



NT-1800 IMO Resolution MSC.148(77) Compliance Report – 1/8

The following is a list of statuses of compliance with the IMO Resolution MSC.148(77) Annex 10 (adopted on 3 June, 2003) for Narrow-Band Direct-Printing Telegraphic Equipment (NAVTEX receivers). The **ALDEN AE-1800** is an OEM version of the **NT-1800**, and both models are identical in electrical and mechanical characteristics.

NOTES:

- (1) The EUT referred to in the document represents the Model **NT-1800** NAVTEX receiver (serial # S05600001, software version 1.0).
- (2) NAVTEX simulators used in the tests: 8502E (s/n 9401/518 kHz, s/n 9403/490 kHz)
- (3) The indication “**OK**” in the Compliance Status column signifies being fully compliant with the applicable requirement in the above resolution.
- (4) The “manual” referred to in the list is the “**ALDEN AE-1800 NAVTEX RECEIVER INSTRUCTION MANUAL**...”

Applicable Paragraph No. MSC.148(77) Annex 10	Compliance Status	Note / Supporting Information
1. INTRODUCTION	OK	The EUT is designed to comply with the provisions of Recommendation ITU-R M.540 and the general requirements specified in IMO Resolution A.694(17) and standards specified in IMO Resolution MSC.148(77) Annex 10, as detailed below and in the following pages.
2. GENERAL	OK	
2.1 System configuration		<p>The EUT system comprises a dedicated 5.6-inch color LCD for NAVTEX text display, two independently operating receivers (518 kHz first receiver, 490/4209.5 kHz second receiver), a printer port (RS-232C port), a non-volatile message memory storing up to 200 messages each containing 500 characters average for each frequency, and an INS port (RS-422 port).</p> <p>The second receiver can be switched between 490 kHz and 4209.5 kHz manually or with a proprietary software command via the INS port.</p> <p>The non-volatile memory's contents can be selectively downloaded to an INS/IBS device using IEC 61162-1 formatted commands.</p>
3. CONTROLS AND INDICATIONS		
3.1. Display of rejected stations and message types	OK	The EUT displays a list of rejected stations and rejected message both at power-up and when a dedicated front panel key REJ is pressed.

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Applicable Paragraph No. MSC.148 (77) Annex 10	Compliance Status	Note / Supporting Information
4. RECEIVERS		
4.1. Receiver configuration, message display priority and simultaneous dual frequency operation	OK	<p>The EUT has a dedicated 518 kHz NAVTEX receiver and a second receiver that receives either 490 kHz or 4209.5 kHz NAVTEX broadcasts, as selected by the user.</p> <p>Both receivers operate simultaneously, and the first receiver has the priority in displaying 518 kHz messages when NAVTEX broadcast occurs on both frequencies at the same time. Second receiver messages are automatically stored in memory while the EUT is receiving currently transmitted 518 kHz messages.</p> <p>The operation of one receiver does not prevent, or interfere with, the operation of the other receiver.</p>
4.2. Receiver sensitivity: below 2 μ V emf for 4% of CER (character error rate)	OK	<p>The sensitivity for displaying messages with CER=00%. was measured to be 1 μV (0 dBμ) or less on 518, 490 and 4209.5 kHz.</p>
5. DISPLAY DEVICE AND PRINTER		
5.1. Minimum No. of characters displayed/line: 32	OK	<p>The EUT displays up to 40 message characters per line across its 5.6" LCD display.</p>
5.2.1. Indication of new NAVTEX message upon its reception until acknowl- edged or until elapse of 24 hours after its receipt.	OK	<p>The EUT is designed to show a new message immediately after its reception by attaching a tag (NEW MESSAGE) to its message ID.</p> <p>The tag can be removed by pressing CLR key to acknowledge the reception and reading of that message or will be automatically removed 24 hours after that message is received.</p>
5.2.2. Display of newly received messages	OK	<p>The EUT shows all new messages in real time as they are received.</p>
5.3. Minimum No. of NAVTEX text lines to be displayed per screen page: 16	OK	<p>The EUT displays up to 18 lines of NAVTEX message characters in addition to one additional line at the top and bottom ends of the screen to indicate receiving status, usable scroll keys, command prompts, warning/caution messages, etc.</p>

