Serial No. GM24072x

PHYSICAL TEST REPORT
FOR THE
L3 COMMUNICATIONS
AVIATION RECORDERS CORPORATION
AUTOMATIC IDENTIFICATION SYSTEM
PERFORMANCE TESTS

Prepared for:

L3 Communications Aviation Recorders Corp.
6000 Fruitville Road
Sarasota, FL 34232
USA

Submitted by:

Green Mountain Electromagnetics, Inc.

(802) 388-3390
Fax: (802) 388-6279
E-mail: gme@gmelectro.com
219 Blake Roy Road • Middlebury, Vermont 05753

L3 Communications Aviation Recorders Corporation
Physical Tests
By
Green Mountain Electromagnetics, Inc.
Middlebury, Vermont

Unit: Automatic Identification System (AIS)
Evaluated: September 20 - 24, 2004 at L3 Sarasota, Florida/November 12, 2004 at GME

I. Applicable Standards:

The unit described in this report was evaluated for compliance with paragraph 15, "Physical Tests" of IEC 61993-2, "Maritime Navigation and Radiocommunication Equipment and Systems – Automatic Identification Systems (AIS), Part 2: Class A Shipborne Equipment of the Universal AIS – Operational and Performance Requirements, Methods of Test and Required Test Results (December 2001)."

The unit described in this report was also measured for compliance with paragraph 7.2, "Power Supply - Excessive Conditions" and paragraph 11.1, "Acoustic Noise and Signals" of European Standard EN 60945, "Maritime Navigation and Radiocommunication Equipment and Systems – General Requirements – Methods of Testing and Required Test Results (August 2002)." All procedures and equipment are in accordance with EN 61993 and EN 60945.

II. Unit Tested:

The L3 Communications Aviation Recorders Corporation, Automatic Identification System provides continuous signal and data transmission for ship identification. The AIS uses 24-VDC power, has TDMA/DSC transmitters and TDMA/GPS/DSC receivers. It consists of the two-piece metal enclosure with connector hardware, the transmit/receive circuits, the micro-processor/data-storage electronics, and the antenna interface. The table below describes the unit tested to determine compliance with the standards:

Model/P/N	Manufacturer	H/W/D in cm	Serial Number
AISD1-000-00	L3 Communications	8/15/20	104

III. Summary of Results:

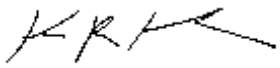
The L3 Communications Aviation Recorders Corporation AIS complies with the requirements in IEC 61993-2, paragraph 15 and EN 60945, paragraphs 7.2 and 11.1. Section VIII contains the results summarized in the table below.

	Test	Mode/Port	IEC 61993-2 Para.	Tolerance/Limit	Specified Value	Measured Value
1	Frequency Error	TDMA Transmit	**15.1.1**	±500 Hz	156,025,000 Hz	156,024,795 Hz
				±500 Hz	157,412,500 Hz	157,412,291 Hz
				±500 Hz	160,637,500 Hz	160,637,266 Hz
				±500 Hz	162,025,000 Hz	162,024,751 Hz
		DSC Transmit	**15.2.1**	±13 Hz	1300 Hz	1299.307 Hz
	Modulation			±21 Hz	2100 Hz	2100.572 Hz
	Rate	DSC Transmit	**15.2.2**	±30 ppm	600.0 Hz	600.0 Hz
2	Carrier Power	TDMA Transmit	**15.1.2**	±1.5 dB	40.96 dBm	40.50 dBm
					33.01 dBm	32.48 dBm
3	Modulation Spectrum	TDMA Transmit	**15.1.3**	25 kHz lmt.	61993-2 Fig. 4	Within Limit
		DSC Transmit		25 kHz lmt.	61993-2 Fig. 4	Within Limit
		TDMA Transmit	**15.1.4**	12.5 kHz lt.	61993-2 Fig. 5	Within Limit
4	Attack Time Release	TDMA Transmit	**15.1.5**	+1.5 dB	80% <1 ms	80% <1 ms
	Time		**15.1.6**	-50 dBPc	<1 ms	<1 ms
5	Sensitivity	TDMA Receive	**15.3.1**	20% PER	-107 dBm	-107 dBm
			15.3.2	20% PER	-98 dBm	-99 dBm
		DSC Receive	**15.4.1**	0.01 BER	-107 dBm	-114 dBm
	Error at	TDMA Receive	**15.3.3**	1% PER	-7 dBm	-7 dBm
	High Input	DSC Receive	**15.4.2**	0.01 BER	-7 dBm	-7 dBm
6	Co-channel Rejection	TDMA Receive	**15.3.4**	-10 dB	0 dB	-7 dB
			15.3.5	-18 dB	0 dB	-8 dB
		DSC Receive	**15.4.3**	-10 dB	0 dB	-8 dB
7	Adjacent Channel	TDMA Receive	**15.3.6**	20% PER	≥70 dB	77 dB
			15.3.7	20% PER	≥50 dB	55 dB
	Selectivity	DSC Receive	**15.4.4**	0.01 BER	≥70 dB	82 dB
8	Spurious Rejection	TDMA Receive	**15.3.8**	20% PER	≥70 dB	90 dB
		DSC Receive	**15.4.5**	0.01 BER	≥70 dB	80 dB
9	Inter-modulation Rejection	TDMA Receive	**15.3.9**	0% PER	20% PER	10% PER
		DSC Receive	**15.4.6**	0.01 BER	≥65 dB	75 dB
10	T/R Switching Time	TDMA Receive	**15.3.10**	20% PER	-107 dBm	-107 dBm
11	Blocking Desensitization	DSC Receive	**15.4.7**	0.01 BER	≥84 dB	84 dB

12	Power Supply	Transceive	**60945 par. 7**	Extreme Voltage Reverse Polarity Voltage Variation	40 VDC Safe 21.6-31.2 VDC	40 VDC Compliant 21.6-31.2 VDC
13	Acoustic	Transceive	**60945 par. 11.1**	Operating	≤60 dBA	<60 dBA

Testing was performed by Kyle R. Kowalczyk, president, Green Mountain Electromagnetics and requested by:

L3 Communications Aviation Recorders Corp.
6000 Fruitville Road
Sarasota, FL 34232
USA



Kyle R. Kowalczyk
12/15/04

IV. Laboratory Description:

The GME laboratory and Open Area Test Site (OATS) are located at 219 Blake Roy Road, Middlebury, VT. GME is internationally accredited by the American Association for Laboratory Accreditation (A2LA) and meets the quality requirements in ISO/IEC 17025 (1999), "General Requirements for the Competence of Testing and Calibration Laboratories." For scope of accreditation, contact GME. The L3 Test Laboratory is located in Sarasota Florida.

