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# INTERNATIONAL STANDARD



Global maritime distress and safety system (GMDSS) – Part 6: Narrowband direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)

IEC 61097-6:2005

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### CONTENTS

F	OREW	ORD	4					
I	INTRODUCTION							
	NTROD	UCTION (to Amendment 1)	6					
I								
1	Sco	7						
2		pe native references						
3		nitions and abbreviations						
J		Definitions						
	3.1		-					
4	3.2	Abbreviations						
4		Performance requirements						
	4.1	General						
	4.2	General characteristics						
	4.3 4.4	Specific characteristics						
	4.4 4.5	Receiver						
	4.5	Display						
	4.7	Integral printer						
	4.8	NAVTEX message memory						
	4.9	Power supplies	10					
	4.10							
5	5 Tes	conditions						
	5.1	General						
	5.2	Performance test						
		Performance check.						
	5.4	Normal and extreme conditions						
	5.5	Standard test signal						
	5.6	Standard test file	20					
	5.7	Arrangement for test signal applied to the receiver input	20					
	5.8	Artificial antennas	20					
	5.9	Measurement uncertainty	20					
	5.10	Interpretations of measurement results	21					
	5.11	11 Conducted and radiated RF immunity tests exclusion bands						
		12 Narrow band responses on receivers						
6	6 Env	Environmental tests required						
7	' Seri	al interface tests	22					
	7.1	INS input electrical tests	22					
	7.2	INS input performance tests	22					
	7.3	INS output electrical tests	22					
	7.4	INS output performance tests						
	7.5	Printer output electrical tests						
	7.6	Printer output performance tests						
8	3 Gen	eral and signal processing tests	23					
	8.1	Exclusion of stations						
	8.2	Exclusion of message categories	23					

	8.3	Receiver test facility	24
	8.4	Search and rescue (SAR) alarm provision and reset	24
	8.5	Additional alarms	24
9	Rece	eiver tests	24
	9.1	Call sensitivity	25
	9.2	Interference rejection and blocking immunity	25
	9.3	Co-channel rejection	26
	9.4	Intermodulation	26
	9.5	Off-frequency transmitter	27
	9.6	Simultaneous operation on several receive frequencies	27
	9.7	Protection of input circuits	27
10	) Print	er tests	28
	10.1	Basic requirements	28
	10.2	Paper roll end alarm and storage inhibition	28
	10.3	Automatic line feed indication and paper feed	28
	10.4	Mutilated character indication	29
	10.5	Tests of technical characteristics (ITU-R Recommendation M.540)	29
11	Mem	ory tests	
	11.1	Internal storage, message tagging and erasure of oldest message identifications	
	11.2	Erasure of message identifications/storage time	
		Storage of message identifications	
		Reception of messages with character errors	
		Unsatisfactory reception	
	11.6	Power-off check	
		Brown-out test	
		UTC handling check	
http12	2stMisc	ellaneous tests datandarda/icc/ac65c2b7.8cdf.4c80.9bfb.d38458713f86/icc.61	
	12.1	Spurious emissions	35
	12.2	Equipment manuals – checks of the manufacturer's documentation	35
	12.3	Marking and identification	35
Aı	nnex A	(informative) Block diagrams of NAVTEX systems	
Aı	nnex B	(normative) Definition of satisfactory reception of a message	
Aı	nnex C	(informative) IEC 61162 sentences for NAVTEX operation	
Aı	nnex D	(normative) Manufacturer's declarations/equipment manual	42
Fi	gure A	1 – EUT with an integral printing device	
Fi	gure A	2 – EUT with an integral display device	
Fi	gure A	3 – EUT black box receiver	37
		- Alarm conditions signaled using the ALR sentence formatter	
Та	able 2 -	- Extreme power supply variation	18
Та	able 3 -	- Unwanted signal levels	25
Та	able 4 -	- Intermodulation frequency pairs	26

#### INTERNATIONAL ELECTROTECHNICAL COMMISSION

#### GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS) -

#### Part 6: Narrowband direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)

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The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience. A vertical line in the margin shows where the base publication has been modified by amendment 1. Additions and deletions are displayed in red, with deletions being struck through.