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5.4. Ease of message reading under all ambient lighting conditions at normal working distances and viewing angles	OK	<p>The EUT uses a daylight-viewing high contrast color TFT LCD as its display device for ease of viewing at normal angles, and it is backlit with the brightness adjustable in 8 steps for ease of reading text in all ambient lighting conditions.</p> <p>The fonts used to display message characters are approx. 3.5 mm in size and in bold face, making the text readable from more than 2 meters away.</p> <p>Regular size fonts are also user-selectable.</p>
5.5. Indication of forced division of a word by line feed	OK	<p>The EUT displays an internally generated carriage return symbol (↓) at the 40th character position of a line to indicate division of a word forced by a line feed.</p> <p>When output to a printer or an INS device via the EUT's I/O connectors, the symbol is replaced with an underscore (_) (hex 5F); this is described in the following paragraphs of the manual:</p> <ul style="list-style-type: none"> • Page 1-4 paragraph ⑨ • Page 4-12 paragraph <i>NOTE</i> • Page 4-13 paragraph <i>NOTE</i> • Page 4-14 paragraph <i>NOTE</i> • Page 4-15 paragraph <i>NOTE</i> • Page 4-16 paragraph <i>NOTE</i> • Page 7-15 paragraph ⑩ • Page 9-2 paragraph (14)
5.6. Delineation between adjacent NAVTEX messages on screen and on printout	OK	<ul style="list-style-type: none"> • On-Screen Delineation <p>The EUT inserts visual indication “STORED (CER=XX%)” at the end of each message, followed by 1 line feed.</p> <ul style="list-style-type: none"> • Printout Delineation <p>The EUT prints indication “STORED (CER=XX%)” at the end of each message, and then feeds 1 line before starting to print next message.</p>
5.7. Indication of corrupt characters	OK	<p>The EUT shows corrupt (error) characters with asterisks (*).</p>

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Applicable Paragraph No. MSC.148 (77) Annex 10	Compliance Status	Note / Supporting Information
5.8. Output to printer		A serial printer, such as the optional PR-900 , can be plugged into the RS-232C connector on the EUT's rear panel.
5.8.1. All currently receiving messages	OK	<p>Realtime printing of a currently receiving NAVTEX message is enabled when the following setting is made via the menu system.</p> <p>SYSTEM MENU → 6:SELECT OUTPUT MESSAGES → 1:RECEIVING MESSAGES → OFF ON ENT</p>
5.8.2 All stored messages	OK	<p>Printing of all messages stored in the message memory can be accomplished by making the following setting via the menu system:</p> <p>SYSTEM MENU → 6:SELECT OUTPUT MESSAGES → 2:ALL STORED MSG ENT</p>
5.8.3 All messages specified by frequency, station ID or message type	OK	<ul style="list-style-type: none"> Printing of messages specified by frequency can be accomplished by making the following setting via the menu system: SYSTEM MENU → 6:SELECT OUTPUT MESSAGES → 3:MSG SELECTED BY FREQUENCY ENT Printing of messages specified by station ID can be accomplished by making the following setting via the menu system: SYSTEM MENU → 6:SELECT OUTPUT MESSAGES → 4:MSG SELECTED BY STATION ENT Printing of messages specified by message ID can be accomplished by making the following setting via the menu system: SYSTEM MENU → 6:SELECT OUTPUT MESSAGES → 5:MSG SELECTED BY TYPE ENT

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Applicable Paragraph No. MSC.148 (77) Annex 10	Compliance Status	Note / Supporting Information
5.8.4 All currently displayed messages	OK	Printing of all displayed messages can be accomplished by making the following setting via the menu system: SYSTEM MENU → 6: SELECT OUTPUT MESSAGES → 6: DISPLAYED MSG ENT
5.8.5. Selected messages	OK	Printing of messages selected on the display can be accomplished by making the following setting via the menu system: SYSTEM MENU → 6: SELECT OUTPUT MESSAGES → 7: SELECTED MSG ENT
6. STORAGE 6.1. Non-volatile message memory		
6.1.1. (Test 1) Storage capacity: at least 200 messages of average 500 characters	OK	The following test procedure is employed: A special small software routine is embedded in the EUT's system to instantly generate a total of 200 simulated NAVTEX messages of 500 characters each for the test on each NAVTEX receiver. It is then visually checked whether or not all the messages were stored in memory.
(Test 2) Inhibition of user-initiated erasure of stored messages	OK	1. Software <ul style="list-style-type: none"> No menu option is available for the user to erase any stored message. Resetting the system does not clear the message memory. 2. Hardware <ul style="list-style-type: none"> Removing power from the EUT while in operation does not clear the message memory.
(Test 3) Automatic overwriting of oldest message after storage to full capacity	OK	The following test procedure is employed: Upon completion of (Test 1) to load a total of 200 simulated messages into memory, an additional new message was fed to the receiver from the NAVTEX simulators. It was then checked whether or not the oldest (1st) message was automatically deleted from memory.

