NAVTEX RECEIVER

NR-50

Ver 1.0

(Operational Manual)

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SARACOM Co.,Ltd.

WARNING

1. Do not open the equipment.

   An only person who has the technology qualification can inspect the equipment interior.

2. If smoke or fire happens in the equipment, intercept input power supply immediately.

   Continuous use of the equipment can do fire or electrical impact to happen. In these case, must communicate in the service agency which an Saracom Co.,Ltd. or Saracom Co.,Ltd. specifies.

3. Do far from the heating appliances.

   The heating appliances can melt the power cord of equipment, and can become cause of the fire or electrical impact.

4. Be not exposed from the snow and rain.

   The snow and rain such as liquid matter can bring the breakdown of equipment, and electrical danger.

5. Use the fuse of optimum capacity.

   The fuse capacity is appeared in the equipment. The use of wrong fuse can bring damage in the equipment.

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1. NAVTEX System

1.1 Product introduction

NAVTEX is designed to provide international automated direct-printing service such as promulgation of SAR (Search and Rescue) information, Navigational warnings, Meteorological warnings and urgent information to ships. It has been developed to provide a low-cost, simple and automated means of receiving maritime safety information for on board ships at sea and in coastal waters. The information transmitted by NAVTEX coast station, is delivered to each ship directly. On the bridge, the NAVTEX receiver accepts, selects information required for the ship and displays in LCD automatically in English or Korean mode as following [Figure 1-1] international English broadcasting and [Figure 1-2] Korean broadcasting. NAVTEX means the system for broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy and it is a component of IMO(International Maritime Organization)/IHO(International Hydrographic Organization) WWNWS World Wide Navigational Warning Service) defined by IMO Assembly resolution A.706(17). In the GMDSS(Global Maritime Distress and Safety System), since the 1st August 1993, NAVTEX receiving capability has become part of the mandatory equipment which is required to be carried in certain vessels under the provisions of the International Convention for the Safety of Life at Sea(SOLAS), 1974, as amended in 1988.

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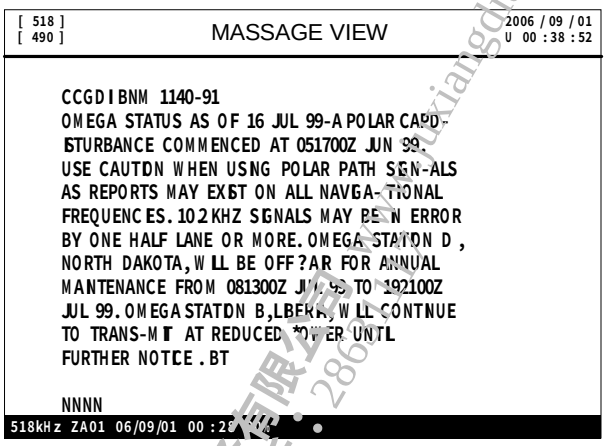
This system provides international and National service as follows.

1. International NAVTEX service means the coordinated broadcast and automatic reception on frequency 518kHz of maritime safety information (MSI) by means of narrow-band direct-printing telegraphy using the English language.
2. National NAVTEX service means the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy using 490kHz or 4209.5kHz frequencies other than 518kHz as decided languages by the Administrations concerned.

“NR-50” NAVTEX receiver designed to receive together domestic NAVTEX service (490kHz Korean broadcasting) and international NAVTEX service (4209.5kHz).

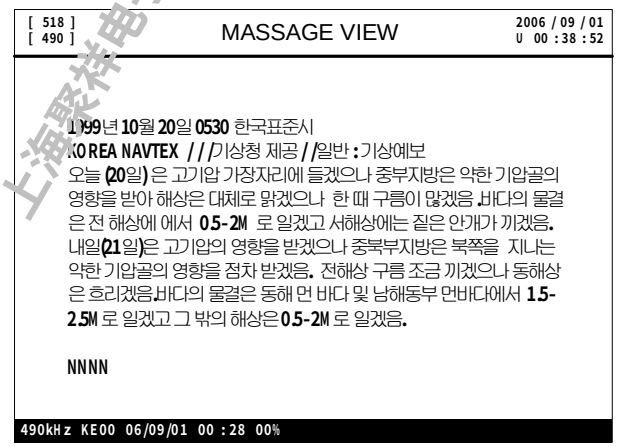
"NR-50" NAVTEX receiver also fully complies with the operational and technical characteristics of ITU-R recommendation M.540-2 and performance standards for ship borne narrow-band direct-printing equipment in IMO assembly resolution A.525(13)

---< Navigational Warnings>---



[Figure 1-1] International NAVTEX English broadcasting

---<기상 예보>---



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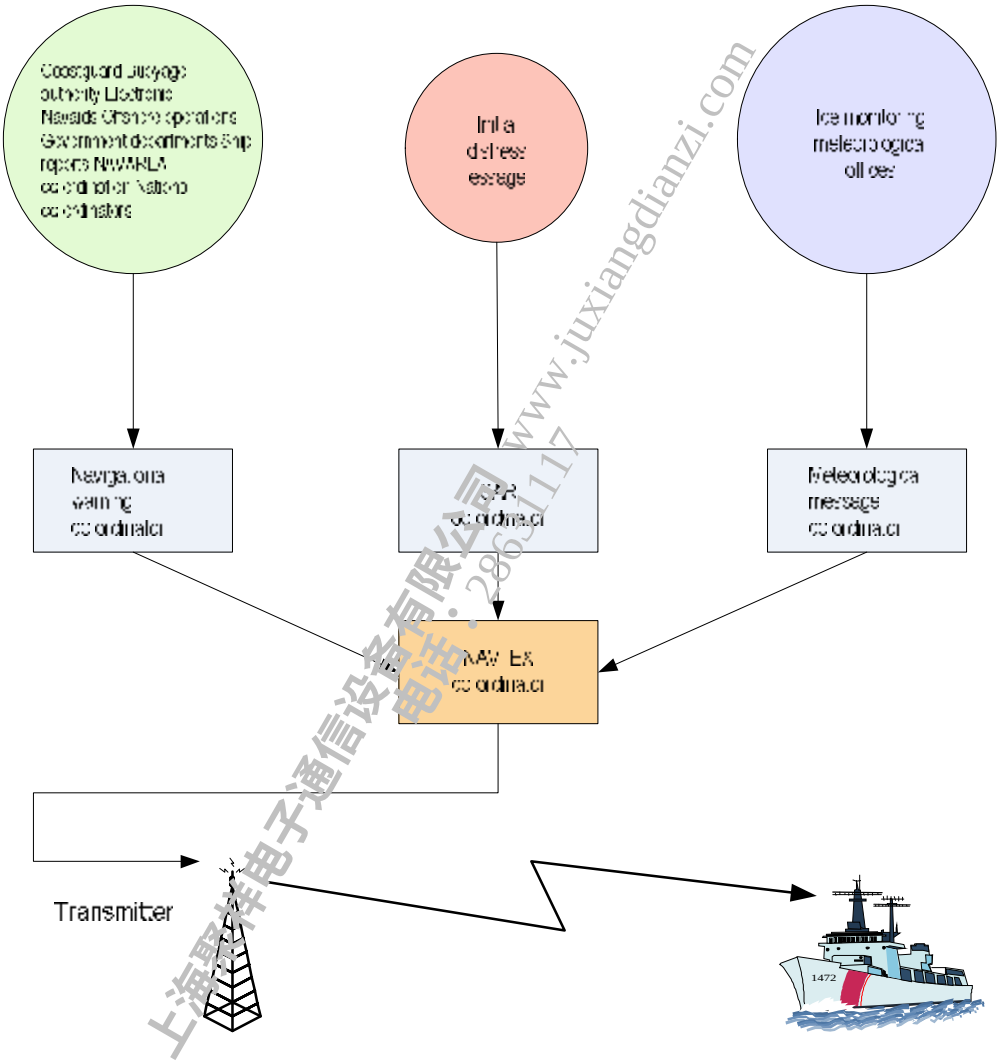
[Figure 1-2] National NAVTEX Korean broadcasting



[Figure 1-3] The NAVTEX concept

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1.2 Theoretical features of NAVTEX

NAVTEX service uses a single frequency for transmissions from nominated stations within each NAVAREA being arranged on a time-sharing basis to eliminate mutual interference as following [Figure 1-4].

All necessary information is contained in each transmission. The power of each transmitter is regulated so as to avoid the possibility of interference between transmitters. It may be adjusted to provide a range of about 250 to 400 nautical miles.

Normally a dedicated NAVTEX receiver which has the ability to select messages to be printed according to a technical code(B1, B2, B3, B4), which appears in preamble of each message and whether or not the particular message has already been printed.

But certain essential classes of safety information such as navigational and meteorological warnings and search and rescue information are non-reject able to ensure that ships using NAVTEX always receive the most vital information.

According to [Figure 1-3] of the NAVTEX concept, NAVTEX coordinators exercise control of messages transmitted by each station according to the information contained in each message and the geographical coverage required. Thus a user may choose to accept messages, as appropriate, either from the single transmitter which serves the sea area around his position or from a number of transmitters.

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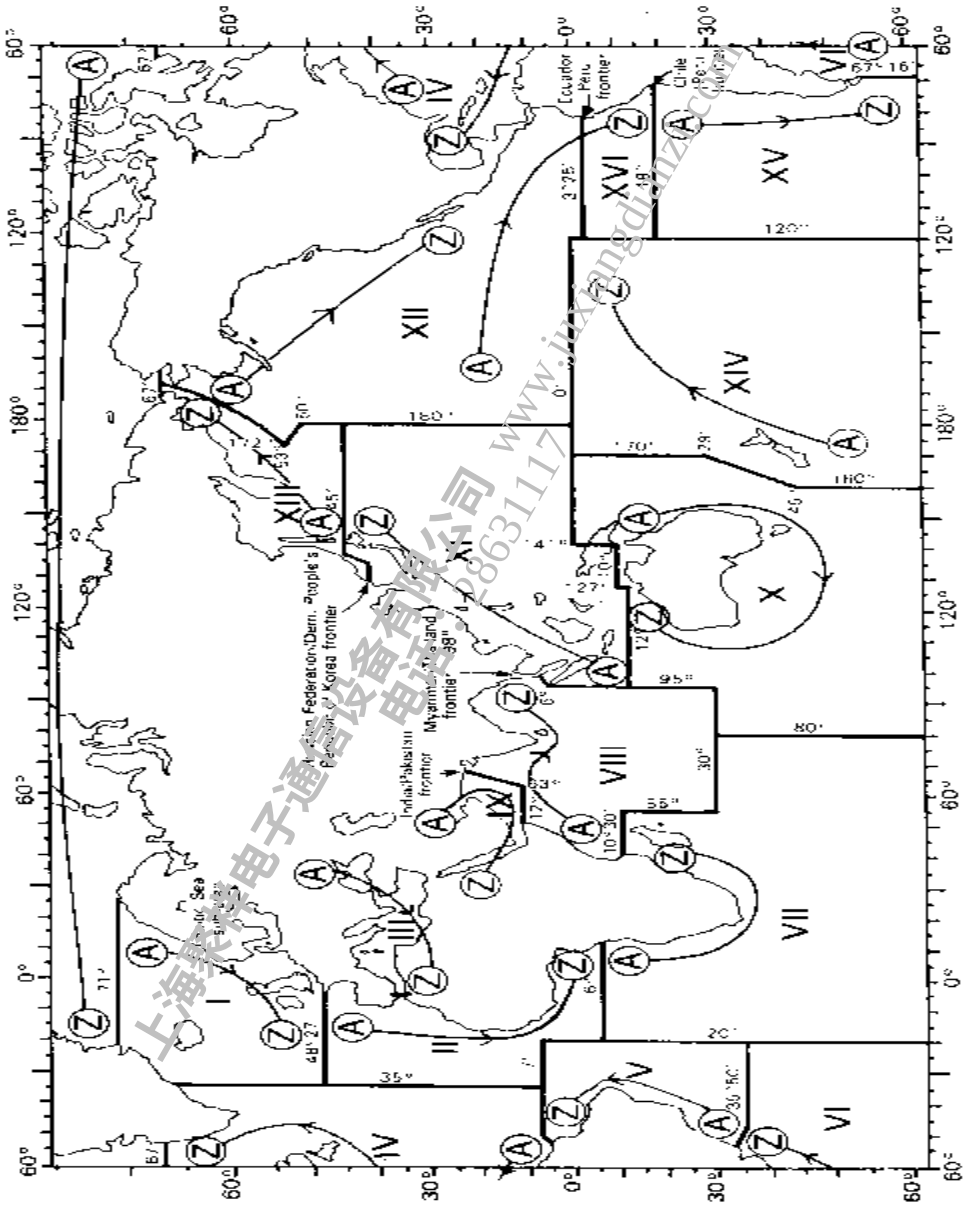