V. Measuring Equipment:

The table below describes the instrumentation used by Green Mountain Electromagnetics to perform this testing:

Unit	Manufacturer	Model	Serial/ID #	Last Cal.	Next Cal.
Spectrum Analyzer	Hewlett-Packard	8592	3624A00631	1/13/04	1/13/05
Signal Generator	IFR	3412	10411	6/14/04	6/14/05
Signal Generator	Marconi	2031	ID5165	8/11/04	8/11/05
Signal Generator	Marconi	2031	1160	9/5/04	9/5/05
Spectrum Analyzer	Hewlett-Packard	8563	10415	9/8/04	9/8/05
Radio Test Set	Hewlett-Packard	8920B	501717	5/23/04	5/23/05
PC/Monitor	L3 Configured	9591 9411	MIS9591 MIS9411	n/a	n/a
Frequency Counter	Agilent	53181A	ID5111	4/27/04	4/27/05
Power Sensor	Agilent	E9301B	ID5119A/B	6/7/04	6/7/05
Power Meter	Agilent	E4418B	ID5113	4/27/04	4/27/05
Power Supply	Hewlett-Packard	6038A	500771	12/10/03	12/10/04
Power Attenuator	Hewlett-Packard	8498A	ID5122	5/24/04	5/24/05
Sound Meter	Extech	407703A	9144841	5/30/03	5/30/05
Splitter	Mini-Circuits	ZSC-4-1	n/a	n/a	n/a
Plotter	Hewlett-Packard	7475A	2517A05281	n/a	n/a

VI. Measurement Procedures for AIS Physical Tests:

Preface: The following is a brief description of GNS test setup used to perform Packet Error Rate Test (PER) and Bit Error Rate Test (BER). Two audio files, one for 12.5 kHz and one for 25 kHz channel, are used as GMSK modulation data into the signal generator. Also, a third file is used for the BER test as FSK modulation data into the signal generator. These audio files were created by converting GMSK and FSK data into audio format (.wave file). The signal generated is set to a carrier frequency and FM modulation is set to ON. Signal generator FM deviation is set according to the channel bandwidth. A PC is used to play the audio files, and the audio output is fed into the signal generator. The audio format data is used as modulation IN of the signal generator and RF output is taken out from the signal generator. Pilot port of the EUT is monitored for PER and BER test results using Hyper Terminal.
The diagram below shows the test setup.

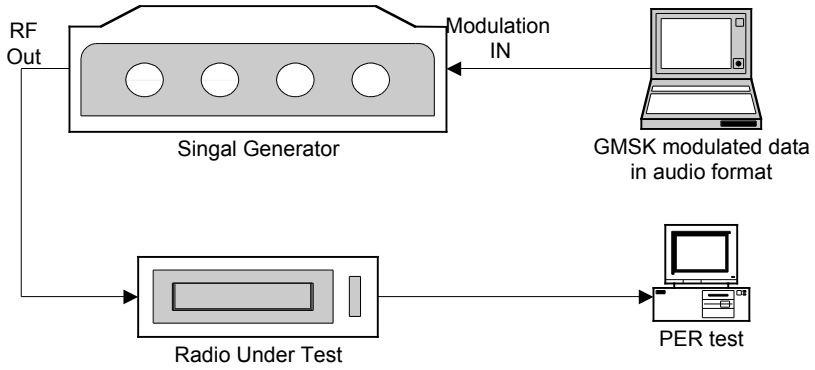


Figure 1: Test setup for PER test

GMSK and FSK data can be continuously played via windows media software (preferably with high quality sound card) and number of packets can be monitored on the Pilot port output of the radio under test.

For BER test, a packet that contains 90 bits of payload, which consists of 9 ten-bit symbols, is used. The symbols used are hex value 0x355, because this symbol is closest to the dot-pattern. The packet length is 400 ms, so in continuous mode the maximum of 450 bits can be received in two seconds (90 x 5).

For PER test, one GMSK packet takes about 26.666 ms to transmit. So, in continuous mode, maximum of 75 packets can be received in two seconds. Attached table for PER is based on the success rate of the raw packet data received by the unit under test.

Success Rate in %	Packets in 2 seconds
100	75
95	71.25
90	67.5
85	63.75

80	60
75	56.25
70	52.5
65	48.75
60	45
55	41.25
50	37.5
45	33.75
40	30
35	26.25
30	22.5
25	18.75
20	15
15	11.25
10	7.5

Table 1: PER = (100% -Success rate) within pre-defined time period

The EUT outputs the following every 2 seconds via the Pilot port.

"AIS: x/75 packets (Avg. X) DSC: y/z bit-errors (Avg. Y)"

Where

x = the number of packets received in the last 2 second time interval
X = the average number of packets received per 2 seconds since the beginning of the PER test.
y = number of errored bits received.
z = total number of bits received.
Y = the average bit error rate.

So, "AIS: 75/75 packets (Avg. 70.0) DSC: 1/450 bit-errors (Avg. 0.0001)" means that during this 2-second interval 75 packets were received in the AIS channel and the average number of packets received since the start of the test is 70.0. Also, the above example shows that during this 2-second interval, 450 bits were received on the DSC channel, one of them was in error, and the average BER since the start of the test is 0.0001 (10 ^ -4).

VI. Measurement Procedures for AIS Physical Tests:

1. Frequency Error.

TDMA Frequencies: 156.025, 157.4125, 160.6375, 162.025 MHz

Specification: ±0.5 kHz Normal Operation

DSC Frequencies: 1300, 2100, 600 Hz

Specification: ±13 Hz, ±21 Hz, ±30 ppm

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to 24-VDC power and GPS antenna; attach 30-dB attenuator to VHF port.

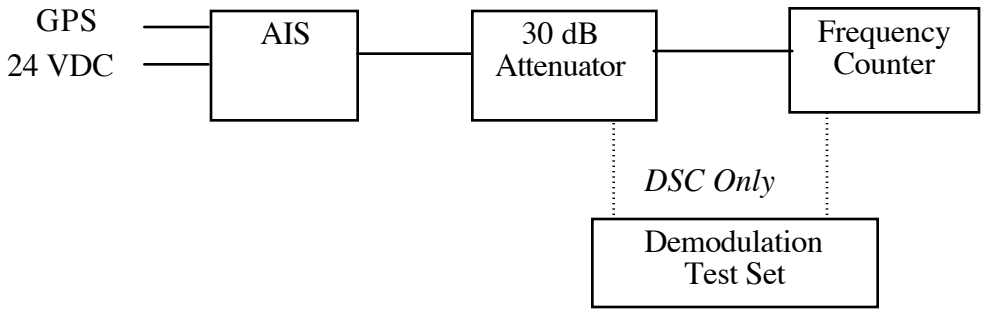
b. Verify frequency counter and AIS operation.
   i. Frequency counter is connected to 30-dB attenuator.
   ii. AIS channels are selected from front panel.
   iii. Frequency counter requires warm-up period.

c. Verify AIS frequency with non-contact probe and spectrum analyzer.

d. Operate EUT at first selected channel with no modulation.

e. Record frequency displayed on counter.
   i. Repeat for each TDMA channel – settings are 1060, 1228, 2260 & 2088.

f. Perform state error and rate tests on DSC channel 70 using demodulated output.
   i. Demodulation is connected between 30 dB and counter.
   ii. States B & Y are D21 and D13 on AIS front panel.
   iii. Use radio test set f to demodulate for state error or rate test demodulation.