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Applicable Paragraph No. MSC.148 (77) Annex 10	Compliance Status	Note / Supporting Information
6.1.2. (Test 1) Tagging stored individual message for permanent retention in memory	OK	Pressing STO MSG on the EUT's keypad attaches a PROTECTED tag to the ID of the desired message on display to indicate that the tagged message is protected from automatic time– based erasure.
(Test 2) Maximum storage capacity for tagged messages: 25% of message memory	OK	The EUT can store up to 50 tagged messages of 500 characters each. Attempting to tag an additional message causes a warning message prompt “ STORAGE LIMIT IS REACHED ! ” to show up blinking for a few seconds at the bottom command/prompt line.
(Test 3) User–initiated removal of message tag	OK	Pressing CLR prompts the user to confirm the execution of the action. Selecting option “ YES ” removes the tag.
(Test 4) Overwriting of message after removal of tag	OK	<p>The following test procedure is used:</p> <p>The oldest message (#1/200) is tagged first. Then the tag is *1 manually removed and new messages are fed to each receiver from the appropriate NAVTEX simulator.</p> <p>It is then checked whether the oldest message is automatically erased.</p> <p>*1: Press CLR to remove the tag. User acknowledgement is required. See paragraph 3.8.3 on page 3–6 of the manual for removal procedure.</p>
6.2. Message ID		
6.2.1. Minimum capacity of storage: 200 for each receiver	OK	A message ID and its associated message are inseparable in memory management. Storing an ID also stores its corresponding message together. Since the EUT can hold up to 200 messages, their IDs are also automatically stored in memory at the same time.
6.2.2. (Test 1) Automatic erasure of IDs after 60 to 70 hours of time passage	OK	<p>The following test procedure is used:</p> <p>Step (1)</p> <p>The EUT is switched on and left unattended for 59 hours continuously with some messages stored. Then it is checked whether the oldest message still remained in memory.</p> <p>Step (2)</p> <p>Exactly after 61 hours passed, it is checked whether the oldest memory is erased.</p>

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6.2.2. (Test 2) Automatic erasure of oldest ID after storage to full capacity	OK	<p>This test is conducted at the same time as (Test 1) in paragraph 6.1.1, since a message ID and its associated message are inseparably handled in memory management.</p> <p>It is checked whether or not the oldest message (together with its ID) was erased when an additional new message is loaded into the receiver after a total of exactly 200 messages are stored.</p>
6.2.3 Storage of satisfactorily received messages only (CER <4%)	OK	<p>The EUT is designed to comply with IEC 61097-6 2nd Edition, paragraph 5.3.6, as follows:</p> <ul style="list-style-type: none"> • The EUT will store messages that are received with a character error rate (CER) of $\geq 4\%$ and $\leq 33\%$, and will replace those messages with subsequently received messages of the same IDs if they have smaller CERs. • If a new message is received with a CER $< 4\%$, it will store the message together with its ID and will not receive a subsequently transmitted message of the same ID.
6.3. Programmable control memories		
6.3.1. Retention of B₁ and B₂ characters for less than 6 hours of continuous power shutdown	OK	<p>The EUT is designed to retain all settings of selected/rejected stations and message types under a sustained power shutdown condition for at least consecutive 10 days.</p> <p>The following test procedure is employed:</p> <ol style="list-style-type: none"> (1) The current selection/rejection settings are noted. (2) The EUT is turned off and left in that condition for 6 consecutive hours. (3) It is checked whether or not the same settings are retained in memory.
7. ALARMS		
7.1. (Test 1) Indication of SAR	OK	<p>The EUT is designed to audibly (with a repetitive beep) and visually (with red colored ID, ALARM tag and text) warns the user immediately on receiving an SAR message on either the first or second receiver.</p>
(Test 2) Manual reset	OK	<p>The SAR alarm can only be acknowledged and reset by pressing  or with an ACK command (IEC 61162-1) fed via the EUT's INS (RS-422) port.</p>