International Standard IEC 61097-6 has been prepared by IEC technical committee 80: Maritime navigation and radiocommunication equipment and systems.

- 5 -

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 61097 consists of the following parts under the general title *Global maritime distress and* safety system (GMDSS):

- Part 1: Radar transponder Marine search and rescue (SART) Operational and performance requirements, methods of testing and required test results
- Part 2: COSPAS-SARSAT EPIRB Satellite emergency position indicating radio beacon operating on 406 MHz Operational and performance requirements, methods of testing and required test results
- Part 3: Digital selective calling (DSC) equipment Operational and performance requirements, methods of testing and required testing results
- Part 4: INMARSAT-C ship earth station and INMARSAT enhanced group call (EGC) equipment Operational and performance requirements, methods of testing and required test results
- Part 5: Inmarsat-E Emergency position indicating radio beacon (EPIRB) operating through the Inmarsat system Operational and performance requirements, methods of testing and required test results
- Part 6: Narrowband direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)
- Part 7: Shipborne VHF radiotelephone transmitter and receiver Operational and performance requirements, methods of testing and required test results
- Part 8: Shipborne watchkeeping receivers for the reception of digital selective calling (DSC) in the maritime MF, MF/HF and VHF bands Operational and performance requirements, methods of testing and required test results
- Part 9: Shipborne transmitters and receivers for use in the MF and HF bands suitable for telephony, digital selective calling (DSC) and narrow band direct printing (NBDP) Operational and performance requirements, methods of testing and required test
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  - Part 10: Inmarsat-B ship earth station equipment Operational and performance requirements, methods of testing and required test results
  - Part 12: Survival craft portable two-way VHF radiotelephone apparatus Operational and performance requirements, methods of testing and required test results
  - Part 13: Inmarsat F77 ship earth station equipment Operational and performance requirements, methods of testing and required test results

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this standard may be issued at a later date.

IMPORTANT – The "colour inside" logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this publication using a colour printer.

#### INTRODUCTION

NAVTEX provides shipping with navigational and meteorological warnings and urgent information by automatic display and/or print out from a dedicated receiver.

NAVTEX is a component of the IMO/IHO World-Wide Navigational Warning Service (WWNWS) defined by IMO Assembly Resolution A.706(17), as amended, and the WMO Manual on Marine Meteorological Services, Part Ibis, Provision of warnings and weather and sea bulletins (GMDSS application). It has been included as an element of the Global Maritime Distress and Safety System (GMDSS).

The original NAVTEX specification allowed for equipment with integral printers and precluded the fitting of equipment which relied on other ways of recording and displaying NAVTEX data. The use of Liquid Crystal Displays and other Visual Display Units is now ubiquitous on ships' bridges and this revision of the specification allows for their use in displaying NAVTEX data.

As a result of the final cessation of the distresss watch on 500 kHz in 1999 the frequency 490 kHz became available for use as a national NAVTEX channel and this has now been widely implemented around the world. This NAVTEX specification therefore requires simultaneous operation on an additional channel to the international channel of 518 kHz.

IMO Resolution MSC.148(77) states that the equipment should comprise radio receivers, a signal processor and:

- a) an integrated printing device; or
- b) a dedicated display device, printer output port and a non-volatile message memory; or
- c) a connection to an integrated navigation system and a non-volatile message memory.

#### **Document Preview**

#### <u>IEC 61097-6:2005</u>

https://standards.iteh.ai/catalog/standards/ieINTRODUCTION<sup>80-9bfa-d38458713f86/iec-61097-6-2005</sup> (to Amendment 1)

The amendment removes the description in Annex C of the sentences NRX and NRM. These sentences are now described in IEC 61162-1 (see NOTE below).