Block Diagram of Frequency Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

2. Carrier Power.

High Specification: 40.96 ± 1.5 dBm (12.5W +5.1W/-3.1W) Normal Operation

Low Specification: 33.01 ± 1.5 dBm (2W +.8W/-.6W) Normal Operation

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to 24-VDC power and GPS antenna; attach 30-dB attenuator to VHF port.

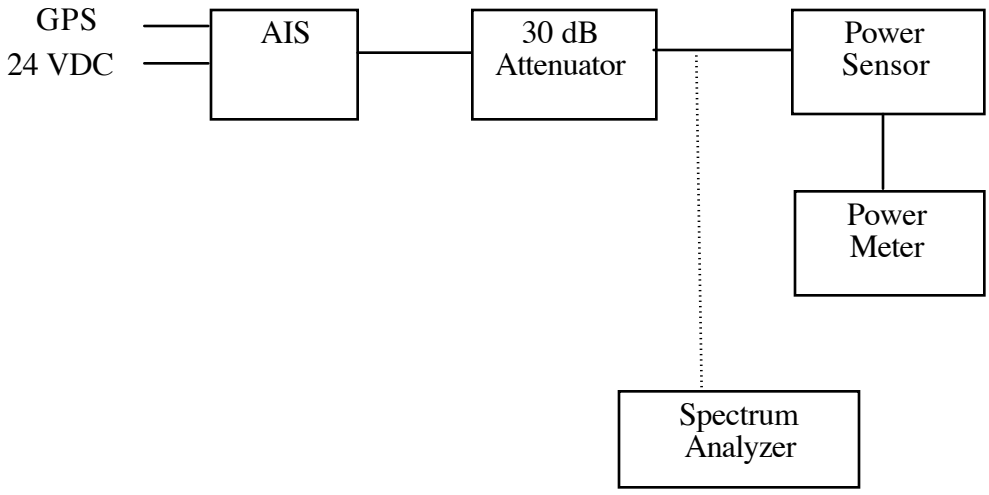
b. Verify power meter/sensor and AIS operation.
   i. Power sensor is connected to 30-dB attenuator.
   ii. AIS power levels are selected from front panel.
   iii. Power meter requires zeroing and calibration each time.

c. Verify AIS frequency with spectrum analyzer.

d. Operate EUT at high power unmodulated.

e. Record level displayed on meter.

f. Repeat for low power.



Block Diagram of Carrier Power Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

3. Modulation Spectrum.

25kHz Envelope: 0dB ±10kHz, decrease -25dBc to -70dBc from ±10kHz to ±25kHz

12.5kHz Envelope: 0dB ±2.5kHz, decrease 0dBc to -60dBc from ±2.5kHz to ±12.5kHz

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to 24-VDC power and GPS antenna; attach 30-dB attenuator to VHF port.

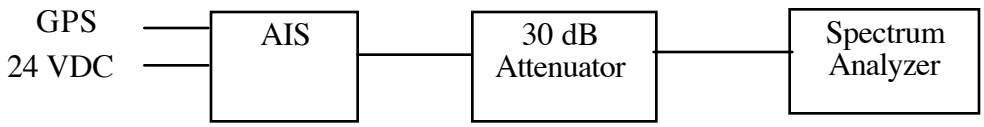
b. Verify analyzer and AIS operation.
   i. Spectrum analyzer is connected to 30-dB attenuator.
   ii. AIS test signals 1, 2 & 3 per 61993-2, para. 10.4 are selected from front panel.
   iii. Spectrum analyzer requires warm-up period.

c. Verify AIS test signal on spectrum analyzer.

d. Operate EUT at first selected test signal with standard modulation.

e. Record frequency spectrum displayed on analyzer.

f. Repeat for each TDMA and DSC test signal.



Block Diagram of Modulation Spectrum Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

4. Attack/Release Time.

Attack Specification: 80% power at 1ms

Release Specification: 50 dB below power at 1ms

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to 24-VDC power and GPS antenna; attach 30-dB attenuator to VHF port.

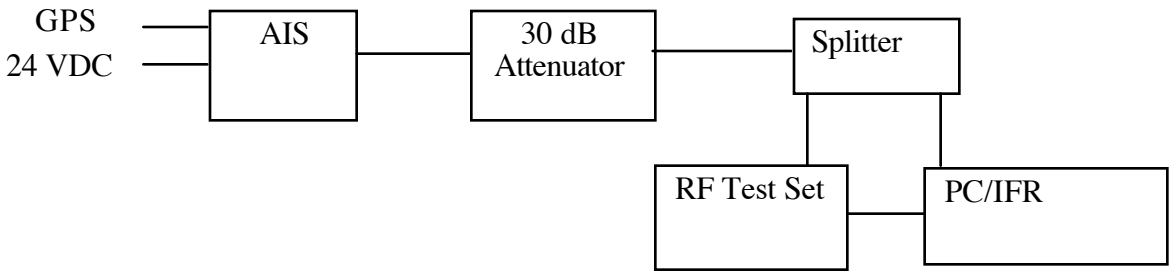
b. Verify RF Test Set and AIS operation.
   i. Power splitter input is connected to 30-dB attenuator.
   ii. PC uses other splitter output.

c. Verify system sensitivity is 30-dB down and trigger on leading edge.

d. Operate EUT with standard modulation.

e. Record rise time (attack) transient displayed on oscilloscope.

f. Repeat for falling edge (release time).