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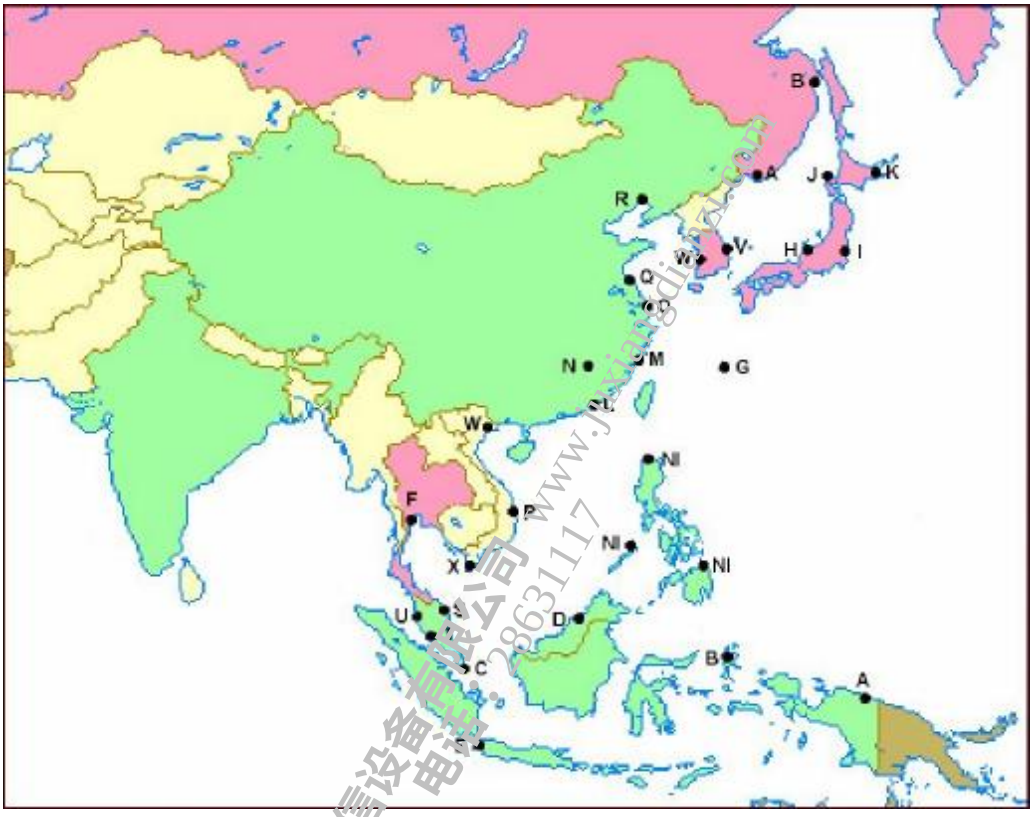
[Figure 1-4] NAVAREA of the WWNWS



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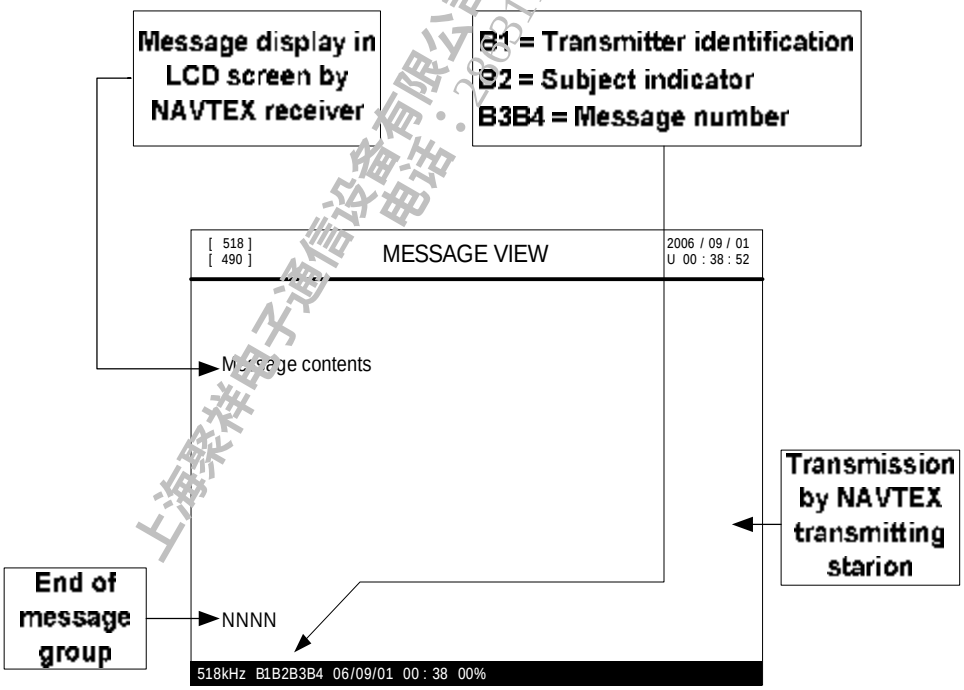
[Figure 1-5] Coast Station Allocation in NAVAREA XI and XIII

1.3 NAVTEX message format

The format of all messages is set according to [Figure 1-6]. This defines essential elements of the message that influence the receiver to be operated.

Great care is required to avoid errors of syntax in the groups ZCZC, B1B2B3B4, and NNNN as they will cause receivers operate incorrectly, and may well result in the loss of vital message.



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[Figure 1-6] Standard format for NAVTEX messages

In [Figure 1-6], B1(Transmitter identification character) is single unique letter which is allocated to each transmitter. [Figure 1-4] and [Figure 1-5] is relevant to whole NAVAREA and the station of NAVAREA XI. B2(Subject indicator character) is in use as following [Table 1-1].

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Message Type (B2)	Subject
A*	Navigational Warnings
B*	Meteorological Warnings
C	Ice Reports
D*	Search and Rescue information and pirate attack warnings
E	Meteorological Forecasts
F	Pilot service Messages
G	DECCA Messages
H	LORAN Messages
I	OMEGA Messages
J	SATNAV Messages
K	Other Electronic Navaid Messages
L*	Navigational Warnings -Additional letter “A”
M~Y	Reserved
Z	QRY

Remark: The character marked with **"*"**, can’t be rejected by the receiver.

[Table 1-1] The messages of subject indicator character

1.4 Message numbering

According to [Figure 1-6] of Standard format for NAVTEX messages, each message within a subject group is allocated a serial number, B3B4, between 01 and 99. This number should be allocated by the relevant NAVTEX coordinator.

Certain message is allocated [the B3B4 = 00]. Use of this number should be strictly controlled since messages carrying it will always be displayed in LCD screen, if the broadcast containing such messages is identified to accept by the receiver. Therefore, the number "00" must only be used for severely important messages, such as an initial distress message. Routine messages and service messages should not be allocated to the number “00”.

All message numbers including "00", are stored in the memory always.

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1.5 NAVTEX transmitting station and transmission time

1) International NAVTEX service of adjoining countries (XI, XIII NAVAREA / English)

Country/ Area	NAVTEX Coast Station	Range (NM)	Transmission Time (UTC)	Transmission Time (Local Time In China)
Korea	Chukpyun XI (V)	200 NM	03:30, 07:30, 11:30, 15:30, 19:30, 23:30,	03:30, 07:30, 11:30, 15:30, 19:30, 23:30,
	Byunsan XI (W)	200 NM	03:40, 07:40, 11:40, 15:40, 19:40, 23:40,	03:40, 07:40, 11:40, 15:40, 19:40, 23:40,
Russian Federation	Vladivostok XIII(A)	280 NM	00:00, 04:00, 08:00, 12:00, 16:00 20:00,	00:00, 04:00, 08:00, 12:00, 16:00, 20:00
	Kholmsk XIII(B)	280 NM	00:10, 04:10, 08:10, 12:10, 16:10, 20:10	00:10, 04:10, 08:10, 12:10, 16:10, 20:10,
Japan	Otaru XI (J)	400 NM	01:30, 05:30, 09:30, 13:30, 17:30, 21:30,	01:30, 05:30, 09:30, 13:30, 17:30, 21:30,
	Kushiro XI (K)	400 NM	01:40, 05:40, 09:40, 13:40, 17:40, 21:40,	01:40, 05:40, 09:40, 13:40, 17:40, 21:40
	Yokohama XI (I)	400 NM	01:20, 05:20, 09:20, 13:20, 17:20, 21:20	01:20, 05:20, 09:20, 13:20, 17:20, 21:20
	Moji XI (H)	400 NM	01:10, 05:10, 09:10, 13:10, 17:10, 21:10,	01:10, 05:10, 09:10, 13:10, 17:10, 21:10
	Naha XI (G)	400 NM	01:00, 05:00, 09:00, 13:00, 17:00, 21:00	01:00, 05:00, 09:00, 13:00, 17:00, 21:00
Chinese Mainland	Sanya XI (M)	250 NM	02:00, 06:00, 10:00, 14:00, 18:00, 22:00	02:00, 06:00, 10:00, 14:00, 18:00, 22:00

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	Guangzhou XI (N)	250 NM	02:10, 06:10, 10:10, 14:10, 18:10, 22:10	02:10, 06:10, 10:10, 14:10, 18:10, 22:10
	Fuzhou XI (O)	250 NM	02:20, 06:20, 10:20, 14:20, 18:20, 22:20	02:20, 06:20, 10:20, 14:20, 18:20, 22:20
	Shanghai XI (Q)	250 NM	02:40, 06:40, 10:40, 14:40, 18:40, 22:40	02:40, 06:40, 10:40, 14:40, 18:40, 22:40
	Dalian XI (R)	250 NM	02:50, 06:50, 10:50, 14:50, 18:50, 22:50	02:50, 06:50, 10:50, 14:50, 18:50, 22:50
Hong Kong	Hong Kong XI (L)	N.I	01:50, 05:50, 09:50, 13:50, 17:50, 21:50	01:50, 05:50, 09:50, 13:50, 17:50, 21:50
Taiwan	Chilung XI (P)	N.I	02:30, 06:30, 10:30, 14:30, 18:30, 22:30,	02:30, 06:30, 10:30, 14:30, 18:30, 22:30,
Thailand	Bangkok Radio XI (F)	200 NM	00:50, 04:50, 08:20, 12:20, 16:20, 20:20	00:50, 04:50, 08:20, 12:20, 16:20, 20:20
Indonesia	Jayapura XI (A)	300 NM	00:00, 04:00, 08:00, 12:00, 16:00, 20:00,	00:00, 04:00, 08:00, 12:00, 16:00, 20:00,
	Ambon XI (B)	300 NM	00:10, 04:10, 08:10, 12:10, 16:10, 20:10	00:10, 04:10, 08:10, 12:10, 16:10, 20:10
	Makassar XI (D)	300 NM	00:30, 04:30, 08:30, 12:30, 16:30, 20:30,	00:30, 04:30, 08:30, 12:30, 16:30, 20:30,
	Jakarta XI (E)	300 NM	00:40, 04:40, 08:40, 12:40, 16:40, 20:40	00:40, 04:40, 08:40, 12:40, 16:40, 20:40
Malaysia	Pinang XI (U)	350 NM	03:20, 07:20, 11:20, 15:20, 19:20, 23:20,	03:20, 07:20, 11:20, 15:20, 19:20, 23:20,
	Miri XI (T)	350 NM	03:10, 07:10, 11:10, 15:10, 19:10, 23:10,	03:10, 07:10, 11:10, 15:10, 19:10, 23:10,
	Sandakan XI (S)	350 NM	03:00, 07:00, 11:00, 15:00, 19:00, 23:00,	03:00, 07:00, 11:00, 15:00, 19:00, 23:00,