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Applicable Paragraph No. MSC.148(77) Annex 10	Compliance Status	Note / Supporting Information
8. TEST FACILITIES		
8.1. Provision for internally testing receivers, display and memory	OK	<p>The EUT has a self-diagnostic function that can be activated by the user via the unit's menu system. The following components are tested:</p> <ul style="list-style-type: none"> • Receivers (checking receiving functions on 518 kHz & 490/4209.5 kHz) • Display (showing all internally generated character fonts) • ROM (checking software integrity) • RAM (checking store/recall functions) • Alarm (checking audible alarm function) • Keypad dimmer lamps
9. INTERFACES		
9.1. At least one interface for transfer of message data from memory to INS/IBS	OK	<p>The EUT has an INS port accessible from the rear panel RS-422 connector, through which the stored data can be selectively downloaded in IEC 61162-1 format to an INS/IBS or other communications device.</p>
9.2. Compliance of all I/O interfaces with IEC 61162	OK	<p>In addition to the RS-422 port, the EUT has an RS-232C (printer) interface and an auxiliary interface termed "I/O DATA," all accessible from their corresponding rear panel connectors.</p> <p>The port parameters (i.e. bit format, baud rate and protocol) are selectable to comply with relevant IEC 61162-1 and IEC 61162-2 requirements.</p>
9.3. Built-in printer interface	OK	<p>The EUT has an RS-232C serial interface as standard that can be used to connect a serial printer, such as an optional PR-900 NAVTEX printer, for a realtime printing of NAVTEX messages or for an off-line, selective printout of stored messages on demand from an INS device using IEC 61162-1 formatted command sentences.</p>



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FC701-1-3

January 23, 2009

Declaration of Software Compatibility with **Type-Approved Existing NAVTEX Receiver**

To: The United States Federal Communications Commission

This is to declare that the software (version 1.0 and above) installed in the EUT: NAVTEX Receiver (Model **ALDEN AE-1800**) is compatible with the software in the type-approved **NT-1800** NAVTEX Receiver in terms of all user interface specifications so that the operating procedure is exactly the same for both models, fully complying with the performance and technical standards specified in the IMO Resolution MSC.148(77) and IEC 61097-6 Edition 2.

Yours faithfully,

Japan Marina Company Limited

Hisashi Ichikawa, Director-Technical Manager



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PHONE: (03)3461-3606 FAX: (03)3496-2078

FC701-1-4

January 23, 2009

Declaration of Compliance with IMO Resolution MSC.148(77)

To: The United States Federal Communications Commission

This is to declare that the EUT: NAVTEX Receiver (Model **ALDEN AE-1800**) complies fully with the performance standards stipulated in the IMO Resolution MSC.148(77) adopted on 3rd June, 2003 for the reception of NAVTEX broadcasts on 490, 518 and 4209.5 kHz.

Yours faithfully,

Japan Marina Company Limited

Hisashi Ichikawa, Director-Technical Manager



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FC701-1-5

January 23, 2009

Declaration of Compliance with **IMO Resolution A.694(17)**

To: The United States Federal Communications Commission

This is to declare that the EUT: NAVTEX Receiver (Model **ALDEN AE-1800**) complies fully with the general requirements stipulated in the IMO Resolution A.694(17) adopted on 6th November, 1991 for the GMDSS and electronic navigational aids.

Yours faithfully,

Japan Marina Company Limited

Hisashi Ichikawa, Director-Technical Manager



Japan Marina Co., Ltd.

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FC701-1-6

January 23, 2009

Declaration of Compliance with **IMO Resolution A.813(19)**

To: The United States Federal Communications Commission

This is to declare that the EUT: NAVTEX Receiver (Model **AE-1800**) complies fully with the general EMC requirements stipulated in the IMO Resolution A.813(19) 1995 for electrical and electronic ship's equipment.

Yours faithfully,

Japan Marina Company Limited

Hisashi Ichikawa, Director-Technical Manager



Japan Marina Co., Ltd.