Block Diagram of Transmitter Attack/Release Time Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

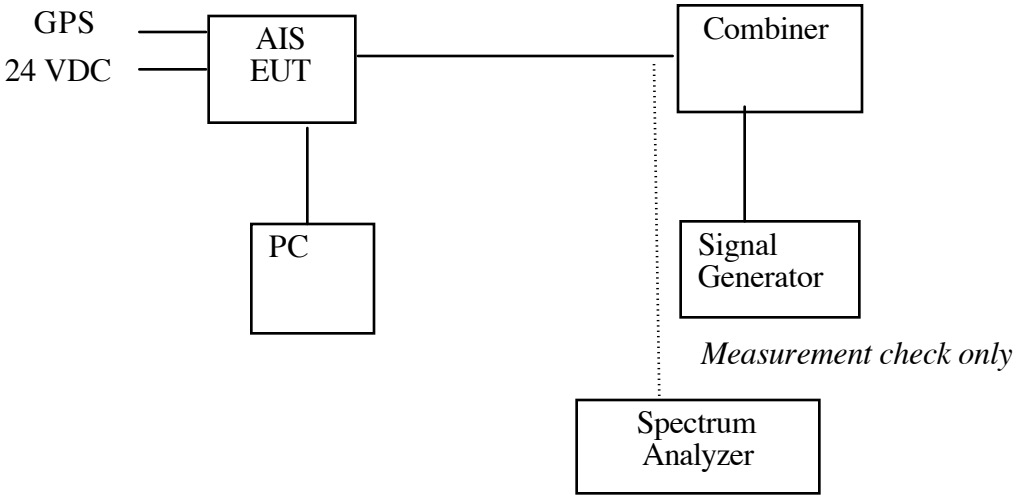
5. Sensitivity including Error at High Input.

25 kHz Specification: -107 dBm @ 20% PER Normal, -7dBm @ 1% PER High Input

12.5 kHz Specification: -98 dBm @ 20% PER Normal Operation

DSC Specification: -107 dBm @ 0.01 BER Normal, -7 dBm @ .01 BER High Input

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to 24-VDC power and GPS antenna.
b. Verify PC and AIS operation.
   i. PC provides input to AIS.
   ii. Signal generator set to provide -107 dBm at EUT (25 kHz).
   iii. Spectrum analyzer verifies correct signal level.
c. Operate with standard modulation at 156.025 MHz.
d. Operate AIS EUT with standard modulation at 156.025 MHz.
e. Run sensitivity software program on PC.
   i. Software determines TDMA packet error rate.
f. Repeat step e. for 162.025 MHz.
g. Set signal generator to provide -98 dBm (12.5 kHz).
h. Repeat step e. for 157.4125 MHz and 160.6375 MHz.
i. Repeat step e. to provide -77 dBm and -7 dBm.
   i. Use 30-dB power attenuator for error at high input.
j. Repeat steps a. – i. for DSC: 156.525 MHz, 156.5265 MHz and 156.5235 MHz.



Block Diagram of Receiver Sensitivity Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

6. Co-Channel Rejection.

25 kHz Specification: -10 dB to 0 dB

12.5 kHz Specification: -18 dB to 0 dB

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to PC, 24-VDC power, GPS antenna.

b. Verify PC and AIS operation.
   i. PC is connected to signal generator A, then sig. gen. A & B are connected to combiner.
   ii. PC is set to provide -104 dBm at EUT (25 kHz).
   iii. Signal generator B set to provide -104 to EUT (0-dBm result) at same channel as AIS.
   iv. Spectrum analyzer verifies correct signal level.

c. Operate PC with standard modulation at default channel and test signal 1.

d. Operate EUT with standard modulation at default channel and test signal 1.

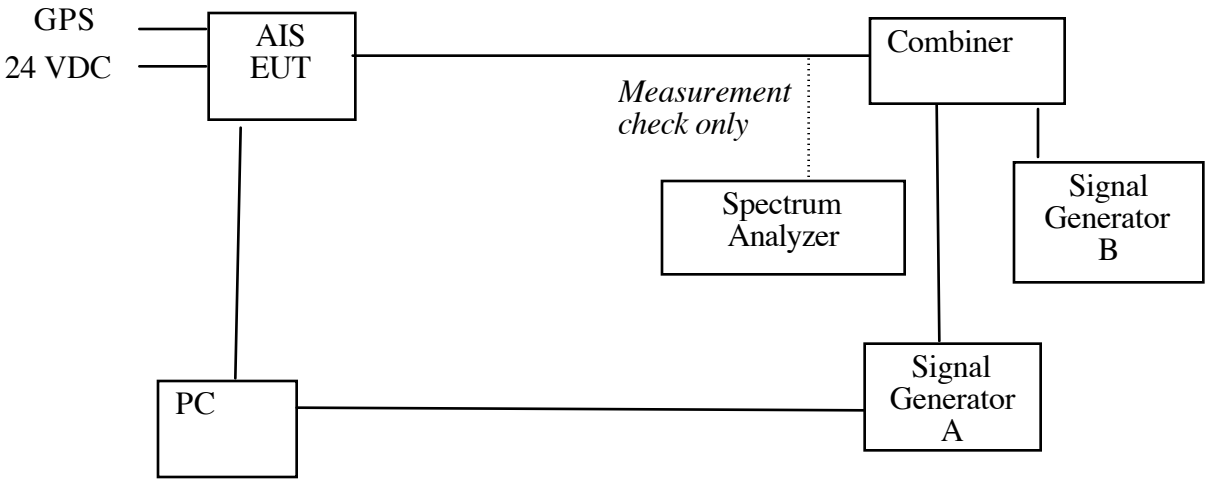
e. Run co-channel software program on PC.
   i. Software determines packet error rate from messages.
   ii. Proceed as in IEC 61993 para. 15.3.4 steps a. – i. if PER >20%.

f. Repeat step e. for test signal 2.

g. Repeat step a. – f. with signal generator B set to frequencies of ±12% of channel separation.

h. Set signal generator to provide -95 dBm (12.5 kHz) and repeat steps b. – g.

i. Repeat steps a. – d. for DSC; generator provides -112-dBm FM modulated at 400 Hz/3kHz.



Block Diagram of Receiver Co-Channel Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

7. Adjacent Channel Selectivity.

25 kHz Specification: 70 dB Normal Operation

12.5 kHz Specification: 50 dB Normal Operation

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to PC, 24-VDC power, GPS antenna.

b. Verify PC and AIS operation.
   i. PC monitors AIS, then sig. gen. A & B are connected to combiner.
   ii. Signal generator is set to provide -104 dBm at EUT (25 kHz).
   iii. Signal generator B set to provide -34 to EUT (70-dB result) at channel immediately above the AIS channel.
   iv. Spectrum analyzer verifies correct signal level.

