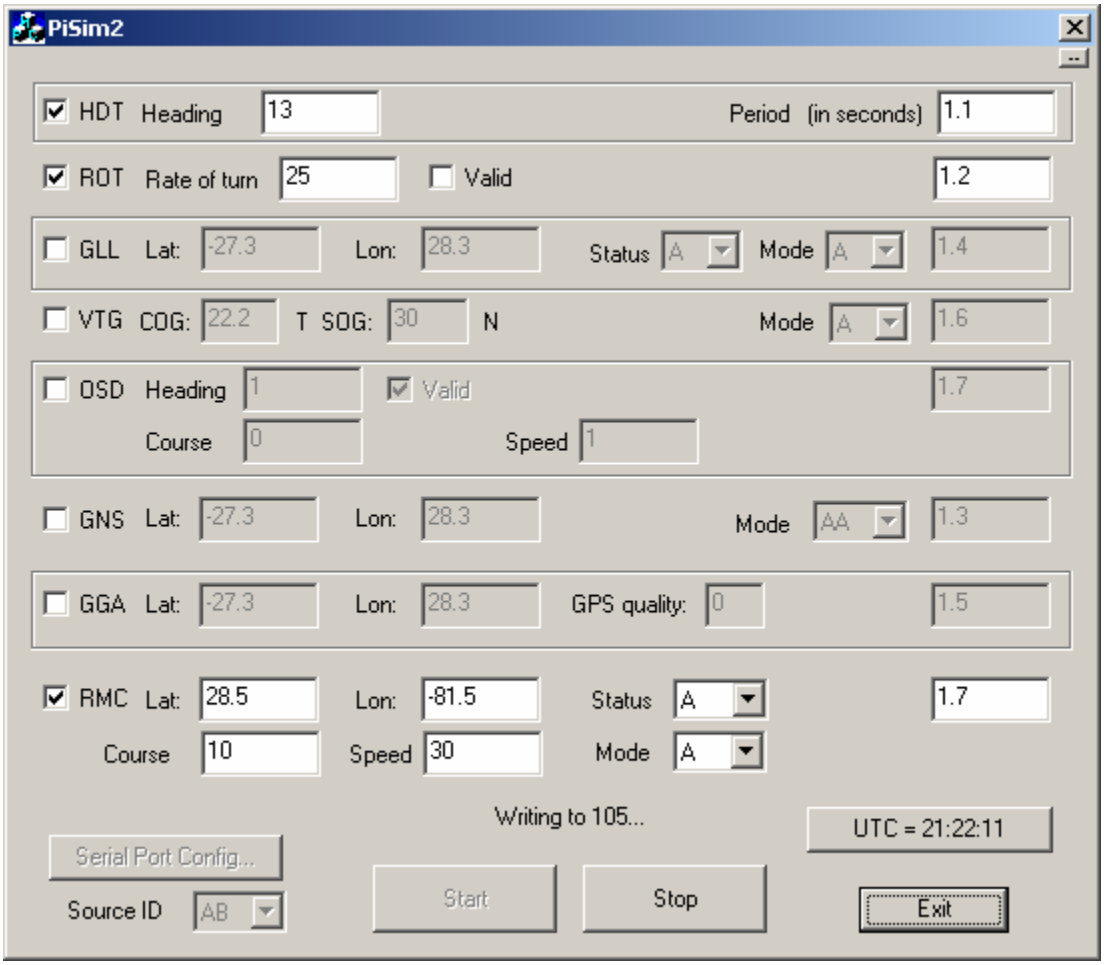
Total VDO Messages Transmitted: 67

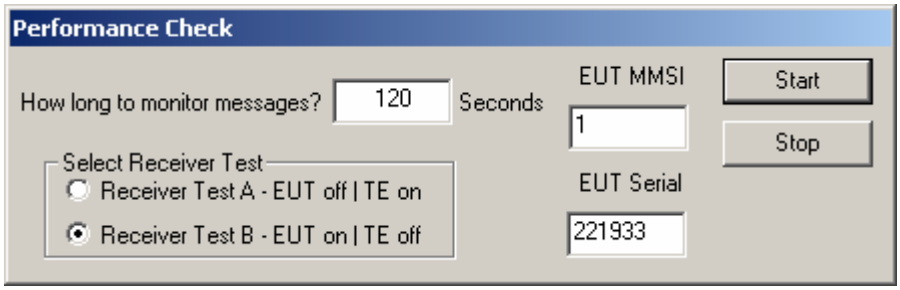
Average reporting rate: 1.99 Seconds

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





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

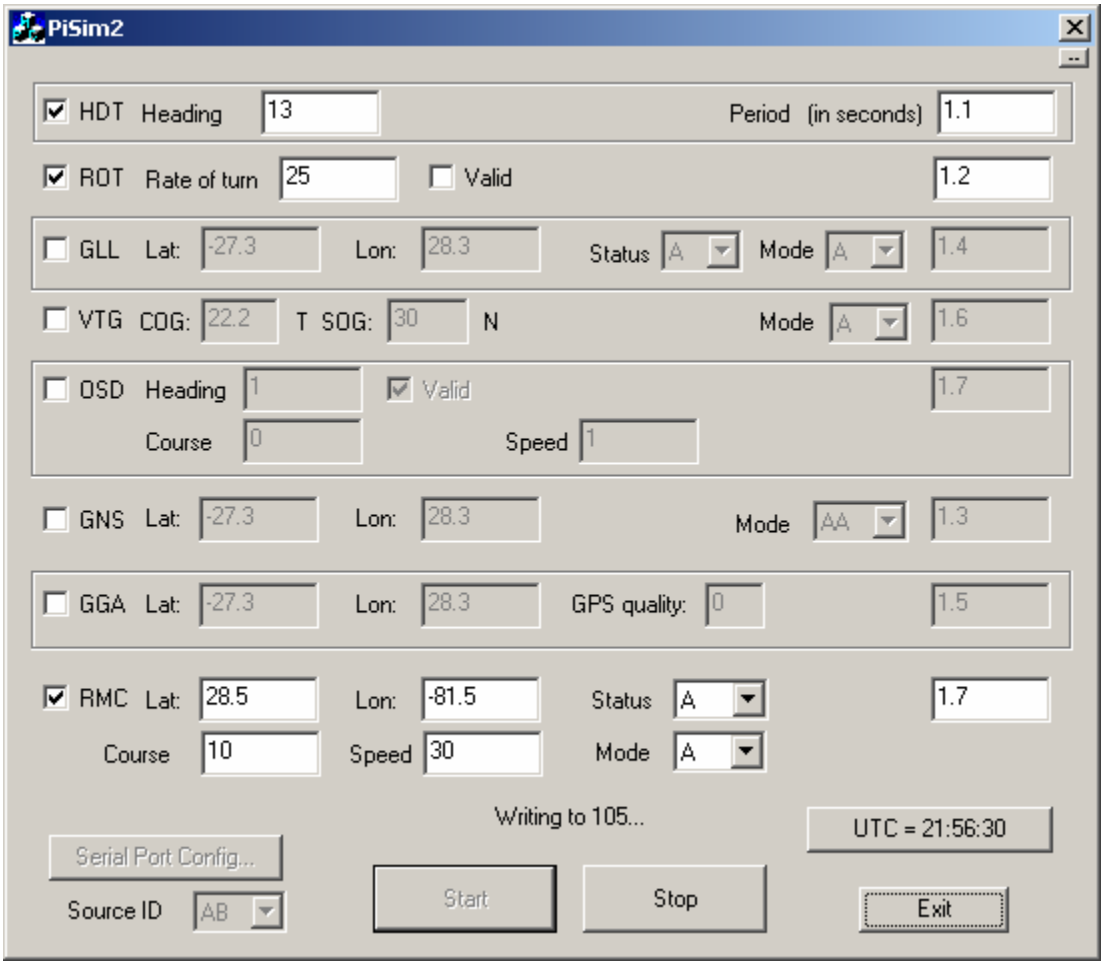