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Singapore	Singapore XI (C)	400 NM	00:20, 04:20, 08:20, 12:20, 16:20, 20:20	00:20, 04:20, 08:20, 12:20, 16:20, 20:20
Philippines	Manila XI (N.I)	320 NM	N.I	N.I
	Puerto Princesa XI (N.I)	320 NM	N.I	N.I
	Davao XI (N.I)	320 NM	N.I	N.I
United States	Guam XI (V)	100 NM	01:00, 05:00, 09:00, 13:00, 17:00, 21:00	01:00, 05:00, 09:00, 13:00, 17:00, 21:00
Vietnam	HoChiMinhCity XI (X)	400 NM	03:50, 07:50, 11:50, 15:50, 19:50, 23:50	03:50, 07:50, 11:50, 15:50, 19:50, 23:50
	Danang XI (W)	400 NM	03:40, 07:40, 11:40, 15:40, 19:40, 23:40,	03:40, 07:40, 11:40, 15:40, 19:40, 23:40,

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2) Domestic NAVTEX service (Korean)

Country	NAVTEX Coast Station	Range (NM)	Transmission Time (UTC)	Transmission Time (Local Time in Korea)
Korea	Chukpyun XI (J)	200 NM	01:30, 05:30, 09:30, 13:30, 17:30, 21:30,	02:30, 06:30, 10:30, 14:30, 18:30, 22:30,
	Byunsan XI (K)	200 NM	01:40, 05:40, 09:40, 13:40, 17:40, 21:40,	02:40, 06:40, 10:40, 14:40, 18:40, 22:40,

Each NAVTEX coastal station has 10 minutes transmission time allocated in every hours to minimize the possibility of interference between transmitters.

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2. NAVTEX Receiver “NR-50”

2.1 Summary

The NAVTEX receiver "NR-50" designed to receive international NAVTEX service reception as well as permanent place NAVTEX service at the same time, use of NAVTEX system of ITU-R M.540-2 and technological characteristic and performance criteria of IMO A.525 (13) effective.
And "NR-50" NAVTEX receiver has a following characteristics in addition to basic characteristics.

- 518kHz and 490kHz / 4209.5kHz two channels at the same time ready for receiving
- Received message contents Appear on LCD screen
- Size of (10 x 16) 32 English characters display in LCD one line
- Size of (16 x 16) 20 Korean characters display in LCD one line
- 16 line indication possibility on one screen
- Received message printing possibility (Option)
- INS Interlock possibility
- NMEA Interlock possibility

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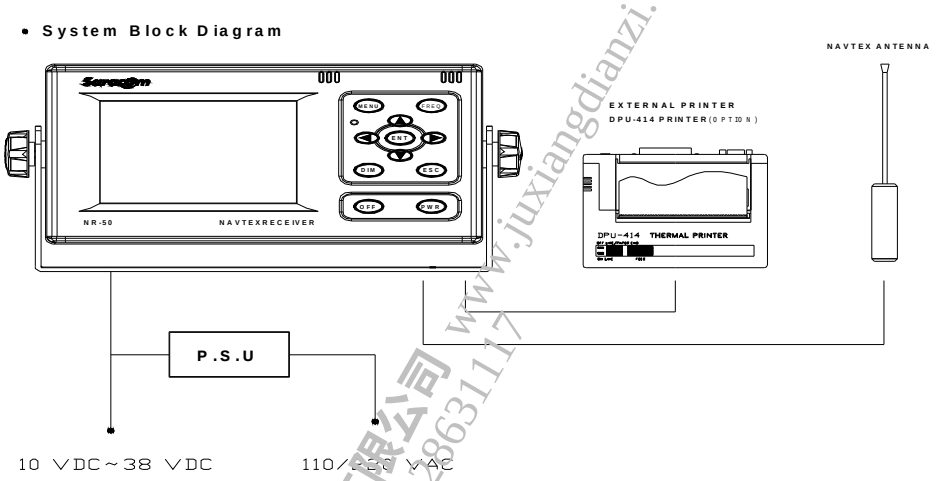
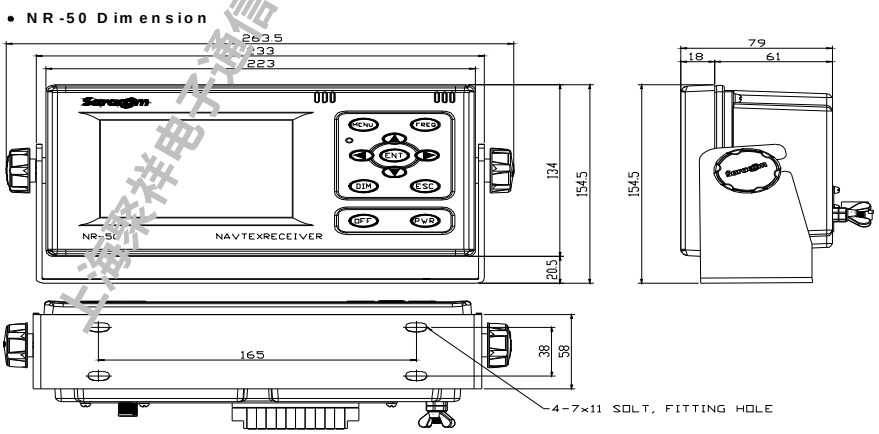
2.2 Composition and elements

This system consisted of the “NR-50” mainframe, RF pre-amplifier and Antenna, Power supply (Option), Printer(Option) etc., are same [Figure 2-1]. And components of the equipment is same with [Table 2-1]. Also, interior composition of NAVTEX receiver main frame is same with [Figure 2-2].



[Figure 2-1] Composition of NAVTEX receiver



[Figure 2-2] Composition of NAVTEX receiver “NR-50”

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Package contents			
No.	Name	Quantity	Characteristic
1	" NR-50" main frame	1	518kHz and 490kHz / 4209.5kHz Reception, LCD screen and KEYPAD
2	Bracket	1	Mounting for main unit
3	Cracking Handle	2	Mounting for main unit
4	Cracking Handle Washer	2	Mounting for main unit
5	Self-Tapping Screw Bolt	4	Main unit bracket
6	Antenna	1	Whip Antenna
7	Pre-amplifier	1	RF Pre-amplifier
8	Antenna bracket	1	Fixing Pre-amplifier
9	TNC Connector	2	Antenna cable connector
10	MAJJ (connection jack)	1	Pre-amplifier cable and Antenna cable connection connector
11	Antenna cable	1	RG-8, 20M
12	Power supply cable	1	DPYCS-5.5, 2M
Option			
13	DPU – 414 (Printer)	1	Thermal Printer
14	Paper	1	Thermal sensitive paper
15	AC Power Supply	1	DC 24V Output

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Option of this equipment composition may not be supplied according to ship owner’s request.

[Table 2-1] Package contents of “NR-50” NAVTEX Receiver

3. Product Specification

3.1 General

1) Reception Frequency range : 518kHz and 490kHz / 4209.5kHz
2) Communication Method : Simplex communication system
3) Type of Emission : F1B, Narrow band direction printer telegraphy, FEC B MODE
4) Frequency Deviation : ±85Hz

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3.2 Software Specification

1) Message reception
   - After synchronization with phasing signal, message is received and display in LCD.
   - If the character error rate is over 33%, “NR-50” will reject receiving the message.

2) Memory save and display prevention of same message
   - If received message is below character error rate 33%, is stored to prevent display of same message when is next reception.
   - When received same two messages is between 4% and 33% character error rate, message of the small error rate is stored.

3) Storage of message ID
   - Message ID is stored until 600 numbers.
   - If ID number exceeds 600, is removed from the oldest thing.
   - Storage time of ID is more than 60 hours. After about 72 hours, ID is removed automatic. A Power-off time is contained in this time.
   - Message serial numbers 53 Bit 00: Message that is allocated as “00” is displayed always and also is stored.

4) Message type selection
   - Type that can not be excepted:
     A : Navigational warning, B: Meteorological warning,
     D: Search and Rescue information, L : Additional Warning to “A”
   - Type that can be excepted:
     C, E~K, M~Z.

5) Selecting coast station
   - It is possible to restrict all coast stations.

6) Alarm

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Audible alarms are roughly classified into urgent report alarm, general report alarm.

- Urgent report alarm: This alarm is activated at reception of message type “D” and SAR information.
- General report alarm: This alarm is activated at reception of all messages except Message type “D”.

7) Feeding line

- When a word composed of more than 14 letters is displayed in LCD, this would be indicated by a hyphen(-).
- For a word composed of under 13 characters, without the division, line is fed in front of the first letter of its word.

8) Liquid Crystal Display (LCD)

- All messages reception or operation state and control menu etc., are displayed on LCD screen for user’s convenience.
- Transmitting station or message type selection and various control selection etc., are controlled through LCD and KEY for user’s convenience.
- When receiving message, synchronous or reception state and character error and save state are displayed in LCD as real time.
- Date and Time display

9) LCD and KEYPAD brightness

- Possible to adjust the brightness for LCD and keypad.