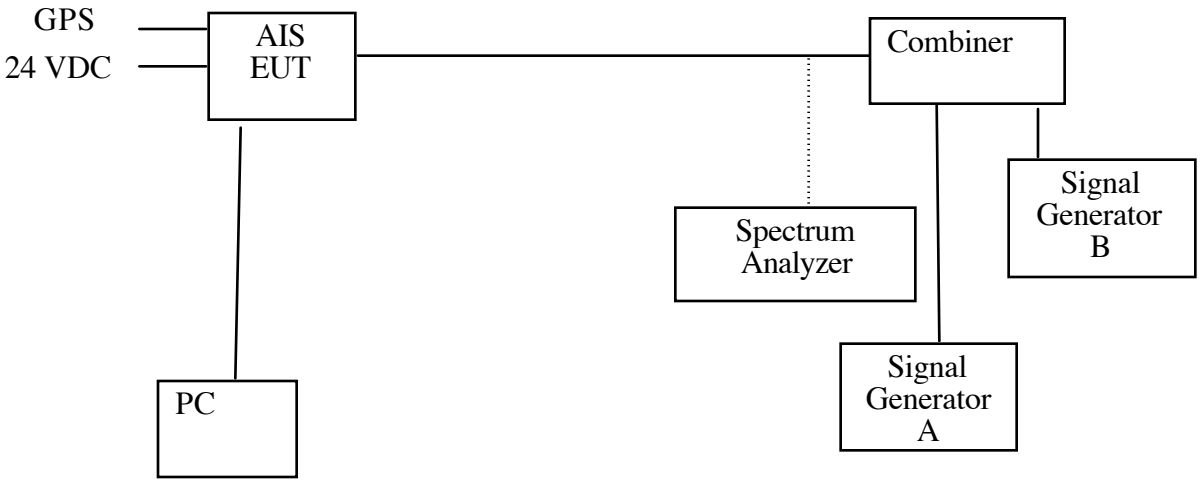
c. Operate PC and AIS EUT with standard modulation at default channel.

d. Run adjacent-channel software program on PC.
   i. Software determines packet error rate from messages.
   ii. Proceed as in IEC 61993 para. 15.3.6 steps a. – k. if PER >20%.

e. Repeat step d. for channel immediately below AIS channel.

f. Repeat steps d. and e. for 12.5-kHz AIS channel.
   i. Set signal generator to provide -95 dBm/-50 dBm.

g. Repeat step a. – c. for DSC; Generator provides -34-dBm FM modulated at 400 Hz/3kHz.



Block Diagram of Receiver Adjacent-Channel Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

8. Spurious Rejection.

Specification: 70 dB Normal Operation

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to PC, 24-VDC power, GPS antenna.

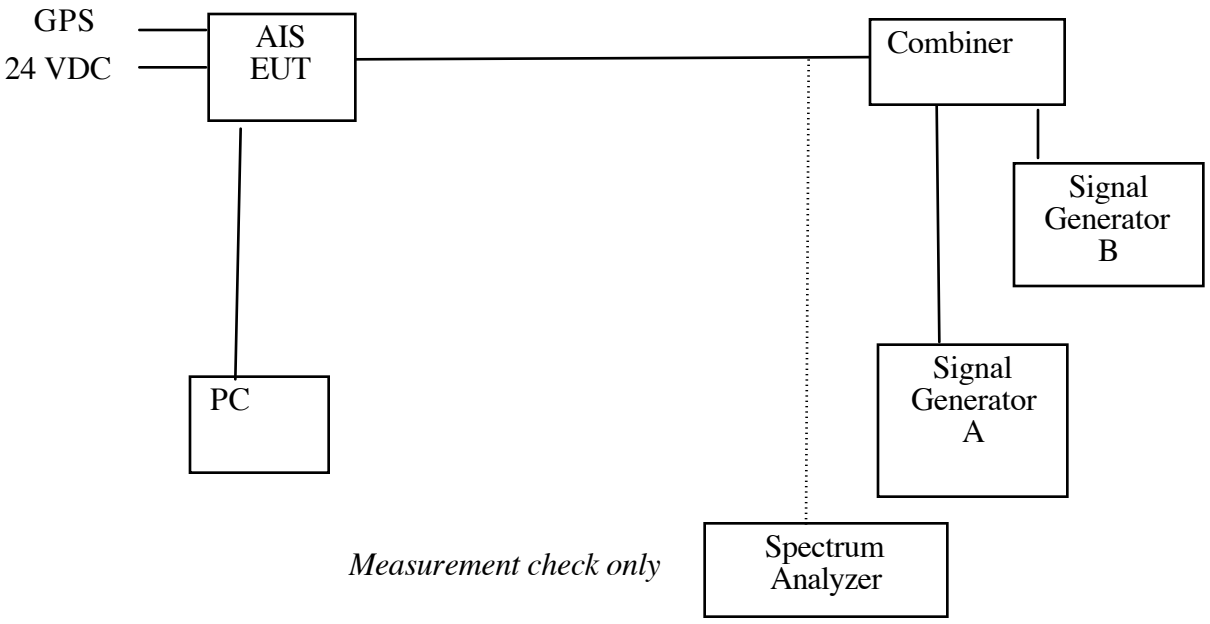
b. Verify PC and AIS operation.
   i. PC is connected to AIS, then sig. gen. A & B are connected to combiner.
   ii. Signal generator is set to provide -104 dBm at EUT (25 kHz).
   iii. Signal generator B set to provide -27 dBm EUT, FM modulated 400 Hz/3kHz.
   iv. Signal generator B set to provide sweeps to EUT per calculations in results (VIII-8).
   v. Spectrum analyzer verifies correct signal levels.

c. Operate PC with standard modulation at default channel.

d. Operate EUT with standard modulation at default channel.

e. Run spurious-rejection software program on PC.
   i. Software determines packet error rate from messages.
   ii. Proceed as in IEC 61993 para. 15.3.8 steps a. – h. if PER >20%.

f. Repeat step a – c. for DSC; generator provides -24-dBm unmodulated from 100kHz to 2GHz.



Block Diagram of Receiver Spurious Rejection Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

9. Intermodulation Rejection.

Specification: PER ≤20% Normal Operation, DSC: .01 BER @ 65dB

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to PC, 24-VDC power, GPS antenna.

b. Verify PC and AIS operation.
   i. PC monitors AIS (A); sig. gen. A – D are connected to combiner.
   ii. Signal generator is set to provide -101 dBm at 162.025 MHz.
   iii. Signal generator B provides -27 dBm at 161.525 MHz, FM modulated at 400 Hz/3kHz.
   iv. Signal generator C provides -27 dBm at163.025, unmodulated.
   v. Signal Generator D set to -15 dBm at 167.750 unmodulated.
   vi. Spectrum analyzer verifies correct signal levels.