Total VDO Messages Transmitted: 41

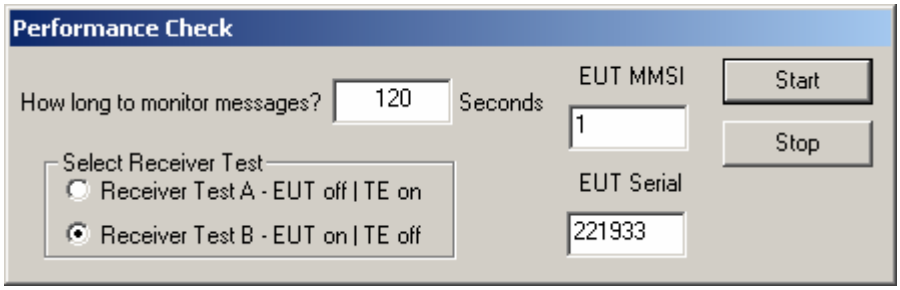
Average reporting rate: 2.05 Seconds

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





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

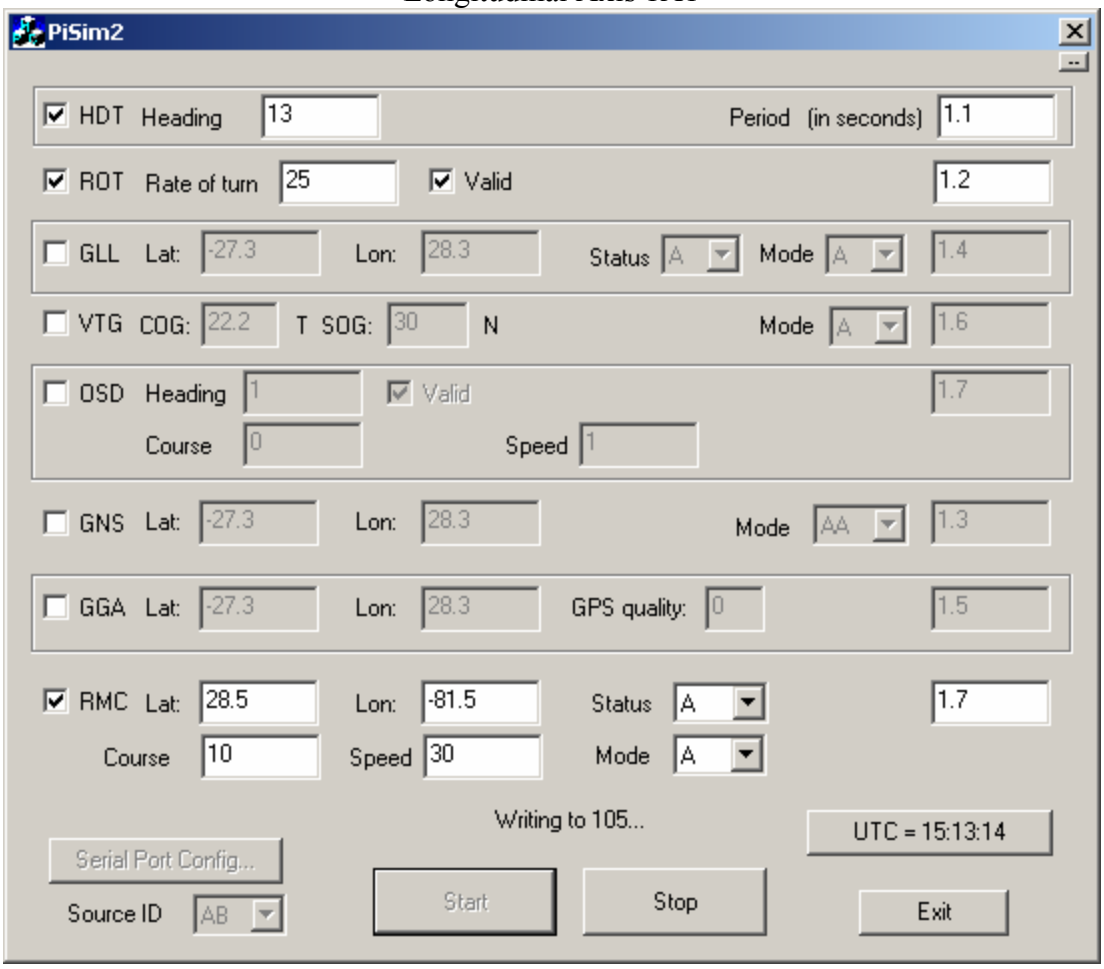
Average reporting rate: 2.00 Seconds

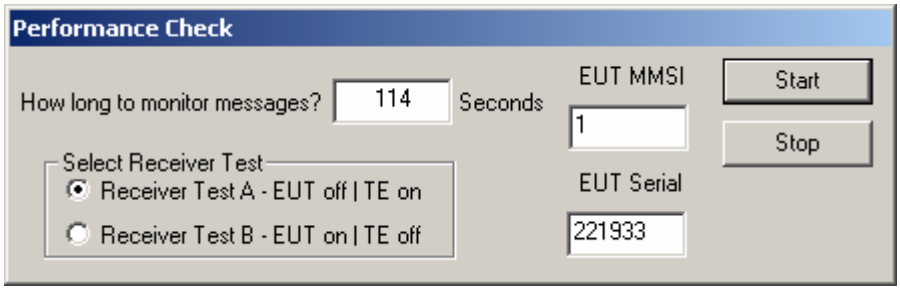
Receive Position Reports
Section 14.1.1.2
Receiver Test B
Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00
Unit Under Test Serial Number: 000221933
Date: Thursday June 19, 2003
==========
Unmatched Messages
==========