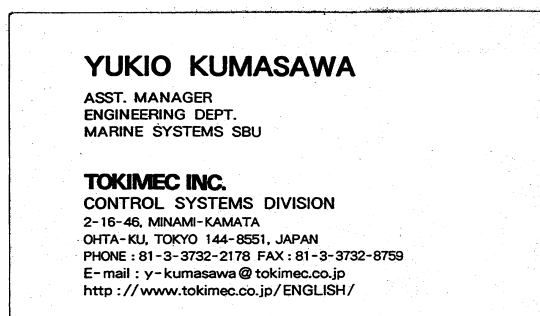
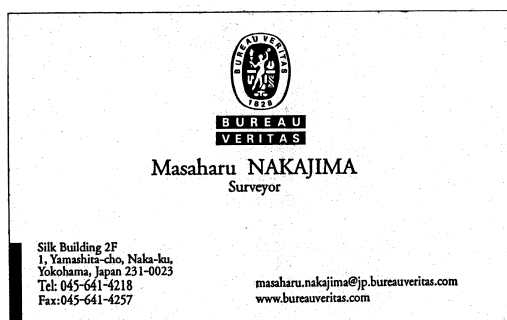
36-2-1001 UDAGAWA-CHO, SHIBUYA-KU, TOKYO 150-0042, JAPAN
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Low Temperature Tests Report

for

NAVTEX Antenna **Model ANT-2000M**

1. Test Standards Applied: IEC 60945 Ed.4.0:2002
2. Equipment under Test (EUT):
 - EUT Manufacturer: Japan Marina Company Limited (JMC)
 - IEC Equipment Category: Exposed Equipment
 - Type of Product: Active Antenna for NAVTEX Receiver **NT-1800**
 - Model Name and Serial No.: **ANT-2000M# S05600001-2**
3. Test Site: TOKIMEC Inc. Environmental Test Laboratory
2-16-46 Minami-Kamata, Ohta-Ku, Tokyo 144-8551
PHONE: 03-3732-2178 FAX: 03-3732-8759
4. Test Periods and Ambient Conditions:
 - Periods: 16:00 (Nov. 22, 2007) to 11:13 (Nov. 23, 2007)
 - Ambient Conditions: 22°C, 20% RH (Nov. 22), 22°C, 20% RH (Nov. 23)
5. Test Engineers: Yukio Kumasawa, Engineering Dept., TOKIMEC
Hisashi Ichikawa, Technical Manager, JMC
*¹Masaharu Nakajima, Surveyor, BV Japan
*¹*Partially participated as witness*



6. Test Results Summary

The tests were conducted with the specified EUT (**ANT-2000M**) placed inside the constant temperature chamber (ESPEC Corp. PWL-3KP, calibration valid till July 2008) and connected to an **NT-1800** placed outside the chamber, by H. Ichikawa, JMC under the supervision of Y. Kumasawa, TOKIMEC, and partially witnessed by M. Nakajima, Bureau Veritas (BV). The EUT was powered at +8V (490 and 518 kHz) or 12V (4209.5 kHz) by the **NT-1800** through its coaxial cable.



6. Test Results Summary (*continued – 2/5*)

Test Schedule:

- November 22, 16:00: Test chamber was programmed to start lowering the temperature toward -25°C .
- November 23, 08:50: The performance test started with the NT-1800 under normal power (24V) condition after confirming that the temperature was maintained at -25°C with the EUT still inside the chamber.
- November 23, 09:05: The performance check was made with the NT-1800 under extreme power (21.6V and 31.2V) condition.
- November 23, 09:18: The performance check was finished.
- November 23, 11:13: The performance test was finished.

Test Results:

Type of Test	Test Method (IEC 60945–2002) Paragraph #	*1Receiver Performance (Call Sensitivity)				Evaluation Results
		Input To Antenna (dBμ)			CER (%)	
Low Temp. (−25°C)	5.2.1 5.2.2 8.4.2.6	518 kHz	Normal Power	6	0	Passed
			Extreme Power	6	0	
		490 kHz	Normal Power	6	0	Passed
			Extreme Power	6	0	
		4209.5 kHz	Normal Power	6	0	Passed
			Extreme Power	6	0	

*1: Standard test signal (STS) defined under IEC 61097-6 Ed. 2 was used as input to measure CER.