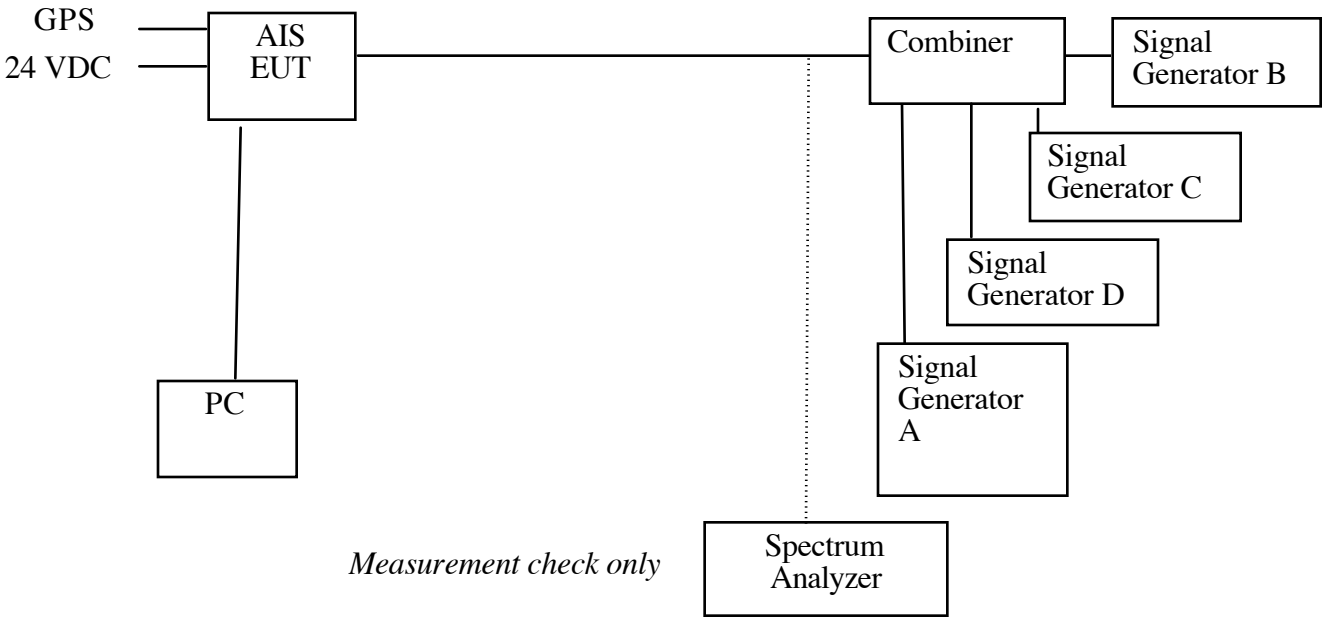
c. Record generator levels necessary for correct signal at EUT.

d. Operate EUT with standard modulation at selected (A) channel.

e. Run intermodulation software program on PC.
   i. Software determines packet error rate from messages.

f. Repeat e. for A = 156.025 MHz, B = 155.525 MHz, C= 157.025 MHz, and D 150.300 MHz.

g. Repeat b. through f. for DSC:
   i. A = -104 dBm, test signal 1, B = -39 dBm, nominal ±50 kHz, and C = -39 dBm, modulated at 400 Hz/±3 kHz, nominal ±100 kHz.



Block Diagram of Receiver Intermodulation Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

10. T/R Switching Time.

Specification: -107 dBm @ 20% PER Normal Operation

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to PC, 24-VDC power, GPS antenna, and 30-dB attenuator.

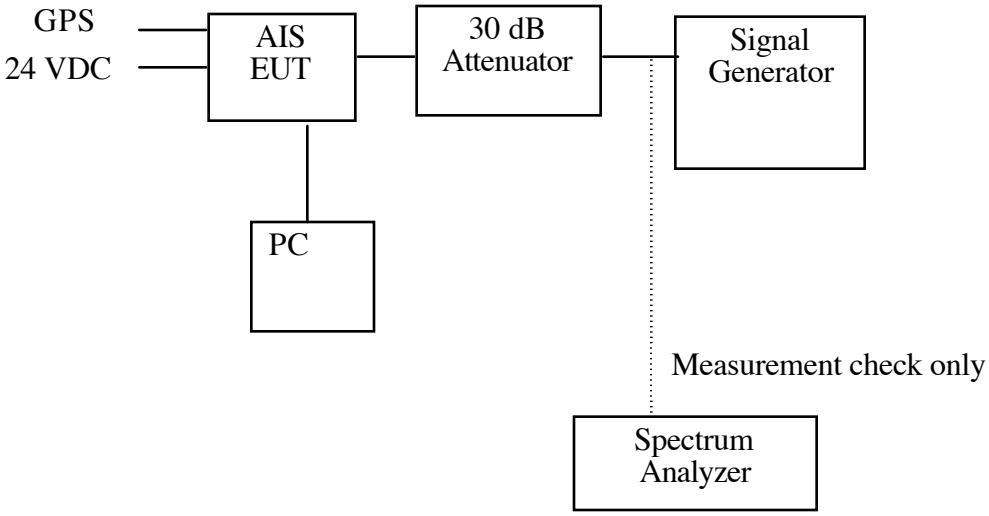
b. Verify PC and AIS operation.
   i. PC is connected to signal generator.
   ii. PC is set to provide -107 dBm at EUT (25 kHz).
   iii. Spectrum analyzer verifies correct signal level.

c. Operate PC with standard modulation at 156.025 MHz.

d. Operate EUT with standard modulation at 156.025 MHz.

e. Verify operation in the slot at default settings and perform sensitivity.

f. Run sensitivity software program on PC.
   i. Software determines packet error rate.



Block Diagram of T/R Switching Time Sensitivity Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