10) Self-diagnosis function

- It is able to confirm easily equipment state by self-diagnosis function. (CPU, RF Board, Buzzer Etc…)

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3.3 Hardware Specification

1) RF receiving part
   - Receiving Frequencies : 518kHz, 490kHz / 4209.5kHz
   - Sensitivity : Below 2 μV (emf) for 50 ohm dummy load
   - Selectivity : Above 300Hz for 6dB bandwidth,
     Below 2kHz for 60dB bandwidth.
   - Leakage emission : Less than 4nW in 50 Ω DUMMY antenna
   - Protection of input circuit: Withstanding 30Vrms of RF signal
   - Self-diagnosis function : Frequencies generator for the 518kHz ±85Hz,
     490kHz ±85Hz, 4209.5kHz ±85Hz

2) Micro processor
   - CPU : S3C44B0X(SAMSUNG).Clock frequency of MAX 66MHz
   - ROM : 2M byte (Execution program and English character font
     built in)
   - RAM : 8M byte
   - RTC : CPU itself built-in RTC use

3) Printer(Option)
   - Type and Model No.: Thermal Printer (DPU – 414)
   - Printing : English (16 x 16dpc) / Korean (16 x 16dpc) each
     40 Characters printing possibility in one line
   - Printing speed : 52.5cps(characters per second) / normal
   - Printing capacity: More than 250,000 characters per printing paper one roll
   - Connection : Serial / RS232C / 9 Pin /D-SUB
   - DOT : Total number of dots - 9 x 320 dots / line
     Character matrix - 9(w) x 7(H) dot
     Space between characters -1dot

4) Environmental condition

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- Operating temperature: -15℃ ～ +55℃
- Humidity : Up to 93% RH at 40℃ temperature
- Vibration : Up to 1G at 50Hz

5) Power supply
- Rating input voltage : DC ＋24V
  (DC ＋10V ～ 38V, 10Watts average)
- AC Power supply (Optional)
  - Input voltage : AC100/110V, AC200/220V
    (*Please check input voltage for AC power supply protection)
  - Output voltage : DC＋24V

6) RF Pre-amplifier and Antenna
- Type : It is high 85.5Cm that install RF pre-amplifier, WHIP antenna
- Frequency : 518kHz, 490kHz, 4209.5kHz
- Input protection : Withstanding 30Vrms of RF frequency
- Temperature extent: For operation －20℃ ～ 60℃
  For storage －20℃ ～ 80℃

7) LCD
- DOT number : 320(W) x 240(H) dots
- DOT size : 0.29(W) x 0.29(H) mm
- DOT space : 0.3(W) x 0.3(H) mm
- Character number : English (10 x 16) 32 Characters / in one line
  Korean (16 x 16) 20 Characters / in one line
- Measure : 139(W) x 102.5(H) x 13.2(T) mm max

8) Weight : Below about 2.3Kg

9) Etc… : External alarm
External printer

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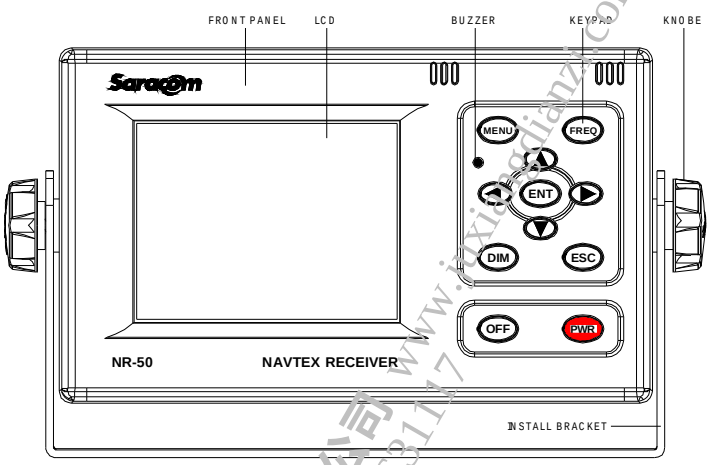
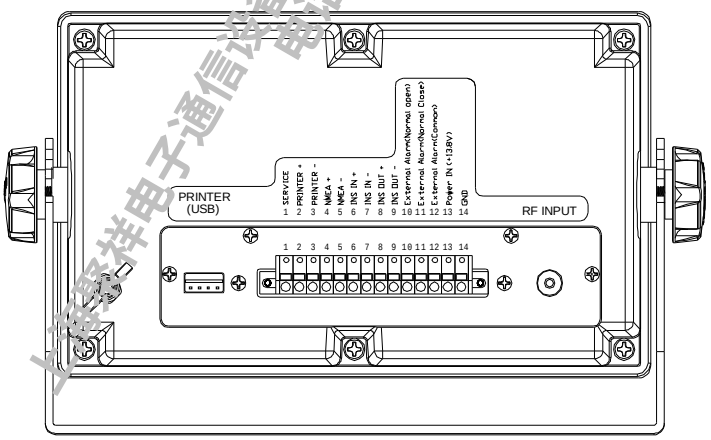
4. How to Operate

4.1 The Outline of main unit and composition of control keys

1) The Outline of main unit



- Front View -



- Rear View -

[Figure 4-1] The outline of NAVTEX receiver “NR-50” main unit

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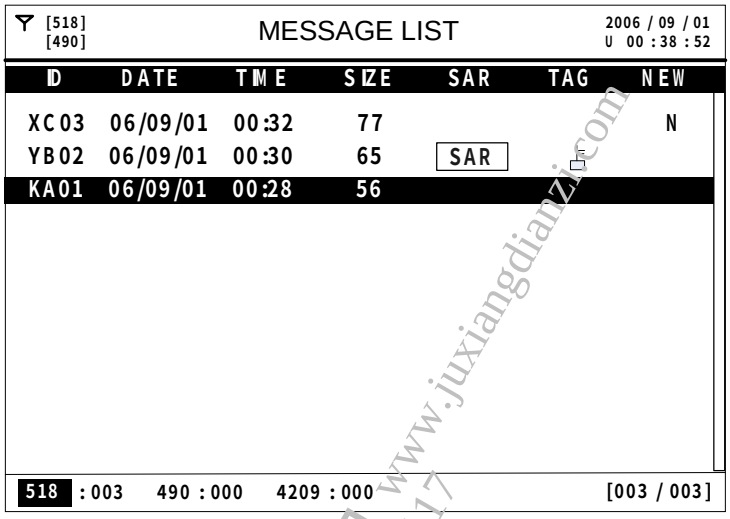
2) The initial screen and composition of control key



[Figure 4-2] Composition on the initial screen

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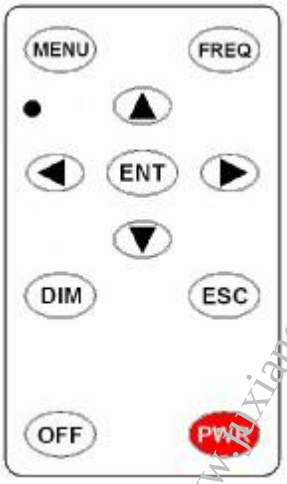
①Indication part:

- Reception message indication: - ID: Message ID
  - DATE: Present Date
  - TIME: Present Time
  - SIZE: Character number of message
  - SAR: SAR information and urgent warning
  - TAG: Message lock/unlock and storage
  - NEW: New message
- Reception frequency and each frequency state display
- Control menu display
- Reception message number about each frequency
- Date and Time display

② Control keys:



[Figure 4-3] Composition of control key

Composition of Control key about "NR-50" Receiver: MENU, FREQ, ENT, DIM, ESC, OFF, PWR, direction keys

Detailed explanation for each control key is clarified at 4-2 Basic use Part.

.

4.2 Basic Operation

1) Power On / Off

To turn on the NAVTEX receiver "NR-50", press the PWR key shortly. When turned on the power and if screen is lighted up then message such as next picture appears sequentially.

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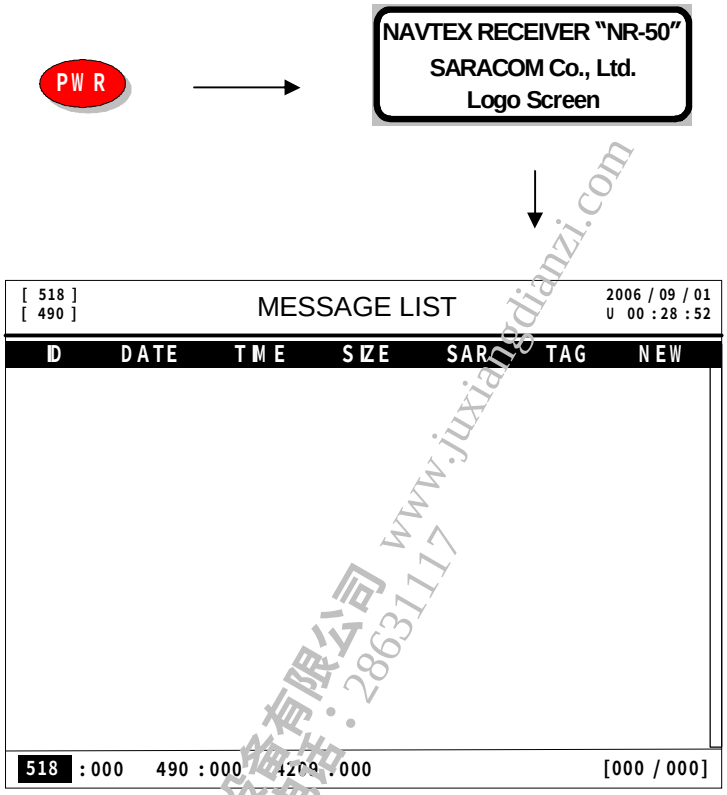

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Usually, the data that is stored in the memory of equipment when it is Powered On can be left. In case of the first setup of the equipment with the first power supply or if the 72 hours passed in Power Off state, all datas are removed.

When the Power is on, if data remains just as it is inside memory, receiver may begin reception in situation such as Power Off ago.

If the 72 hours passed including the Power Off times, ID of the message and stored messages are removed.

Press the OFF key during 3 seconds for the Power Off.

2) Reception and verification of message

NAVTEX receiver "NR-50" receives the maritime safety information of 518kHz frequency which is an international NAVTEX broadcasting and 490kHz, 4209.5kHz frequencies which are the domestic NAVTEX Korean broadcasting. Also, display is received the message by LCD screen or printer, and it is shown to user. Reception process of messages and confirmation achievement are as following.

If a message in a particular frequency arrives from external antenna first, then it is delivered by receiver through RF INPUT PORT of "NR-50" backside. The specification frequency of transmitting station message supposes 518 kHz and also ID supposes KA01.

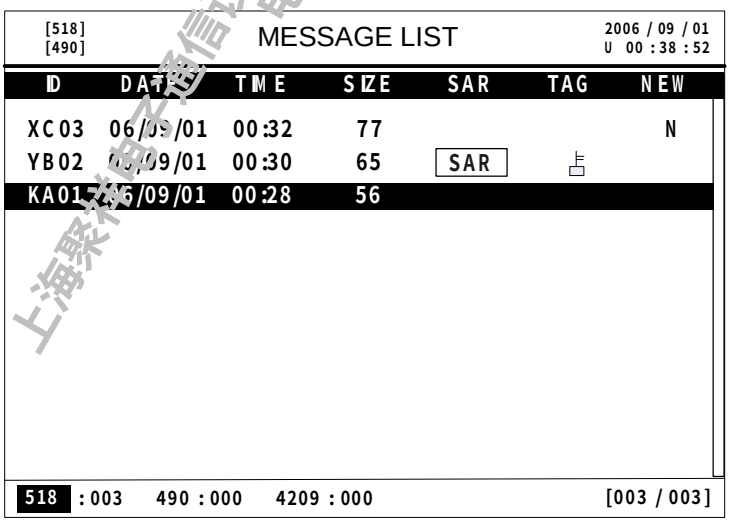
Antenna indication is flickering beside left side top portion's [518] item of screen so that specification frequency distinction may be easily seen among the reception of message.

At the same time, [518] frequency changes to [KA01] of message ID for inform station, message type and message number.

The ID format is explained in detail to 1-3 NAVTEX message format Part.

If NAVTEX receiver receives message, the following screen will be displayed.

(Ex) State that three messages is received.



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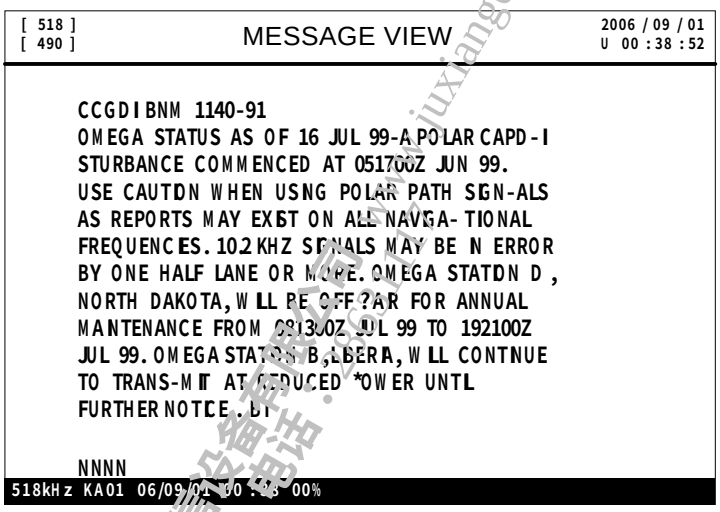
The recent message received is situated in first line and is marked by N as NEW item. If user confirms message once, the N sign is disappeared.