Longitudinal

Longitudinal Axis 1A1





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

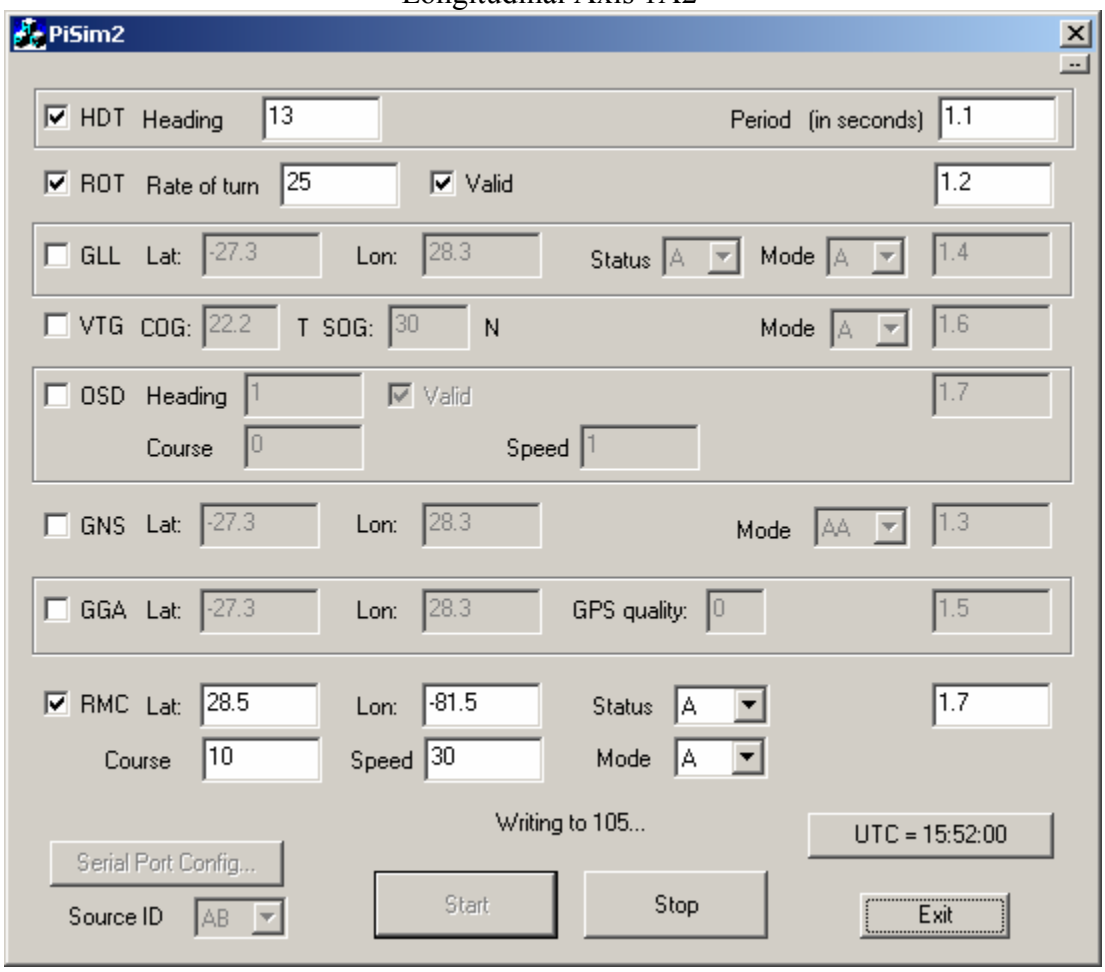
Total VDO Messages Transmitted: 67

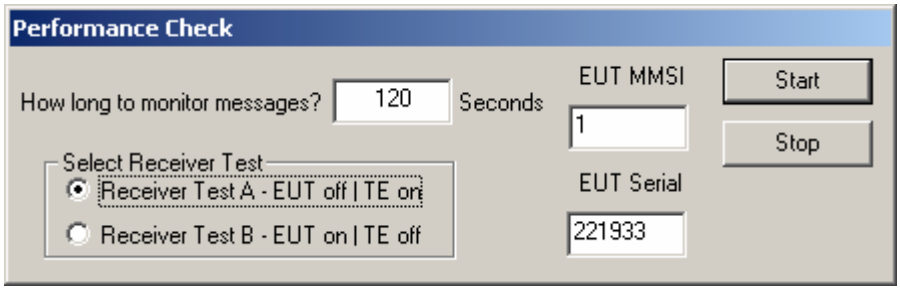
Average reporting rate: 2.00 Seconds

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





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

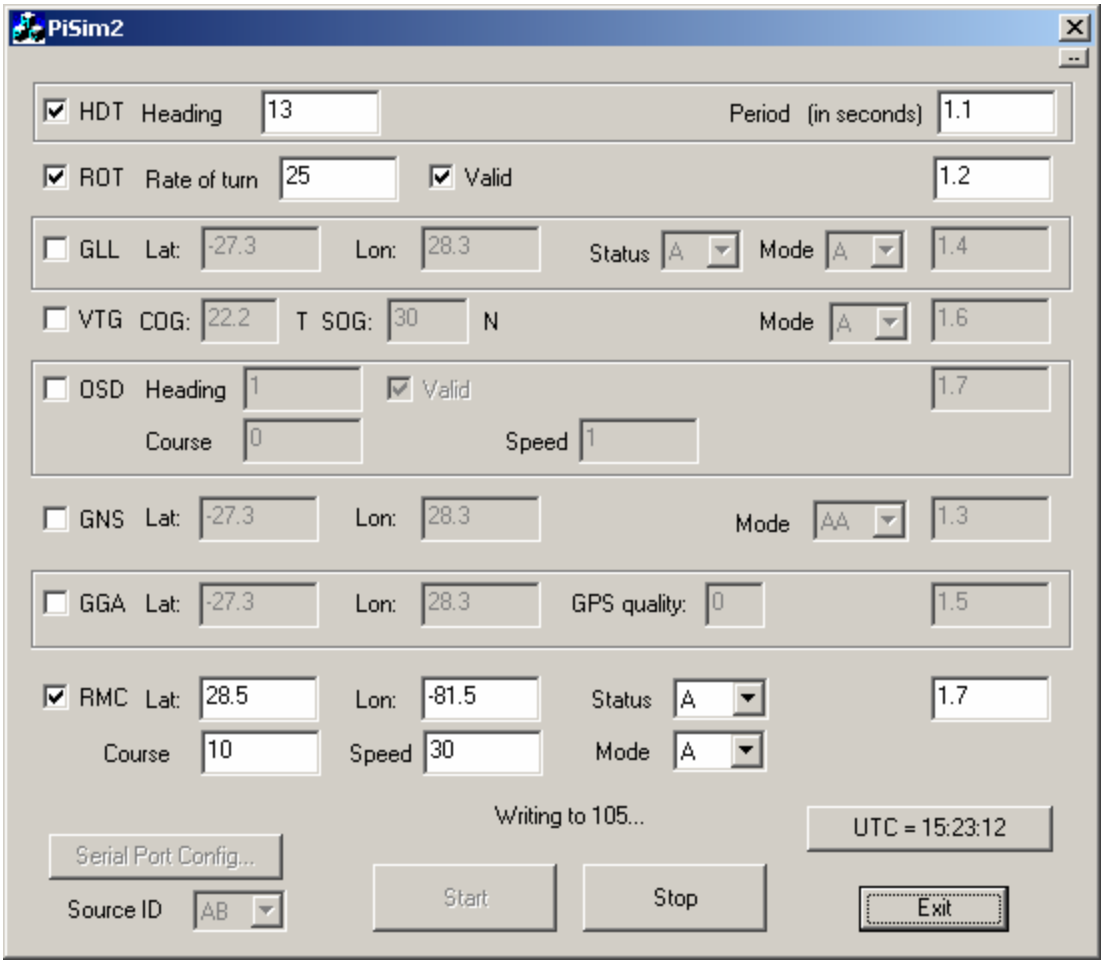