11. Blocking/Desensitization.

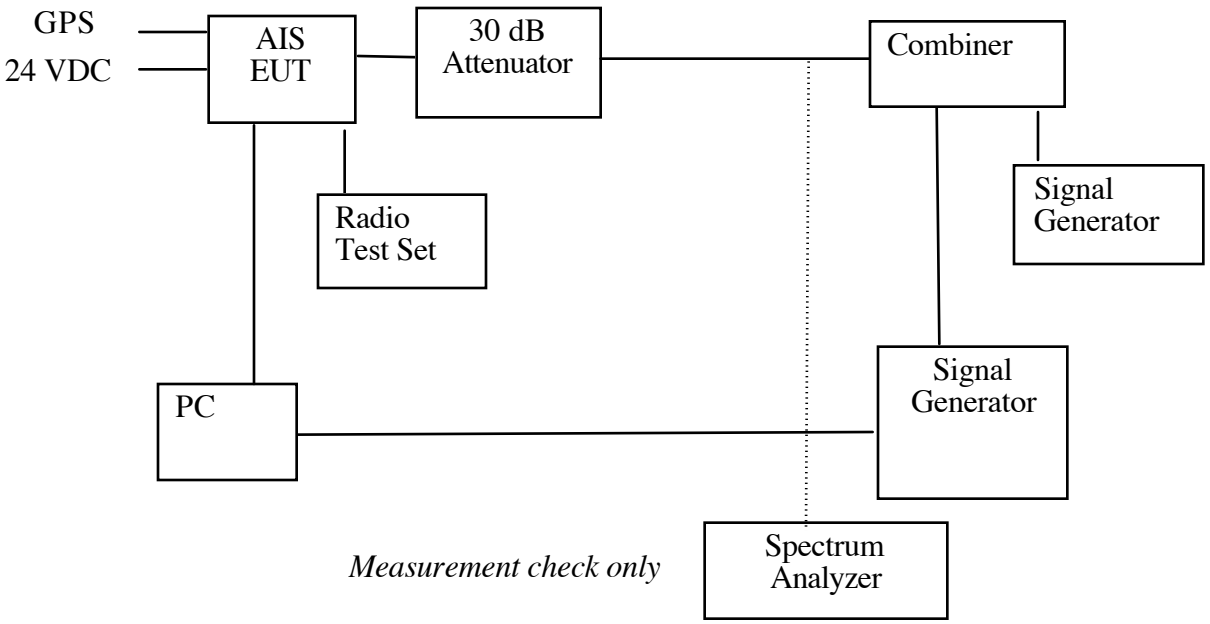
Specification: ≥84 dB @ <.01 BER

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to PC, 24-VDC power, GPS antenna, and 30-dB attenuator.

b. Verify PC and AIS operation.
   i. PC is used as an intentional signal generator.
   ii. PC is set to provide -104 dBm at EUT.
   iii. Signal generator also set to provide -20 dbm to EUT.
   iv. Sweep from -10 MHz to -1 MHz and 1 MHz to 10 MHz relative to nominal frequency.
   v. Spectrum analyzer verifies correct signal level.

c. Operate PC with standard modulation at default channel and test signal 2.

d. Operate EUT with standard modulation at default channel and test signal 2.
   i. Radio test set used for DSC measurements.



Block Diagram of Receiver Blocking Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

12. Power Supply.

Overvoltage Specification: 40 V Extreme Operation

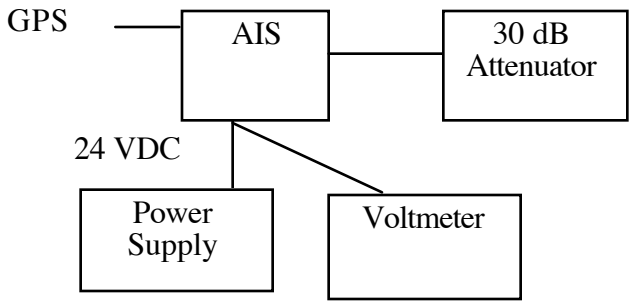
Reverse Polarity: No Damage, Extreme Operation

Voltage Variation: 21.6-31.2 VDC, Extreme Operation

a. Set up EUT and test instrumentation in laboratory.
   i. Connect AIS to 24-VDC power, GPS antenna, and 30-dB attenuator.

b. Verify AIS operation.
   i. Power supply is increased to max and effects noted.
   ii. Polarity is reversed and effects noted.
   iii. Power supply is varied and effects noted.

c. Voltage is verified with voltmeter.



Block Diagram of Power Supply Test

VI. Measurement Procedures for AIS Physical Tests Cont'd:

13. Acoustic.

Specification: ≤60 dBA Normal Operation, No Alarms

a. Set up EUT and test instrumentation in laboratory.

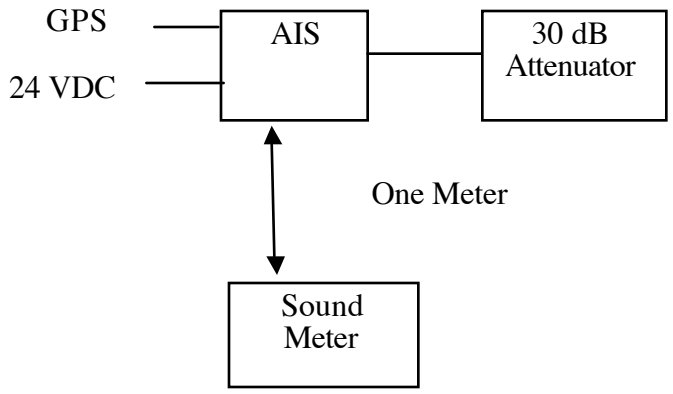
i. Connect AIS to 24-VDC power, GPS antenna, and 30-dB attenuator.

b. Verify AIS and sound meter operation.

i. Sound meter is 1 meter away from each face.

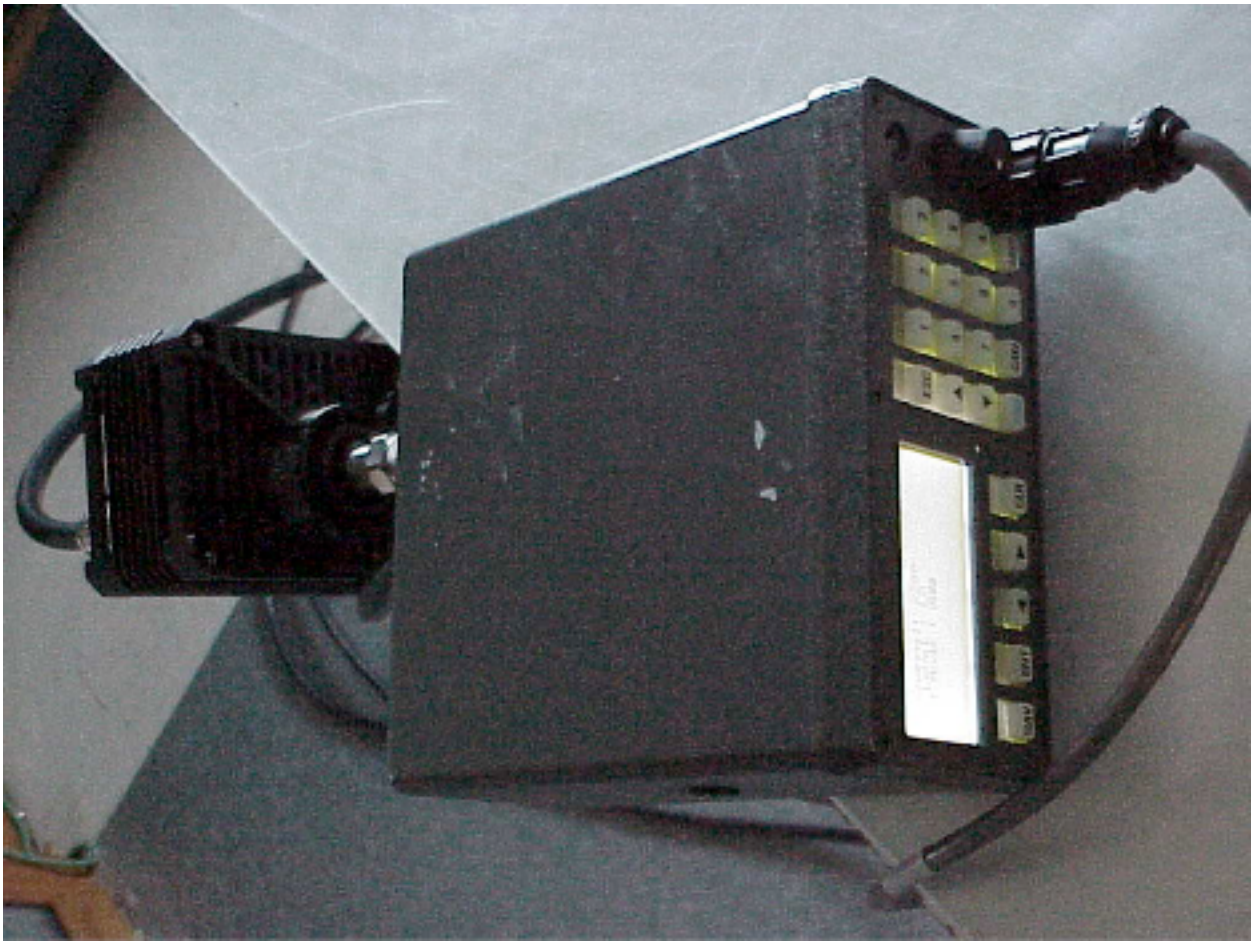
ii. AIS operated normally.