In order to select a message, use the p , q key to confirm the reception message's contents. For the “MESSAGE VIEW”, press the ENT key.
For returnning to the message list in the screen, press the ESC key.



“MESSAGE VIEW " offers three sub functions such as TAG, PRINT OUT, and DATA OUT.

First , TAG item signifies the message storage or lock state's setup .
If the 72 hours including OFF state of NAVTEX receiver "NR-50" pass, all messages are removed. Thus, this function is used to keep the message that is important of this function.

When you selected the TAG, the key sign appears to TAG item in "MESSAGE LIST" screen. Also, the key sign appears under right side of "MESSAGE VIEW" screen.

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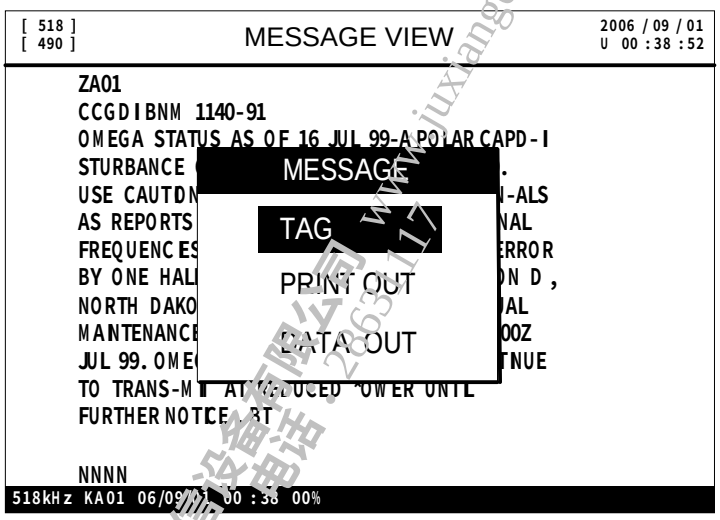
Second, PRINT OUT is a command item that prints the present message contents of "MESSAGE VIEW" by printer.

Finally, "DATA OUT" is to transmit the present message data by computer or external equipment through INS.

Press the MENU key for use sub fuctions in "MESSAGE VIEW" screen. Sub fuction screen about "MESSAGE VIEW" is as following.



Use p or q key to select the item of function you want. Then if pressing the ENT key, you can establish that function.

When you want TAG's cancellation, press the MENU key and select UNTAG item for cancellation of the TAG state in “MESSAGE VIEW “screen.

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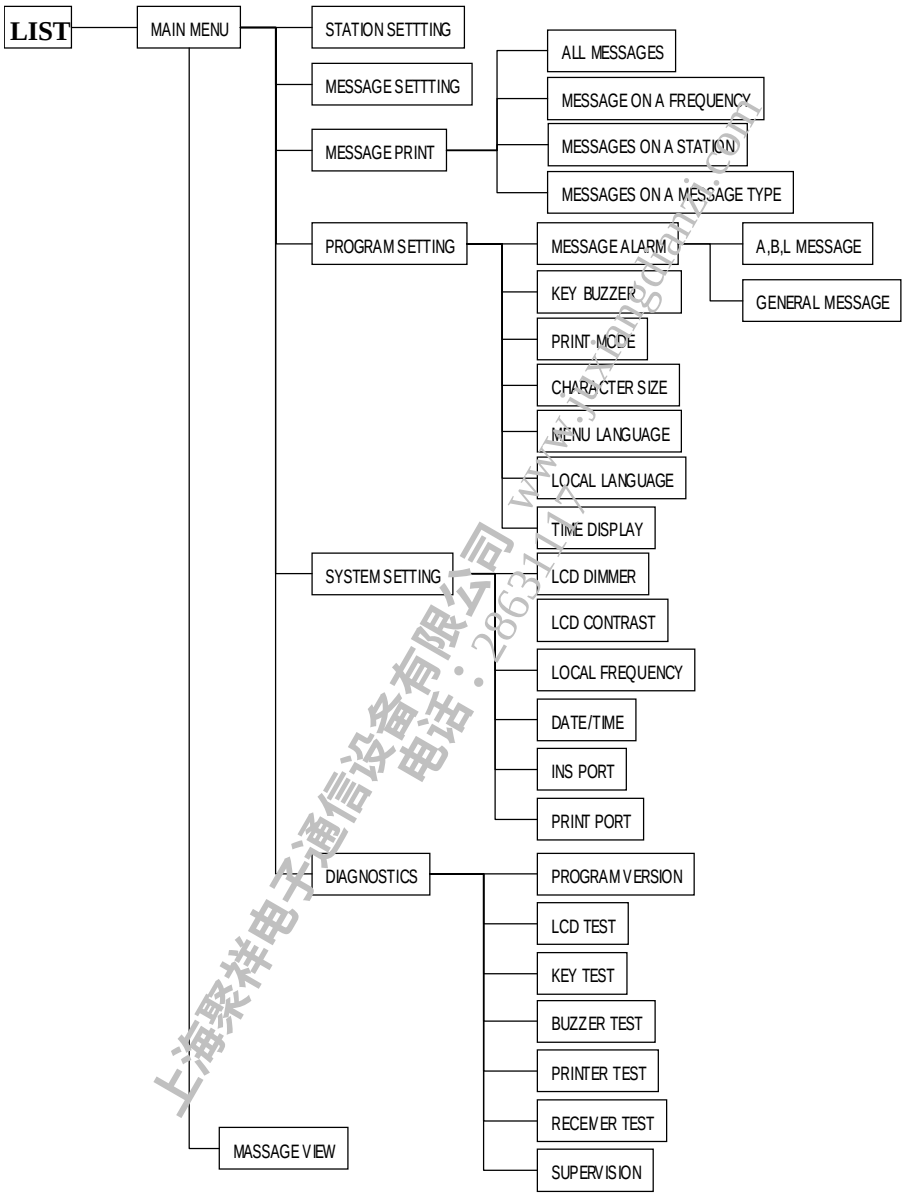
3) Control menu



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[Figure 4-4] Composition of control menu

If you press the MENU key in the initial screen, the following screen will be displayed so that you can select the six control menu in the MAIN MENU.

```
[ 518 ]                                  2006 / 09 / 01
[ 490 ]          MAIN MENU               U  00 : 28 : 52
-------------------------------------------------------
 1. STATION SETTING
 2. MESSAGE SETTING
 3. MESSAGE PRINT
 4. PROGRAM SETTING
 5. SYSTEM SETTING
 6. DIAGNOSTICS

-------------------------------------------------------
 SETS A STATION TO RECEIVE
```

Use the p or q key to select the menu of function you want. Then if pressing the ENT key, you can establish function of menu.

The specific setup method is explained in detail to 4.3 Contol menus setting.

4) Simple Useage of control key

A user can use the control keys for basic and setup of the equipment operation in the initial screen for choosing broadcasting stations and receiving messasge setup by using Contol Menu. The available keys are as following.

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The descriptions of control key	
Control key	Description
MENU	Loading main menu. Also, using to escape from a current menu.
◁ △ ▷ ▽	Moving a next or previous page, Selecting sub menu item, Moving cursor.
ENT	Dicision the entering, Confirmation
FREQ	Change frequency in Screen of "MESSAGE LIST" and bring relevant frequency's reception contents use when select relevant frequency of item that wishes to establish in "STATION and MASSAGE SETTING."
ESC	Escape from the present menu situation to the ago menu.
DIM	Screen brightness control Screen brightness can be adusted by 4 steps.
PWR	Power On
OFF	Power Off

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[Table 4-1] The descriptions of control key

4.3 Control Menu setting

If you press the MENU key in initial screen, the following screen will be displayed. And you can select the six control menu in the MAIN MENU.

```
[ 518 ]                                  2006 / 09 / 01
[ 490 ]          MAIN MENU               U  00 : 28 : 52
1.STATION SETTING
2.MESSAGE SETTING
3.MESSAGE PRINT
4.PROGRAM SETTING
5.SYSTEM SETTING
6.DIAGNOSTICS

SETS A STATION TO RECEIVE
```

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1) STATION SETTING

To select of disselect broadcasting messages from various broadcasting stations which broadcast the maritime safety information in each navigational zone.

For selecting or excluding of coast station, you could refer to “[Fig 1-4] the NAVAREA of the WWNWS” and “[Fig 1-5] the coast station arrangement plan of NAVAREA XI & XIII”.

For use of this function, select “1.STATION SETTING” item at main menu to setup this function by pressing the ENT key. And the following screen will be displayed.

```
[ 518 ]                                          2006 / 09 / 01
[ 490 ]          STATION SETTING                 U  00 : 28 : 52

 518  STATION   A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
      RECEIVE   V V V V V V V V V V V V V V V V V V V V V V V V V V
      PRINT
      INS

 490  STATION   A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
      RECEIVE   V V V V V V V V V V V V V V V V V V V V V V V V V V
      PRINT
      INS

 4209 STATION   A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
      RECEIVE   V V V V V V V V V V V V V V V V V V V V V V V V V V
      PRINT
      INS

JAYAPURA, SVALBARD, CORSEN, MIAMI,
```

The composition of screen can be divided by each frequency and can setup the receiving, printing and input of interfaced signal with INS equipment from a broadicasting station.

Use the t , u key for Station (A~Z) setup, and use the p , q key for reception, printing and INS linkage. Also, the ENT key is used at items selection or cancellation.

In case of STATION selected, the " ü " sign appears in item, and In case of STATION cancelled, the " ü " sign appears in item.

Press the FREQ key for the selection of other frequency bands .

After finishing all setups about each frequency, press the ESC key to escape to previous menu. If there is a change in setup item, following item shall be displayed to confirm the amendment at the same time.

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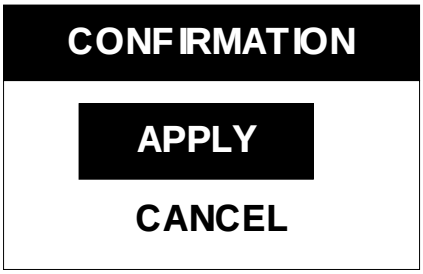

Select APPLY item and press the ENT key, to apply new Station selected.
If the setup is completed, it returns to the main menu screen.

The print menu in "STATION SETTING" is the selection mode of "Printing processing at the same time of reception" when NAVTEX receiver received message from a station.

2) MESSAGE SETTING

This is the function that can accept or deny the various messages that are offered in each Station. For the message setting, select "2.MESSAGE SETTING" item at main menu to setup this function and then press the ENT key.

.

Message type of "A: Navigational Warnings, B: Meteorological Warnings, D: Search and Rescue information, L: Navigational Warnings-Additional letter 'A'" is impossible to exclude in "MESSAGE SETTING" so the cursor doesn't move to these secctions.