Total VDO Messages Transmitted: 110

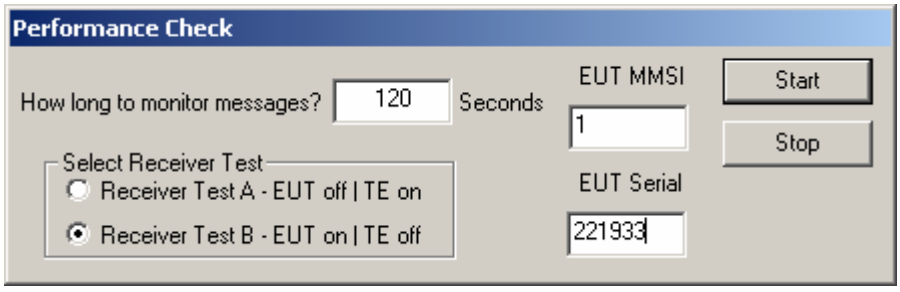
Average reporting rate: 2.00 Seconds

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





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

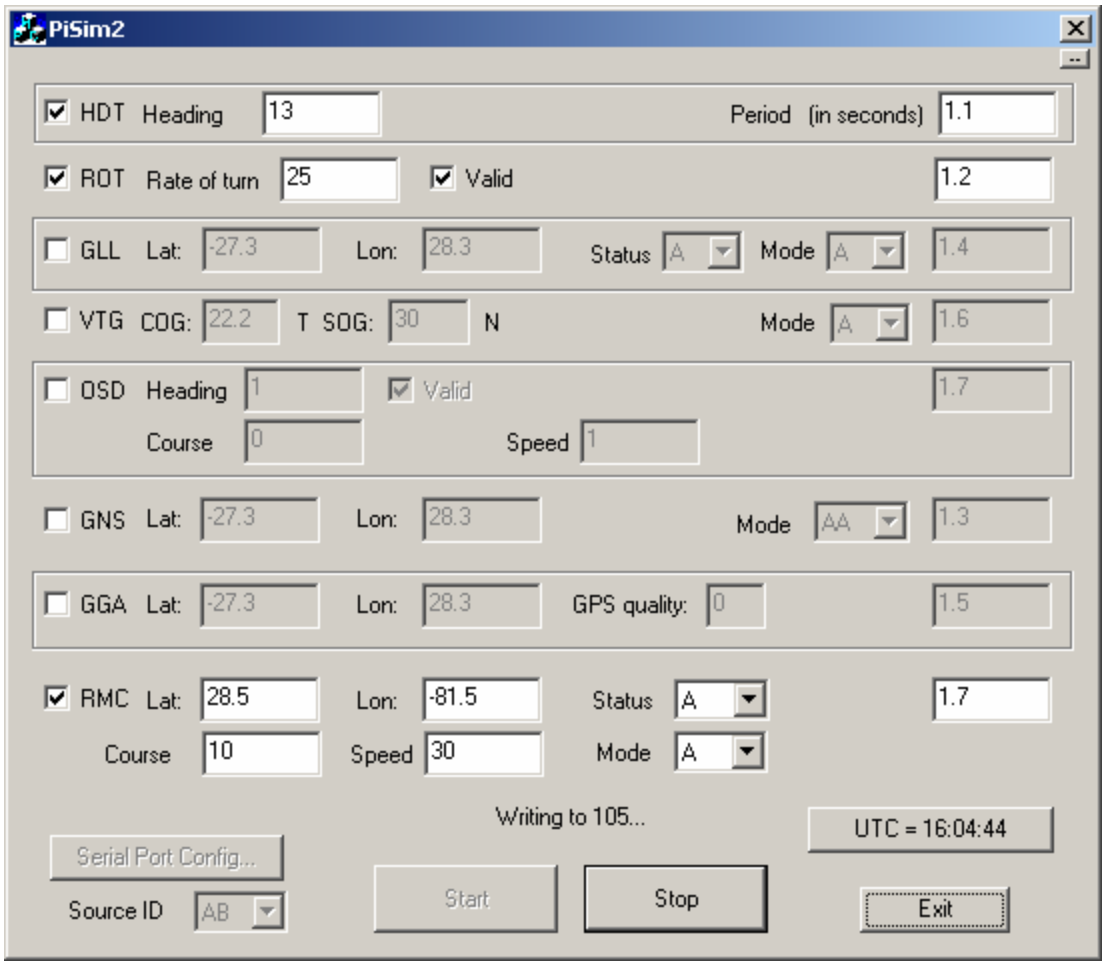
Total VDO Messages Transmitted: 66

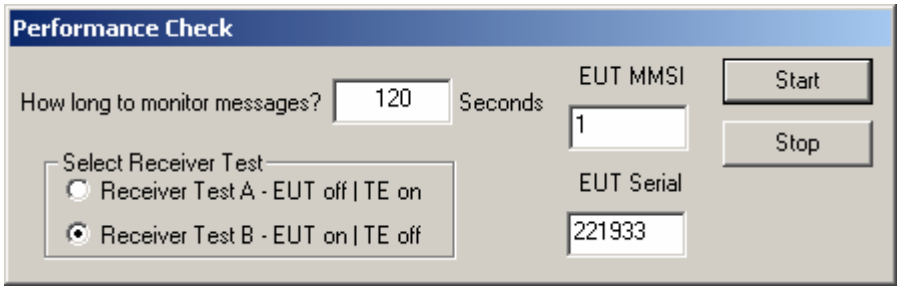
Average reporting rate: 2.00 Seconds

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