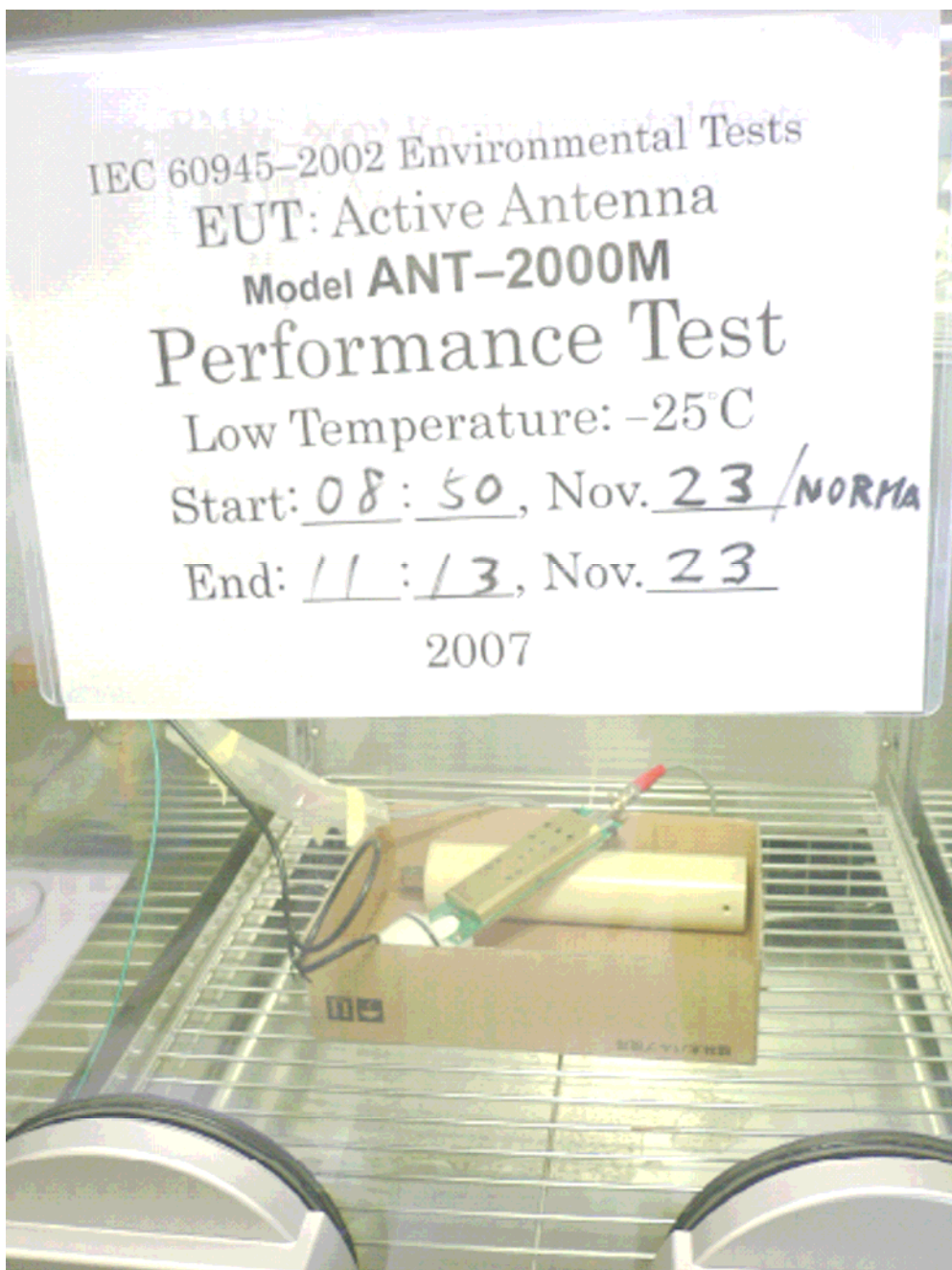
Photo-12: Temperature Readout on Test Chamber's Control Panel





6. Test Results Summary (*continued – 3/5*)

Photo-13: EUT Inside Constant Temperature–Humidity Chamber during Performance Test under Normal Power Condition