For the message selection and cancellation, refer to the contents of the message sings "[table 1 - 1]

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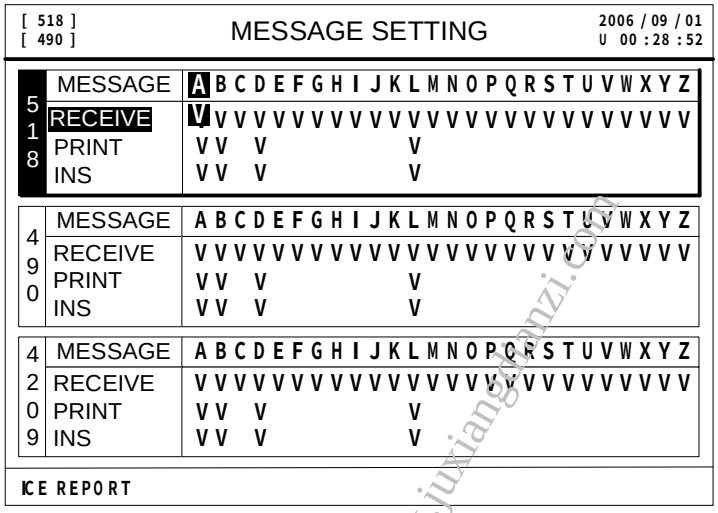

The composition of screen can be divided by each frequency and can setup the receiving, printing and input of interfaced signal with INS equipment from a broadicasting station.

Use the t , u key for Station (A~Z) setup, and use the p , q key for reception, printing and INS linkage. Also, the ENT key is used at items selection or cancellation.

In case of STATION selected, the " ü " sign appears in item, and In case of STATION cancelled, the " ü " sign appears in item.

Press the FREQ key for the selection of other frequency bands .

After finishing all setups about each frequency, press the ESC key to escape to previous menu. If there is a change in setup item, following item shall be displayed to confirm the amendment at the same time.

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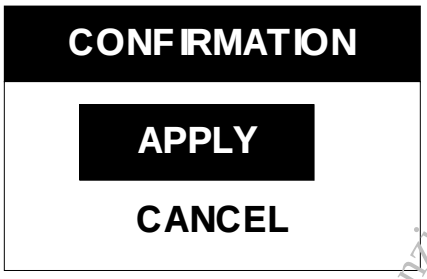

Select APPLY item and press the ENT key, to apply new Station selected.
If the setup is completed, it returns to the main menu screen.

The print menu in "STATION SETTING" is the selection mode of "Printing processing at the same time of reception" when NAVTEX receiver received message from a station.

3) MESSAGE PRINT

If various type of broadcasting messages are received in various stations, "NR-50" NAVTEX receiver marks and stores received contents.

NR-50 also provides Printing functions such as I)all messages printing, 2)a message in a certain frequency, 3)a message from a certain station or 4) a message in a certain format.

Message Pinrt means that NAVTEX receiver prints out a selected message from the restored messages in the memory after receiving.

For this function carryied out, select “3.MESSAGE PRINT” item at main menu and press the ENT key. The following screen will be displayed.

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```
[ 518 ]                                  2006 / 09 / 01
[ 490 ]        MESSAGE PRINT             U  00 : 28 : 52

1. ALL MESSAGES
2. MESSAGES ON A FREQUENCY
3. MESSAGES ON A STATION
4. MESSAGES ON A MESSAGE TYPE

ALL RECEIVED MESSAGES
```

① ALL MESSAGES

The first message item in the Message Print is the print order that have been received from all various type of messages, frequencies and stations. It can show that the numbers of stored and slected messages.

To excute the print function, first press the ENT key and then PRINTING item appears for the check again. If a user press the ENT key again from PRINTING item, then print starts.

There is one thing to be taken care of in All Messages Printing. It is impossible to select Frequency, Stations and Message types because all message are printed.

Select "1.ALL MESSAGES" item at the "3.MESSAGE PRINT" menu for the setup of this function. After pressing the ENT key, the following screen will be displayed.

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[518]
[490]

ALL MESSAGES

2006 / 09 / 01
U 00 : 28 : 52

☑ 518KHz

☑ 490KHz

☑ 4209KHz

PRINT

	STORED	SELECTED
518KHz	10 MSG	10 MSG
490KHz	20 MSG	20 MSG
4209KHz	30 MSG	30 MSG
TOTAL	60 MSG	**60 MSG**

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② MESSAGES BY FREQUENCIES

Execution screen of "MESSAGES ON A FREQUENCY is same with “1.ALL MESSAGES”, and user can select specification frequency. When selecting frequencies, a user can move cursor using the p , q key. And use the ENT key to select and cancel frequency. After frequency selection finishes, print begins if selecting PRINT item.

Select “2.MESSAGES ON A FREQUENCY” item at the “3.MESSAGE PRINT menu for the setup of this function.

③ MESSAGES BY STATIONS

User can print message that is received by NAVTEX receiver selectively to each frequencies and stations. Pressing the p , q key to select frequency that user wants. Pressing the t , u key to select station's message contents to print.

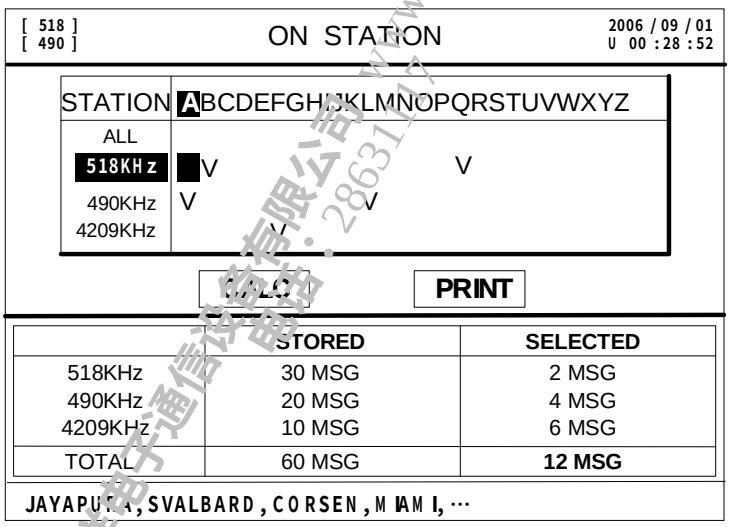
Station selection can be multipul choices, and is selected if pressing the ENT key. In

case STATION or FRQUENCY item is selected, the " ü "sign appears in item, and in case STATION or FRQUENCY item is unselected, the " ü "sign disappears in item. In case select "ALL" from frequency item, all frequencies are selected in one station.

CALC item calculates the number of messages saved and selected . Print method is same as explained in "MESSAGES ON A FREQUENCY".

Select "3.MESSAGES ON A STATION" item at the "3.MESSAGE PRINT" menu for the setup of this function. After pressing the ENT key, the following screen will be displayed.

.



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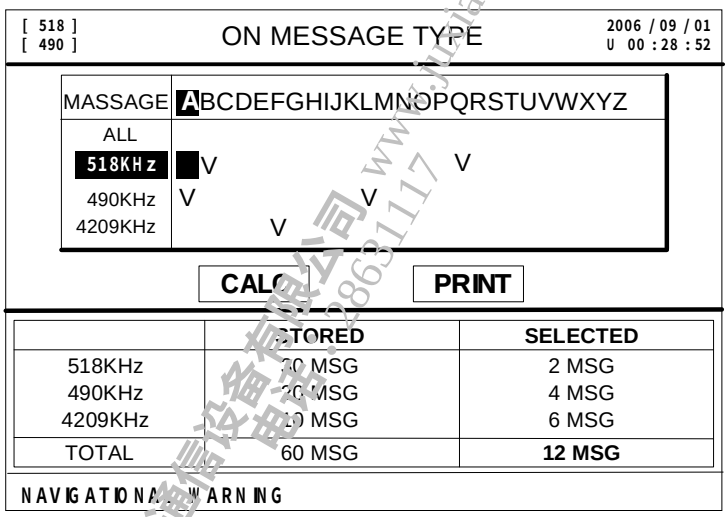
④ MESSAGES BY MESSAGE TYPES

User can print message that is received by NAVTEX receiver selectively to each frequency and message type. Specification message's selection and cancellation and print method are all same with "3. MESSAGES ON A STATION" only except Station which is displayed as MESSAGE, and execution screen also is equal. And selected message type's content is displayed under LCD to help user's comprehension.

Select “4.MESSAGES ON A MESSAGE TYPE” item at the “3.MESSAGE PRINT” menu for the setup of this function. After pressing ENT key, the following screen will be displayed.

.



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All types of message selection are available even such as A,B,D,L messages because the messages already received, which are restored in the memory are printed.

4) PROGRAM SETTING

NAVTEX receiver “NR-50” has the functions of MESSAGE ALARM • KEY BUZZER • PRINT MODE • CHARACTER SIZE • MENU LANGUAGE • TIME DISPLAY etc.

Select “4.PROGRAM SETTING” item at the main menu for the setup of this function. After pressing the ENT key, the following screen will be displayed.

```
[ 518 ]                                          2006 / 09 / 01
[ 490 ]          PROGRAM SETTING                 U  00 : 28 : 52

 1.MESSAGE ALARM
 2.KEY BUZZER                                          ON
 3.PRINT MODE                                      MANUAL
 4.CHARACTER SIZE                                   LARGE
 5.MENU LANGUAGE                                ENGLISH
 6.LOCAL LANGUAGE                               ENGLISH
 7.TIME DISPLAY                                     UTC

SETS A/B/L ALARM AND GENERAL MESSAGE
```

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①MESSAGE ALARM

"NR-50" NAVTEX receiver provides Message Alarm functions such as (A: Navigational Warnings), (B: Meteorological Warnning), (L: Navigational Warning-additional letter A) or (D: Search and rescue, reception of rescue information) and general message receiving alarm is also available.

A user cannot select the message alarlm about message type D (search and rescue) information because the message type D alarm should be differentiated with other alarm compulsorily.

Select “1.MESSAGE ALARM” item at the “4.PROGRAM SETTING” menu for the setup of this function.

After pressing the ENT key, the following screen will be displayed.

.

```
[ 518 ]                                          2006 / 09 / 01
[ 490 ]          MESSAGE ALARM                   U  00 : 28 : 52

 1.A,B,L MESSAGE                                  ON
 2.GENERAL MESSAGE                                OFF

SET A,B,L MESSAGE ALARM (ON / OFF)
```

Use the p , q key to select the alarm's ON or OFF. Then pressing the ENT key, to setup the function.

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②KEY BUZZER

When a user presss control key, buzzer sound can be ON or OFF.

Select “2.KEY BUZZER” item at “4.PROGRAM SETTING” menu for the setup of this function .User can use the ENT key for ON or OFF of buzzer sound.

③PRINT MODE

The message print mode of “NR-50” NAVTEX receiver can be selected either automatic or manual.

Select “3.PRINT MODE” item at the “4.PROGRAM SETTING” menu and press the ENT key.

If a user setup the manual mode in PRINT MODE, “Printing at the same time message reception “function is canceled in main menu’s station/message setting. Therefore, a user can print the messages which is selected.

④CHARACTER SIZE

“NR-50” NAVTEX receiver offers function that can control the large or small the character size of received message on LCD. Select “4.CHARACTER SIZE” item at the “4.PROGRAM SETTING” menu for the setup of this function. By pressing the ENT key, a user can select character size Large(10 x 13) or Small(8 x 13).

⑤MENU LANGUAGE

A user can select the MENU LANGUAGE in English, Korean or Chinese. Select “5.MENU LANGUAGE” item at the “4.PROGRAM SETTING” menu for the setup of this function. Then pressing the ENT key, a user can establish MENU LANGUAGE.

Now, Ver. 1.00 NR-50 of MENU LANGUAGE provides both Korean and English.

⑥LOCAL LANGUAGE

International NAVTEX broadcasting service offers English broadcasting in 518 kHz by standard broadcasting, and at the same time, can send language broadcasting of one's country by local broadcasting frequencies of 490 kHz and 4209.5 kHz.

Local broadcasting language is offered as is different in each and every navigational area. Therefore, according to relevant area, a user must select language.

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For example, the South Korea offers Korean broadcasting by 490kHz frequency. If a vessel in this area that sails "LOCAL LANGUAGE" by Korean language setup, receiver may display maritime safety information make up in Korean language in LCD.

Select “6.LOCAL LANGUAGE” item at the “4.PROGRAM SETTING” menu for the setup of this function. Then, press the ENT key for selecting language as a user wants. Now, setup of LOCAL LANGUAGE is only avaialbe with English.

⑦TIME DISPLAY

User can select date and time of LCD by international standard time (UTC) or local time (LMT).

User can directly input time in the LCD. Also, users can renew automatically through connection of GPS signal.

Select “7.TIME DISPLAY” item at “4.PROGRAM SETTING” menu for the setup of this function. Choose either International standard time or local time by using the ENT key.

5) SYSTEM SETTING

NAVTEX receiver “MR-50” has the function of LCD/KEY DIMMER • LCD CONTRAST • LOCAL FREQUENCY • DATE/TIME SETTING • INS PORT SETTING • PRINT PORT SETTING.

Select “5.SYSTEM SETTING” item at the main menu for the setup of this function. After pressing the ENT key, the following screen will be displayed.

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```
[ 518 ]                                          2006 / 09 / 01
[ 490 ]          SYSTEM SETTING                  U  00 : 28 : 52

1. LCD /KEY DIMMER                                    3
2. LCD CONTRAST                                       0
3. LOCAL FREQUENCY                                490KHz
4. DATE/TIME SETTING
5. INS PORT SETTING
6. PRINT PORT SETTING

SETTING LCD / KEY DIMMER        : 0 - 3
```

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① LCD / KEY DIMMER

Brightness of "NR-50" NAVTEX receiver's LCD/KEY backlight can establish by 4 steps of "0 ~ 3". Also, this function can use through the DIM key of equipment right side keypad.