c. Values on sound meter are recorded.



Block Diagram of Acoustic Test

VII. Test Setup Photographs for AIS Physical Tests:



Equipment Under Test

VII. Test Setup Photographs for AIS Physical Tests Cont'd:

EUT and Support Equipment

VII. Test Setup Photographs for AIS Physical Tests Cont'd:

Acoustic Noise Test Setup

VIII. Measurement Results for AIS Physical Tests:

1. Frequency Error.

Frequencies: 156.025,1 57.4125 MHz

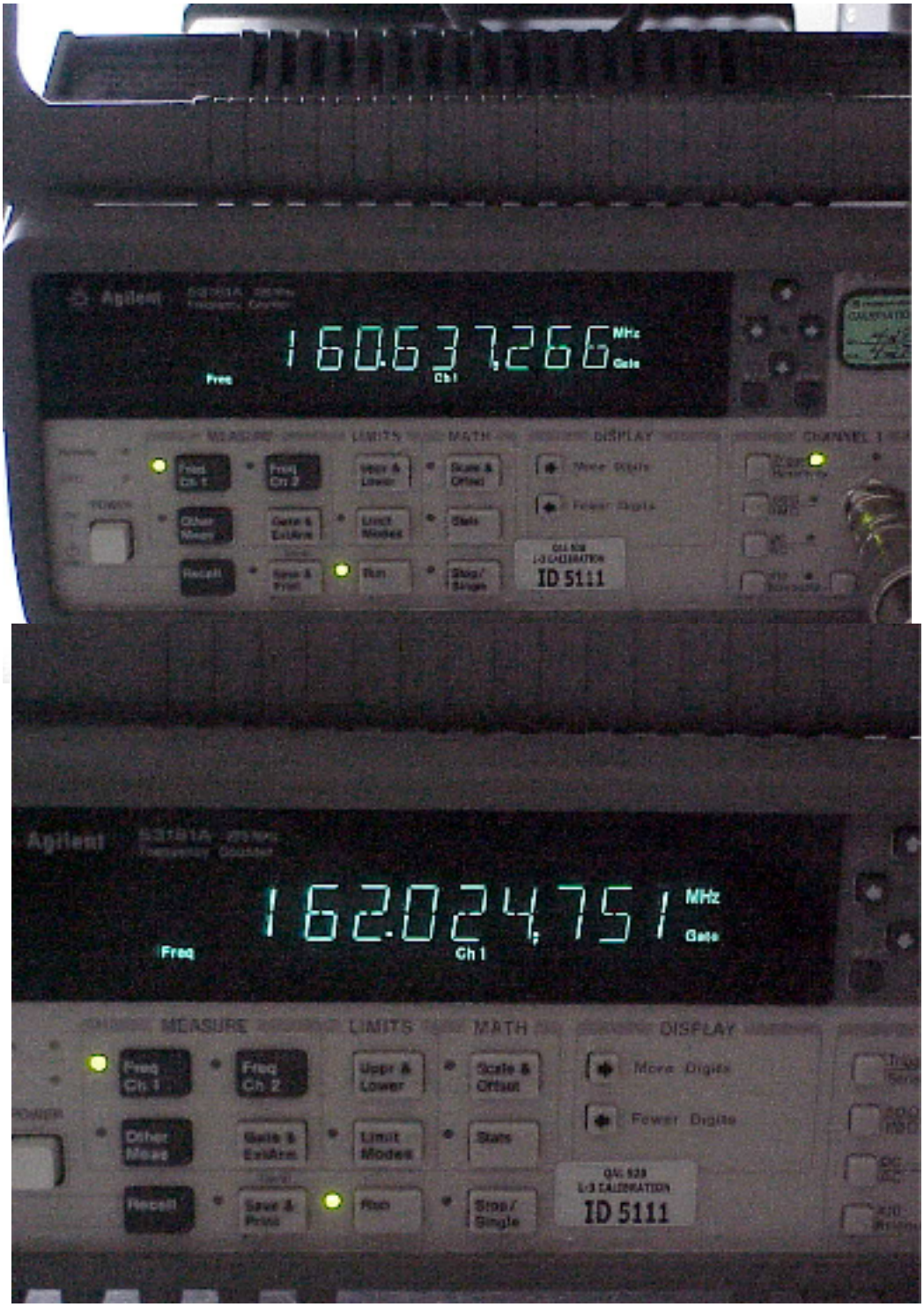
Specification: ±0.5 kHz Normal Operation

VIII. Measurement Results for AIS Physical Tests Cont'd:

1. Frequency Error Cont'd.

Frequencies: 160.6375, 162.025 MHz

Specification: ±0.5 kHz Normal Operation



VIII. Measurement Results for AIS Physical Tests Cont'd:

1. Frequency Error Cont'd. (DSC with Modulation Rate).

Frequencies: 1300 Hz, 2100 Hz

Specification: 1% (13 Hz, 21 Hz) Normal Operation

Frequency: 600.0 Hz (1200 b/s)

Specification: ±30 ppm Normal Operation

Specification	Tolerance	Recorded
1300 Hz	±13 Hz	1299.307 Hz
2100 Hz	±21 Hz	2100.572 Hz
600.0 Hz	±30 ppm	600.0 Hz

VIII. Measurement Results for AIS Physical Tests Cont'd:

2. Carrier Power.

High Specification: 40.96 ±1.5 dBm (12.5W +5.1W/-3.1W) Normal Operation

Low Specification: 33.01 ±1.5 dBm (2W +.8W/-.6W) Normal Operation