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

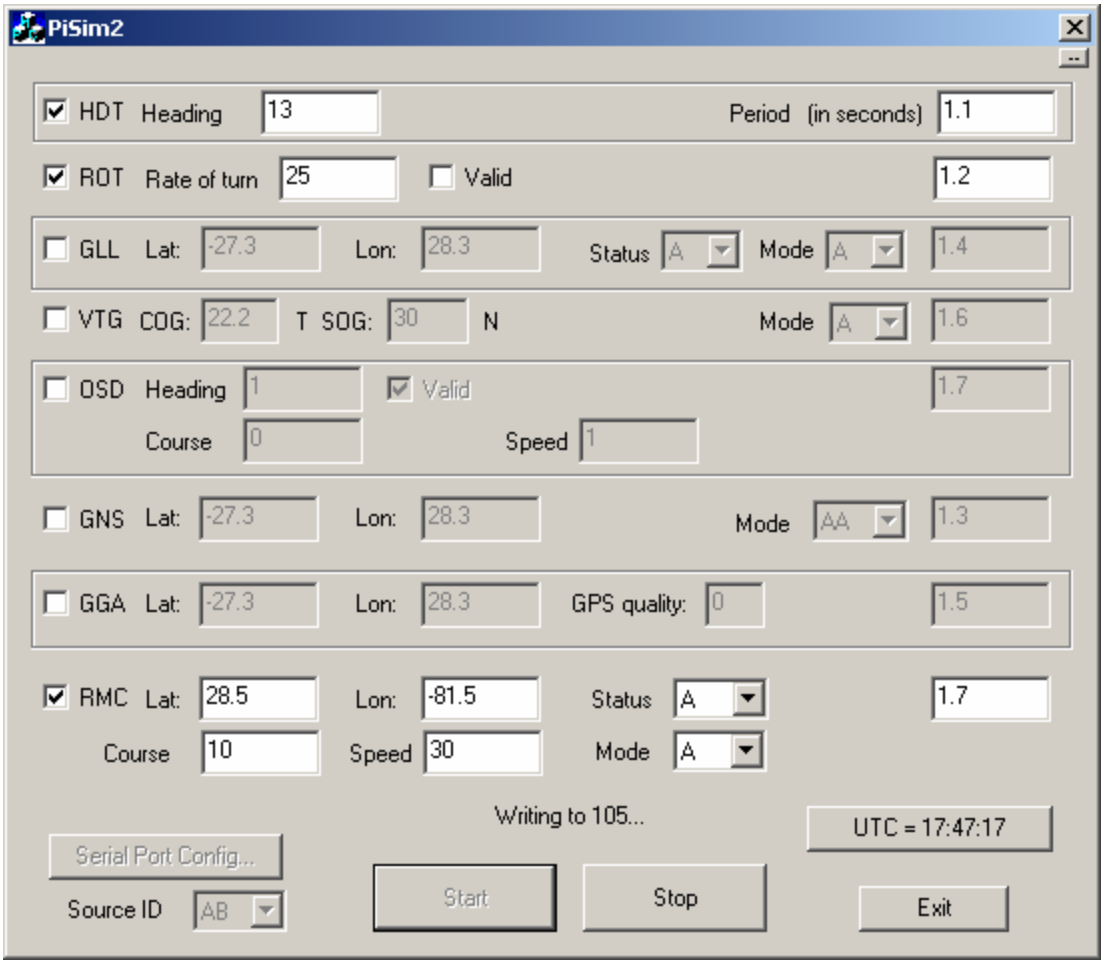
Average reporting rate: 2.00 Seconds

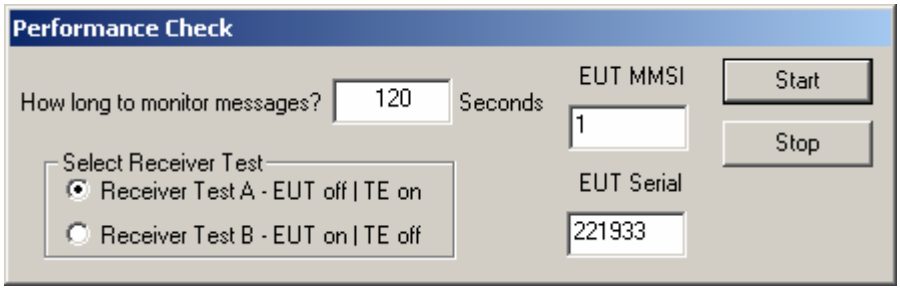
Receive Position Reports
Section 14.1.1.2
Receiver Test B
Equipment Under Test off, Test Equipment on

EUT Part Number: AISA1-000-00
Unit Under Test Serial Number: 000221933
Date: Thursday June 19, 2003
==========
Unmatched Messages
==========