Select “1.LCD / KEY DIMMER” item at the “5.SYSTEM SETTING” menu for the setup of this function. Then pressing the ENT key, a user can establish Brightness that wants. Press the u key for increase of brightness, and press the t key for decrease of brightness.

② LCD CONTRAST

“Contrast of "NR-50" NAVTEX receiver's LCD can establish by 11 steps of "0 ~ 10".

Select “2.LCD CONTRAST” item at the “5.SYSTEM SETTING” menu for the setup of this function. Then pressing the ENT key, a user can establish Brightness that wants. Press the t key for increase of contrast, and press the u key for decrease of contrast

③ LOCAL FREQUENCY

International NAVTEX broadcasting service offers English broadcasting in 518kHz by standard broadcasting. At the same time, can send each country's broadcasting by 490kHz and 4209.5kHz's local broadcasting frequency.

Therefore, a user can select local broadcasting frequency that is offered suitably according to relevant area as is different according to each navigational zone and receive broadcasting.

For example, the South Korea offers 490 kHz's Korean broadcasting. Therefore, the vessel in this area that sails receiving frequency by 490kHz Korean broadcasting can show Korean messages automatically.

A user needs to choose a relevant frequency and broadcasting language adaptively to receive maritime safety information's area broadcasting in order to display broadcasting messages on the screen.

Area broadcasting frequency must select one of these frequencies because it allocates both 490kHz and 4209.5 kHzs for international sea safety broadcasting.

Select “3.LOCAL FREQUENCY” item at the“5.SYSTEM SETTING” menu for the setup of this function and then press the ENT key.

④ DATE / TIME SETTING

A user can input date and time that are marked on the right side top portion of NAVTEX receiver by manually or updating automatically through GPS connection.

Select “4.DATE / TIME SETTING” item at the “5.SYSTEM SETTING” menu for the setup of this function, and then press the ENT key.

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```
[ 518 ]                                          2006 / 09 / 01
[ 490 ]        DATE/TIME SETTING                 U  00 : 28 : 52

  DATE                                  2006/09/01
  TIME(UTC)                               05:37:32
  TIME ZONE                                +00:00
  SUMMER TIME                                 OFF
  TIME UPDATE                              MANUAL

SETS DATE ON THE BASICS OF UTC
```

After selecting a item using the p or q key, the cursor moves to the value at right side in the screen by pressing the ENT key. For example, locate a cursor at Date item for correction date and then pressing the ENT key. Then the cursor shows first at 2006 and by pressing the p or q key to correct the year for the increase or reduction. If a user wants to move a next item which is month, then move by using the t or u key. Using the p or q key as same as above described, you could set the data. If DATE's modifications are completed and then press the ENT ESC, escape in the DATE modification mode. If a user presses ESC key during SETTING then, it keeps old data without any changes.

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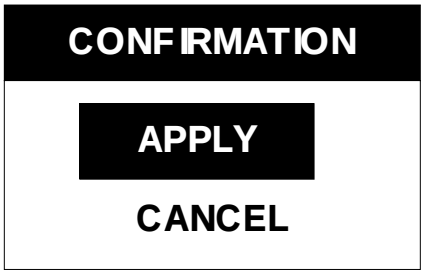
Time Setup is followed by the international standard time. And Time zone indicates the differences between international standard time and local time, and one(1) hour will be decreased if SUMMER TIME is applied.

If External GPS signal is connected, TIME UPDATE can be established automaticity. After modification of Date or Time, press the ESC key to escape from the current menu and then there will be confirmation window appeared asking modification contents as follows.

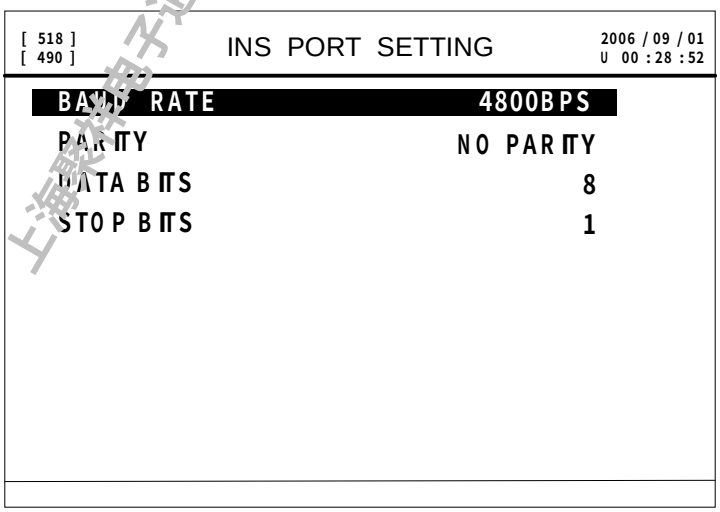


Select APPLY item to confirm the modification and then press the ENT key.

⑤ INS PORT SETTING

"NR-50" NAVTEX receiver offers a standard port for the connection with system of synthesis navigation equipment. Transmission form supports IEC61162's standard protocole. The port can setup 4800bps, 9600bps, 19200bps, 38400bps, 57600bps, and 115200bps baud rate. But error detection code, data bits and stop bits etc. cannot be changed because it is fixed already.

Select "5.INS PORT SETTING" item at the "5.SYSTEM SETTING" menu to setup this function, and then press the ENT key.



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After modification of baud rate, press the ESC key to escape from the current menu and then there will be confirmation window appeared asking modification contents as follows.

Select APPLY item to apply contents that modify, and then press the ENT key.

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⑥ PRINT PORT SETTING

"NR-50 "NAVTEX receiver can be connected to printers which are option items such as DPU-414 or PC Printer of USB form.

Specification of printer as specified in the menu of "PRINT PORT SETTING" is equal to a connected printer.

Message print can be setup in "3.MESSAGE PRINT" of main menu.

Select "6.PRINT PORT SETTING" item at the "5.SYSTEM SETTING" menu to setup this function and then press the ENT key.

```
[ 518 ]                                          2006 / 09 / 01
[ 490 ]          PRINT PORT SETTING              U  00 : 28 : 52

PRINTER
  BAUD RATE                              4800BPS
  PRINTER                                DPU- 414
  CHARS PER LINE                              40

G P S
  BAUD RATE                              4800BPS

CAUTION
  THE PRINTER SHOULD BE SET 4,800BPS
  WHEN A GPS RECEIVER IS CONNECTED.
```

Port setup is available with 4800bps, 9600bps, 19200bps, 38400bps, 57600bps and 115200bps printer buad rate, and DPU-414, and the PC Printer that can be compatible with PC. The number of character and GPS baud rate etc. per one line of print cannot be changed, because it is fixed already.

GPS's reception baud rate is fixed at 4800bps. Therefore, when printing in the GPS reception state, also a user must establish printer BAUD RATE at 4800bps.

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6) DIAGNOSTICS

NAVTEX receiver “NR-50” has the function of PROGRAM VERSION • LCD • KEY • BUZZER • PRINTING • RECEIVER TEST through diagnostics menu. A user can do self-exam rapidly and conveniently through "6.DiAGNOSTICS" menu.

Select “6.DIAGNOSTICS” item at the main menu for the setup of this function. After pressing the ENT key, the following screen will be displayed.

```
[ 518 ]                                  2006 / 09 / 01
[ 490 ]        DIAGNOSTICS               U  00 : 28 : 52

  1. PROGRAM VERSION
  2. LCD TEST
  3. KEY TEST
  4. BUZZER TEST
  5. PRINTING TEST
  6. RECEIVER TEST
  7. SUPERVISION

CHECKS THIS SYSTEM VERSION
```

① PROGRAM VERSION

It shows the presently used version of Navtex, NR-50.

Select "1.PROGRAM VERSION" item at the "6.DIAGNOSTICS" menu to setup this function. After pressing the ENT key, the following screen will be displayed and you can confirm version of NAVTEX receiver "NR-50".

```
[ 518 ]                                  2006 / 09 / 01
[ 490 ]        PROGRAM VERSION           U  00 : 28 : 52

                      NR- 50
                 NAVTEX RECEIVER
                   Version 1.00
                   2006/10/11