NOTE Applies as of edition 4 (2010).

#### GLOBAL MARITIME DISTRESS AND SAFETY SYSTEM (GMDSS) –

#### Part 6: Narrowband direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)

#### 1 Scope

This part of IEC 61097 specifies the minimum performance requirements, technical characteristics and type-testing requirements for narrowband telegraph equipment for the reception of navigational and meteorological information as required by Regulation IV/7.1.4 of the 1988 amendments to the 1974 International Convention for Safety of Life at Sea (SOLAS), and which is associated with IEC 60945. When a requirement in this standard is different from IEC 60945, the requirement in this standard takes precedence.

This standard incorporates the performance standards of IMO Resolution MSC.148(77), the technical characteristics of ITU-R Recommendation M.540, takes account of the IMO Resolution A.694(17) and conforms with the ITU Radio Regulations where applicable.

All text of this standard, whose meaning is identical to that in IMO Resolution MSC.148(77) and ITU-R Recommendation M.540 will be printed in *italics* and the Resolution/Recommendation and paragraph number indicated between brackets.

#### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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IEC 60945, Marine navigation and radio communication equipment – General requirements – Methods of testing and required test results

IEC 61162-1, Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 1: Single talker and multiple listeners

IEC 61162-2; Maritime navigation and radiocommunication equipment and systems – Digital interfaces – Part 2: Single talker and multiple listeners, high-speed transmission

IMO Safety of Life at Sea (SOLAS) Convention (1974), as amended (GMDSS)

IMO Resolution A.694(17) (1991) General requirements for shipborne radio equipment forming part of the global maritime distress and safety system (GMDSS) and for electronic navigational aids

IMO Resolution MSC.148(77) (2003) Revised performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)

IMO Publication – NAVTEX Manual

IMO Resolution MSC/Circ.1122 Adoption of the revised NAVTEX manual

ITU-R Recommendation M.540-2:1990, Operational and technical characteristics for an automated direct printing telegraph system for promulgation of navigational and meteorological warnings and urgent information to ships

ITU-R Recommendation M.625-3:1995, *Direct-printing telegraph equipment employing automatic identification in the maritime mobile service* 

#### 3 Definitions and abbreviations

For the purposes of this document, the following definitions and abbreviations apply.

#### 3.1 Definitions

#### 3.1.1

#### LORAN-C

long range radio-navigation system operating on an assigned frequency of 100 kHz

#### 3.1.2

NAVTEX

system for the broadcast and automatic reception of maritime safety information by means of narrow-band telegraphy

#### 3.1.3

#### Test script

### iTeh Standards

text file containing a number of NAVTEX messages formatted as defined in 5.5. The STF is a particular example of a test script

#### 3.2 Abbreviations

### Abbreviations Document Preview

ASCII American Standard Code for Information Interchange

CER character error rate <u>IEC 61097-6:2005</u>

http EMC indards.itelelectromagnetic compatibility 2b7-8edf-4c80-9bfa-d38458713f86/iec-61097-6-2005

- EUT equipment under test
- HMI human-machine interface
- INS integrated navigation system
- IMO International Maritime Organization
- ITU International Telecommunication Union
- PC performance check
- PT performance test
- RTC real time clock
- SAR search and rescue
- STF standard test file
- STS standard test signal
- USB Universal Serial Bus
- UTC Co-ordinated Universal Time

#### 4 **Performance requirements**

#### 4.1 General

(148/A.1.1) The equipment, in addition to meeting the requirements of the Radio Regulations, the provisions of Recommendation ITU-R M.540 applicable to shipborne equipment and the general requirements set out in resolution A.694(17), and specified in IEC 60945 shall comply with the revised IMO performance standards for NAVTEX equipment Resolution MSC 148(77).