Lateral

Lateral Axis 2A1





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

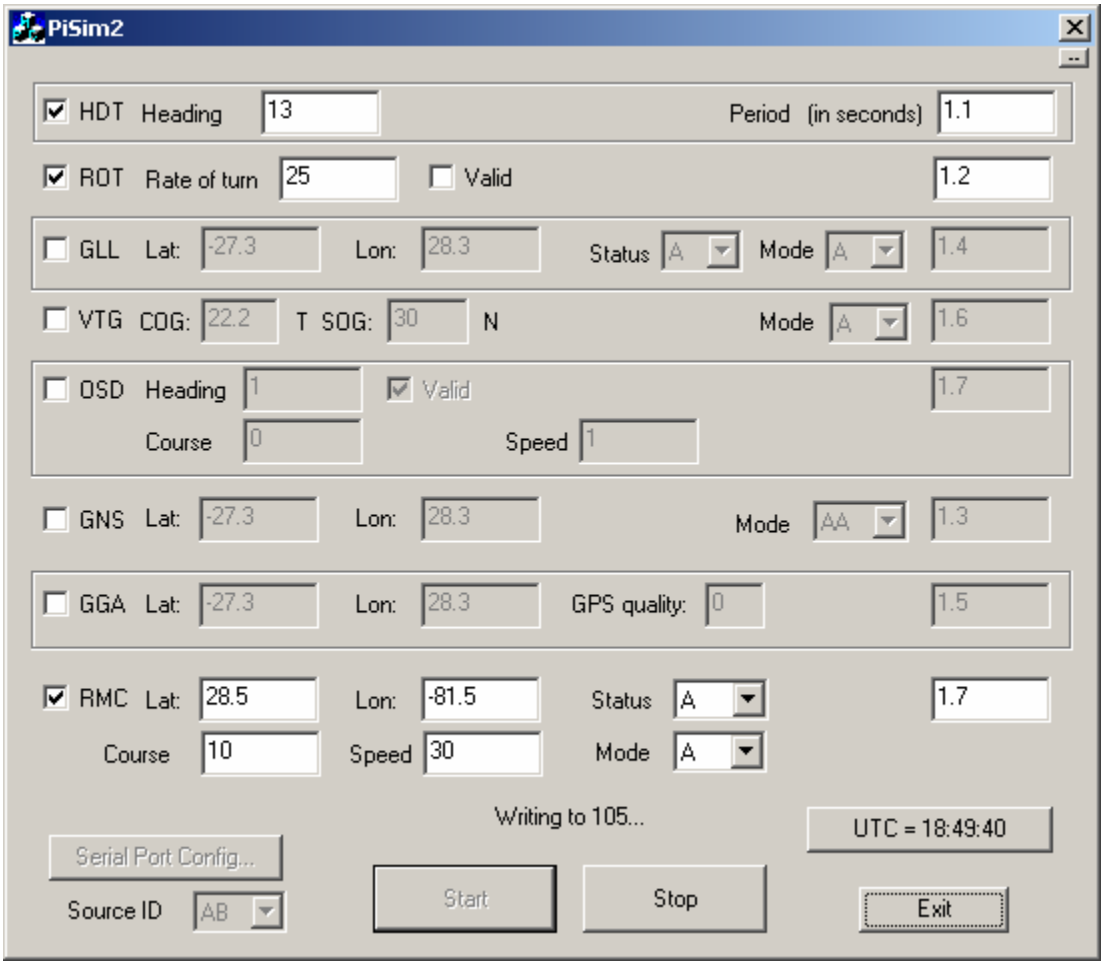
Total VDO Messages Transmitted: 67

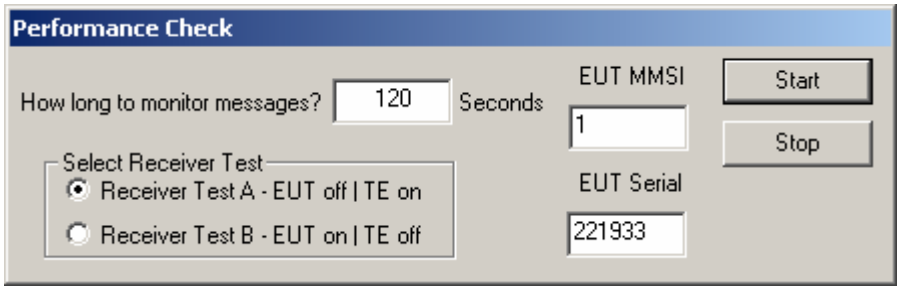
Average reporting rate: 1.97 Seconds

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





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

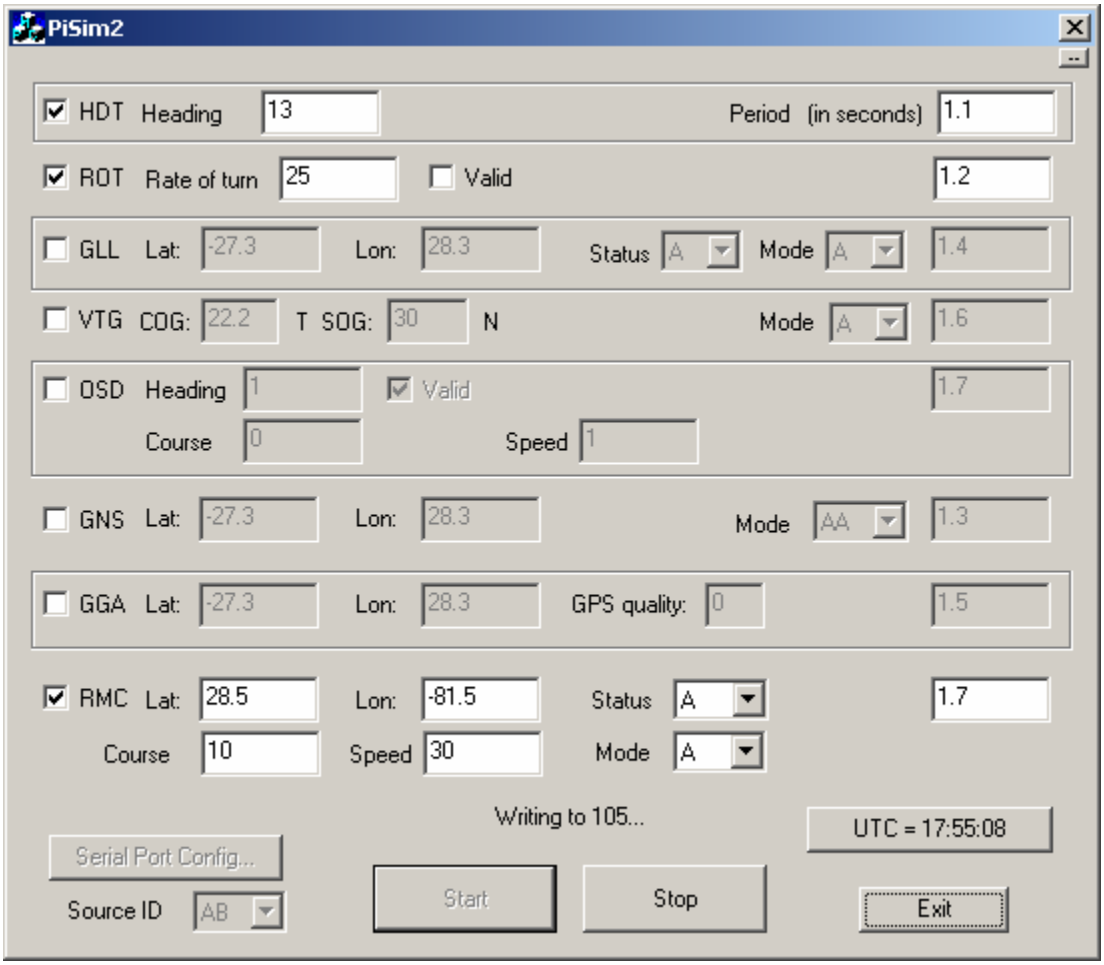
Total VDO Messages Transmitted: 67

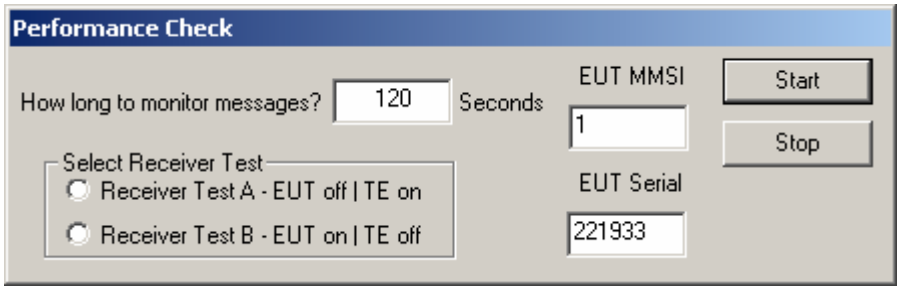