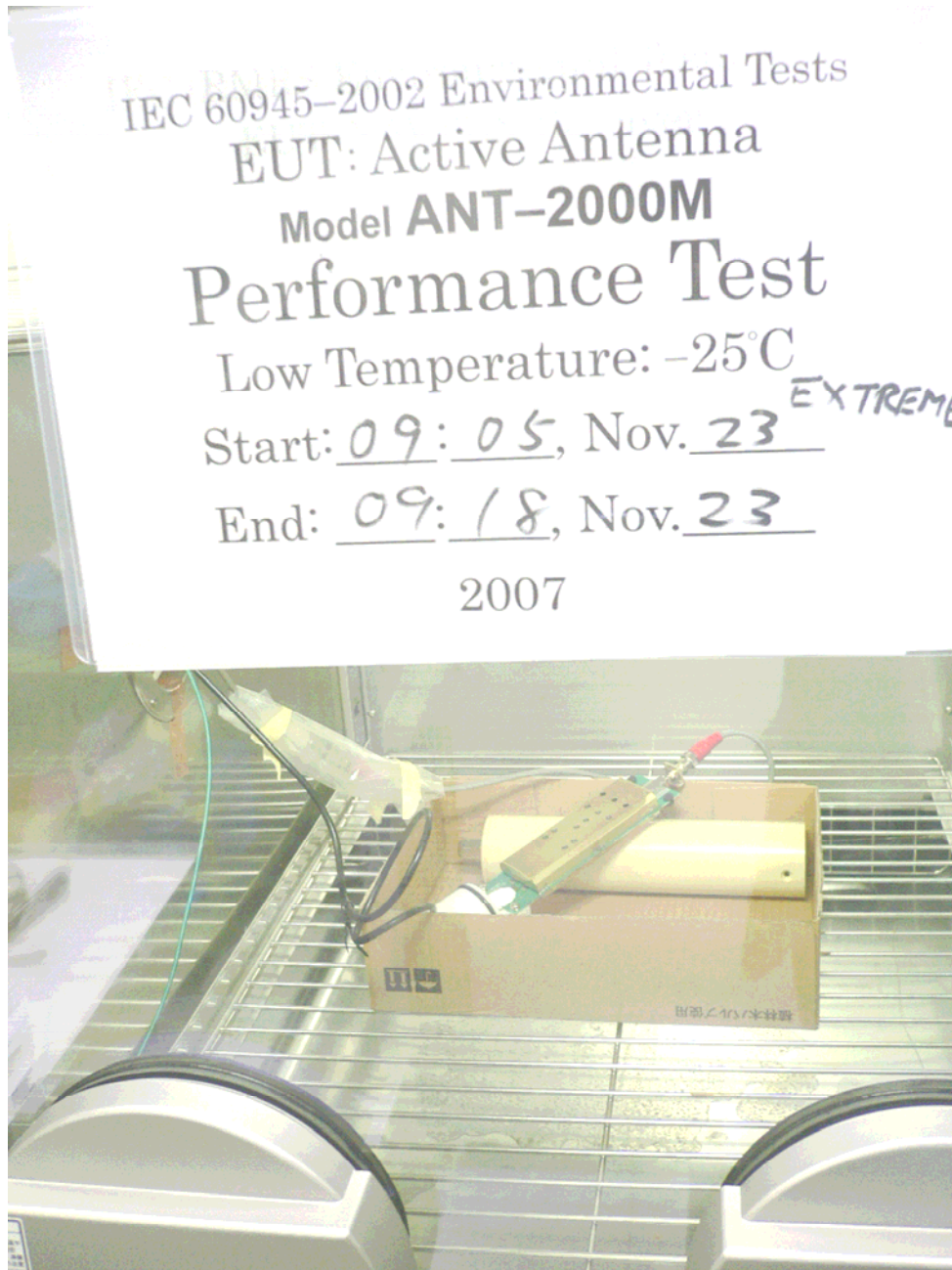


NOTE: EUT's case was removed to allow connections to NT-1800 for testing.



6. Test Results Summary (*continued – 4/5*)

Photo-14: EUT Inside Constant Temperature–Humidity Chamber during Performance Check under Extreme Power Condition





6. Test Results Summary (*continued – 5/5*)

Photo-15: Test System for Testing EUT (**ANT-2000M**) at (-25°C)
November 23, 2007 at TOKIMEC's Environmental Test Laboratory



NOTE: The EUT was placed inside the test chamber behind the computers, and a coaxial cable was used to connect the EUT and the NT-1800 to test the EUT's performance during the low temperature test.