(148/A.2.1) The equipment shall comprise radio receivers, a signal processor and: either

- a) an integrated printing device; or
- b) a dedicated display device, printer output port and a non-volatile message memory; or

NOTE Where there is no printer, the dedicated display device shall be able to be located in the position from which the ship is normally navigated.

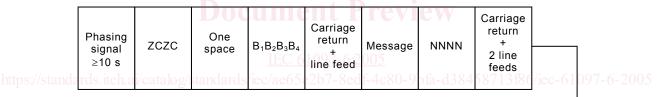
c) a connection to an integrated navigation system (INS) and a non-volatile message memory.

Examples of NAVTEX systems are given in Annex A.

#### 4.2 General characteristics

(540/AII.2) The equipment shall be capable of receiving messages in *the collective B-mode of the direct printing system specified in ITU-R Recommendation M.*625, Annex I,4.

(540/AII.3) *The technical format of the transmission* shall be in accordance with ITU-R Recommendation M.540, Annex II,3 as follows:



//							//	
Phasing signal ≥5 s	zczc	One space	B' <sub>1</sub> B' <sub>2</sub> B' <sub>3</sub> B' <sub>4</sub>	Carriage return & line feed	Message	NNNN	Carriage return + 2 line feeds	End of emissions idle signal $\cdot \alpha \cdot \alpha \dots \alpha$ $\ge 2 s$

where

ZCZC defines the end of the phasing period

 $B_1$  character is a letter (A-Z) identifying the transmitter coverage area.

 $B_2$  character is a letter (A-Z) for each type of message as follows:

- A navigational warning
- B meteorological warning
- C ice report
- D search and rescue information/piracy and armed robbery
- E meteorological forecast

- F pilot message
- G AIS
- H LORAN-C message
- I reserved presently not used
- J SATNAV message
- K other electronic navigational aid system message
- L navigational warning (additional)
- M to Y reserved presently not used
- Z QRU (no message on hand)

 $B_3B_4$  characters are the serial number of the message between 01 and 99.

#### 4.3 Specific characteristics

#### 4.3.1 B<sub>1</sub> and B<sub>2</sub> characters

(540/AII.2.1) The  $B_1$  characters identifying the different transmitter coverage areas and the  $B_2$  characters identifying the different types of messages are defined by IMO and chosen from table I of ITU-R Recommendation M.625, combination numbers 1-26.

- 10 -

- a) Ship equipment shall be capable of automatically rejecting unwanted information using character  $B_1$ .
- b) Ship equipment shall be capable of disabling print-out, transmission to the INS port or display of selected types of messages using character  $B_2$  with the exception of messages with  $B_2$  characters A, B, D and L.
- c) If any facility is rejected (transmitter coverage area) or disabled (type of message) the extent of any such limitation shall be clearly indicated to the user (see 4.3.7).

#### 4.3.2 B<sub>3</sub> and B<sub>4</sub> characters IEC 61097-6:2005

(540/AII.2.2)  $B_3 B_4$  is a two-character serial number for each  $B_2$ , starting with 01 except in special cases where the serial number 00 is used (see 4.3.5).

#### 4.3.3 Preamble

(540/AII.3) The printer or message store shall only be activated if the preamble  $B_1 B_2 B_3 B_4$  is received without errors.

#### 4.3.4 Repetition of printing/display

(540/AII.4) Facilities shall be provided to avoid printing, storage or display of the same message several times on the same ship, when such a message has already been satisfactorily received.

(540/AII.5) The necessary information for these measures shall be deduced from the sequence  $B_1 B_2 B_3 B_4$ .

#### 4.3.5 Mandatory printing/display

(540/AII.6) A message shall always be printed, stored and displayed if  $B_3 B_4 = 00$  and if it is transmitted by a coast station that the equipment is programmed to select.

(540/AII.2.3) The characters ZCZC  $B_1 B_2 B_3 B_4$  need not be printed/displayed.