Average reporting rate: 2.00 Seconds

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





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

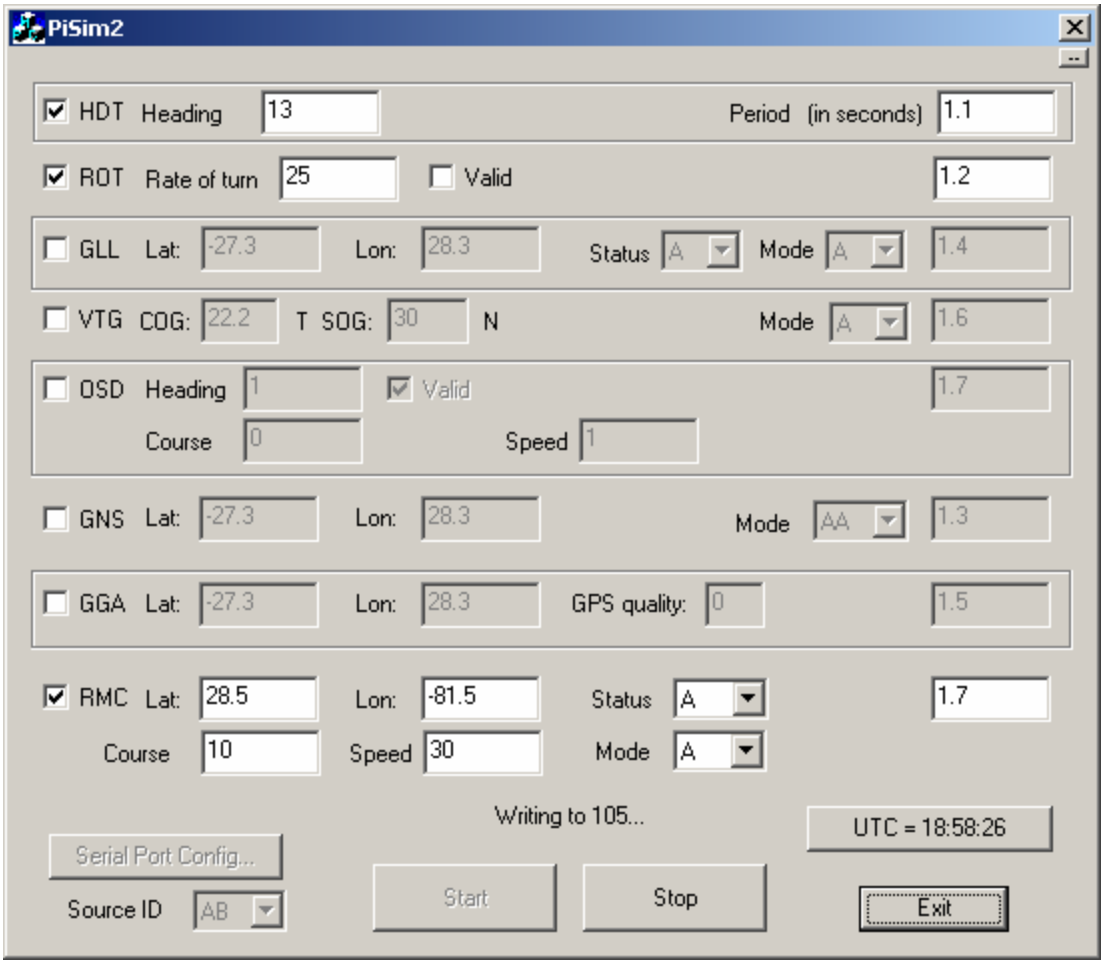
Total VDO Messages Transmitted: 66

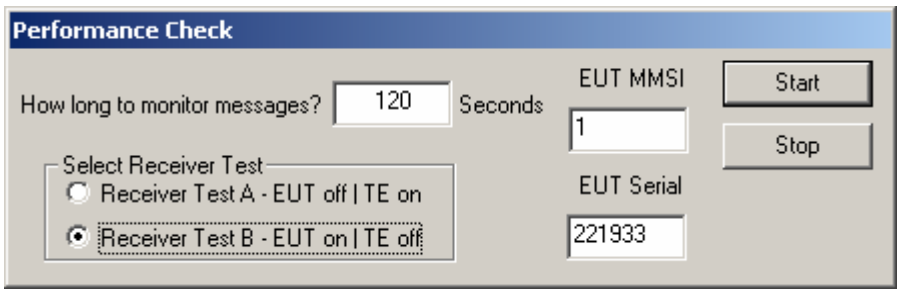
Average reporting rate: 1.98 Seconds

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





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
==========
Unmatched Messages
==========