                 SARACOM Co.,Ltd.
                   BUSAN, KOREA
                 82- 51- 600- 9000
                 WWW.SARACOM.NET
```

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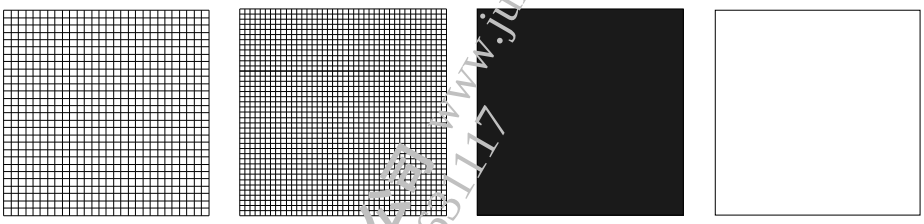
② LCD TEST

"LCD TEST" can and recover the LCD error of NAVTEX receiver. Select "2. LCD TEST" item at "6. DIAGNOSTIC" at the main menu to setup this function. After pressing the ENT key, the following screen will be displayed.

LCD test is carried out by the direction key or the ENT key. And "LCD" is tested at the same time that pressing ENT key is begun. By pressing ENT key, it starts the test and returns to the first mode after pressing 5 times ENT key or Arrow Key.

The testing display is shown as below.



-pressing 1 times- -pressing 2 times- -pressing 3 times- -pressing 4 times-

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③ KEY TEST

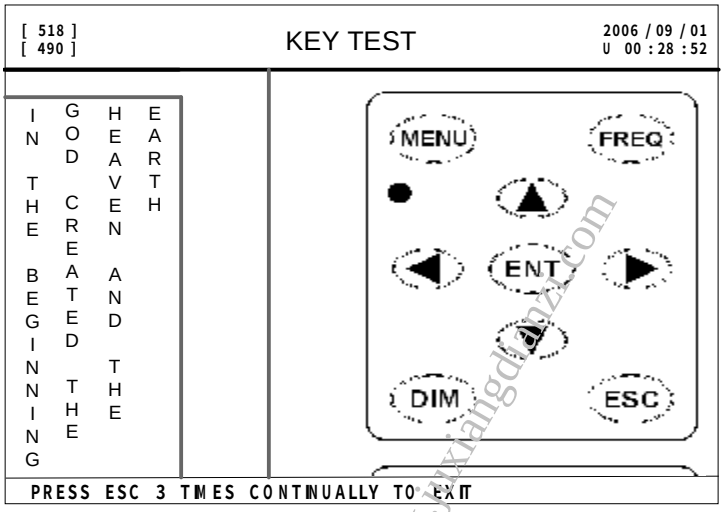
A user can test keypads and operationg status which is located on the top right side of the front panel except the OFF and PWR key which are located on the bottom right side of the front panel.

If the key test begins, the screen of " KEY TEST " appears such as below.

If pressing key that you wish to test, relevant key's color changes so that a user can confirm the key operation state. For example, when pressed DIM key two times, the color change of test screen's DIM key is DIM → DIM → DIM .

Repeat the pressing ESC key 3 times when you wish to finish the test.

Select "3.KEY TEST" item at the "6.DIAGNOSTICS" menu to setup this function, and then pressing the ENT key.



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④ BUZZER TEST

The NAVTEX receiver “NR-50” sings buzzer when the messages is received and key is inputed. “BUZZER TEST" is the item that can do the confirmation whether the alarm function acts well. If you have selected the test item by the p , q key and press the ENT key, test of selected each item will begin. Buzzer test is divided by two items of key and messages. Details as following.

1. NORMAL : Alarm of when pressing the key that is activated.
   → (-)
2. ERROR: Alarm of when pressing the key that is not activated.
   → (- -)
3. SAR(D) MSG : Alarm that inform Urgent warnings (Search and Rescue) SAR information, reception of message TYPE " D ".
   → (— —) <Repetition>
4. A / B / L MSG : Alarm that inform Navigational warnings, Meteorological warnings, reception of message TYPE "A,B,L ".

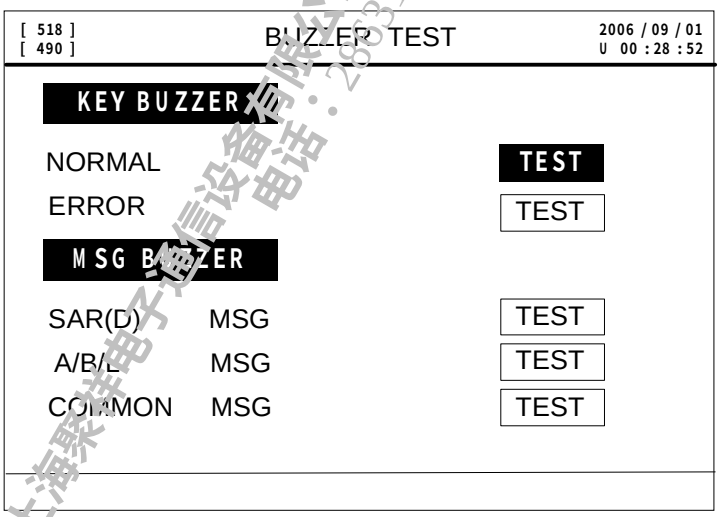
→ (— — — —) <Repetition>

5. COMMON MSG : The alarm that inform when message reception except the messages type of number 3 and 4 item.

→ (— —) <Repetition>

Press the ESC key to finish the “BUZZER TEST”. But in the case of the items of 3, 4 and 5, when you have pressed the ENT key, the test state is kept continuously. Therefore, test is ended when pressed more the ENT key once.

Select “5.BUZZER TEST” item at the “6.DIAGNOSTICS” menu to setup this function, and then press the ENT key.



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⑤ PRINTING TEST

NAVTEX receiver “NR-50” can use a printer through external connection and a user can print the received message.

“PRINTING TEST” item inspects a receiver and the connection state of printer or action status of printer.

If executing the PRINTING TEST, the below screen will be displayed.

If pressing the ENT key, as PRINT item changes by PRINTING item, the “NR-50” test message's printer output is begun .

Before the completion of downloading information from the NAVTEX reciver to a printer, a receiver is not controlled even pressing any keys.

If print ends, then the items will change from PRINTING to PRINT again.

Select “5.PRINTING TEST” item at the “6.DIAGNOSTICS” menu to setup this function, and then press the ENT key.

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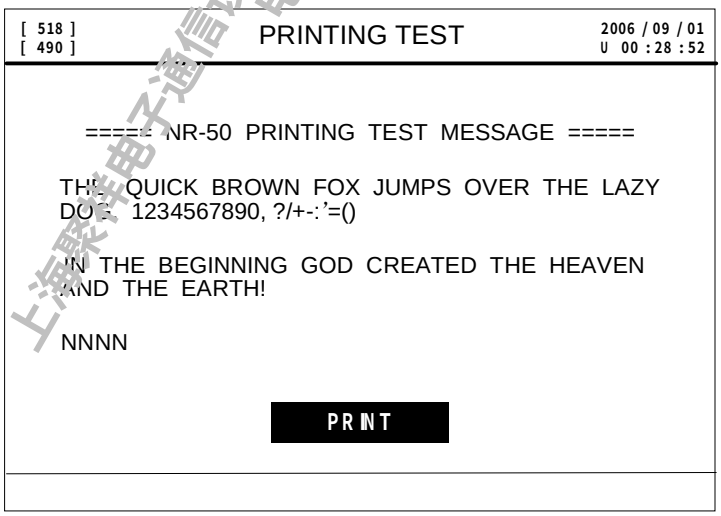

⑥ RECEIVER TEST

"RECEIVER TEST" is a function that tests state of reception of NAVTEX receiver "NR-50". This function is the process that a receiver generates a frequency loading a message itself and receives and inspects the messages.

The test progressing order is 518kHz, 490kHz, 4209kHz. And the reception state(STATE), the characters number(SIZE) and degree of error(CER) are displayed.

When the receiver is progressing test each frequency, the indication of antenna shape twinkles on LCD's the left above screen.

Therefore a user can know easily the present NAVTEX receiver's action state by the indication.

Before begining RECEVER TEST, test confirmation menu is appeared, and if you have selected the TEST item and press the ENT key, and then test begins.

Select "6.RECEIVER TEST" item at the "6.DIAGNOSTICS" menu to setup this function, and then press the ENT key. The following screen is a result of reception test.

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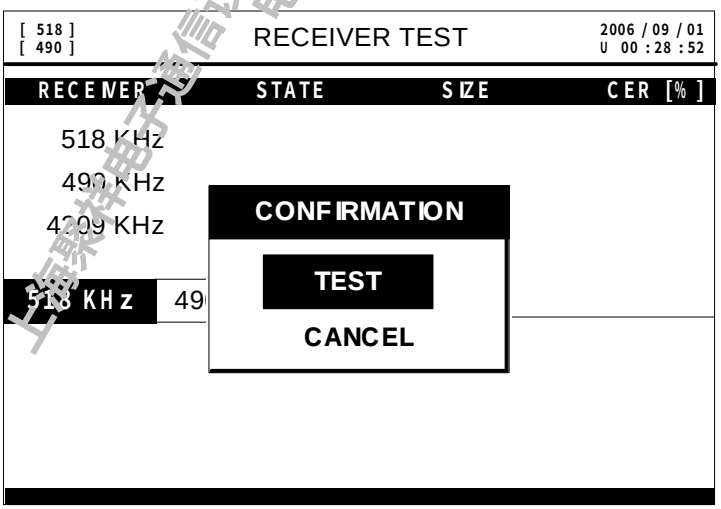

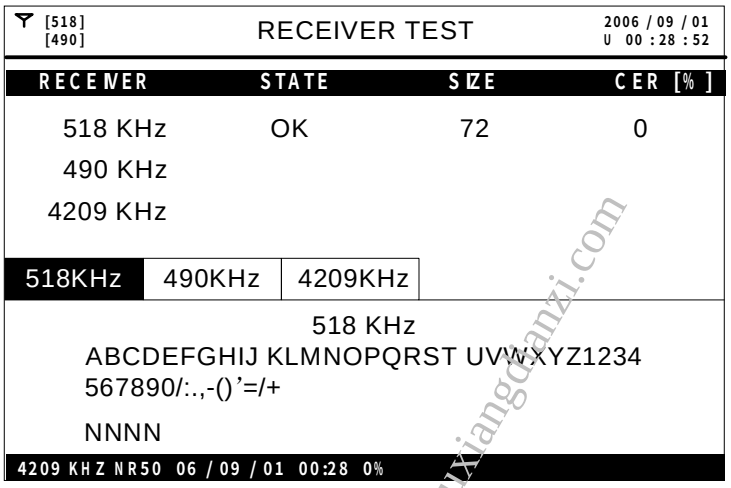

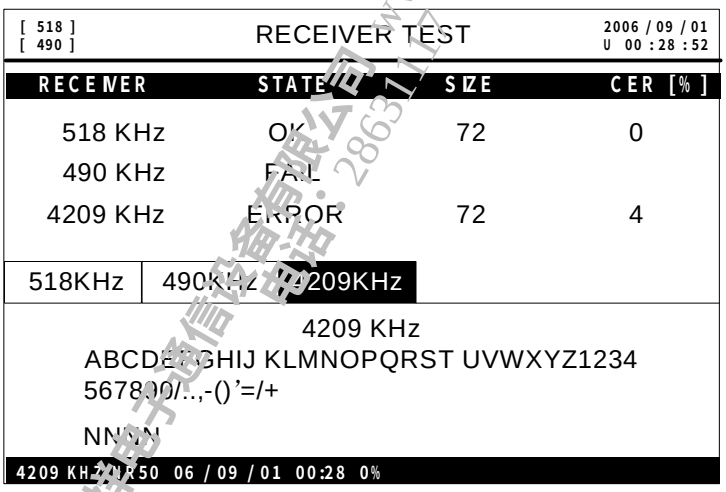

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The reception state of NAVTEX "RECEIVER TEST" has the 3 states - OK, ERROR and FAIL as shown above.

- OK: message received normally without the error rate
- ERROR: message received by the error rate less than 33%
- FAIL: message not received or received message by the error rate more than 33%

⑦ The supervision menu of diagnostics is excluded in the user manual, because it is the technical supporting menu.

5. 安装

5.1 天线

NAVTEX接收信号是中频信号，所以一般宜用长一点的天线。NR-50C随机配置玻璃钢外壳的鞭状天线。

接收天线安装时应离开船上的其他发射天线，以免发射天线的射频信号通过接收天线损坏内部器件，接收机的抗压门限为30V。

中频天线不需要架在高的地方。如天线应尽量接地，如找不到接地的地方，应

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5.2 接收机

可以利用随机提供的安装支架，将接收机安装在桌上、墙上或顶板上。

安装的地方应避免被水溅湿或被阳光直射。

建议接收机的背后应至少预留100mm，以便方便背后电缆的接线。

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5.3 外置报警盒

外置报警盒用于搜救信息接收的报警指示。外置报警盒应安装在容易识别的地方。报警盒附带10m的连接电缆。

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5.4 电源连接

NR-50C采用+24V直流供电，输入电压的允许范围为：+10V DC ~ +40V DC。 随机提供2m标准电缆。采用屏蔽电缆，屏蔽层应接地，以减少电磁干扰。

电缆接线说明如下：

接线端位置	电线颜色	描述
13	红	+ 12 V ~ + 24V
14	黑	0V

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5.5 外置报警盒接线

外置报警盒与接收机背后的接线端相连。

接线位置	描述
10	External Alarm (常开)
11	External Alarm (常闭)
12	External Alarm (公共端)

电源、外置报警盒及天线连接图见 [图 5-1]。

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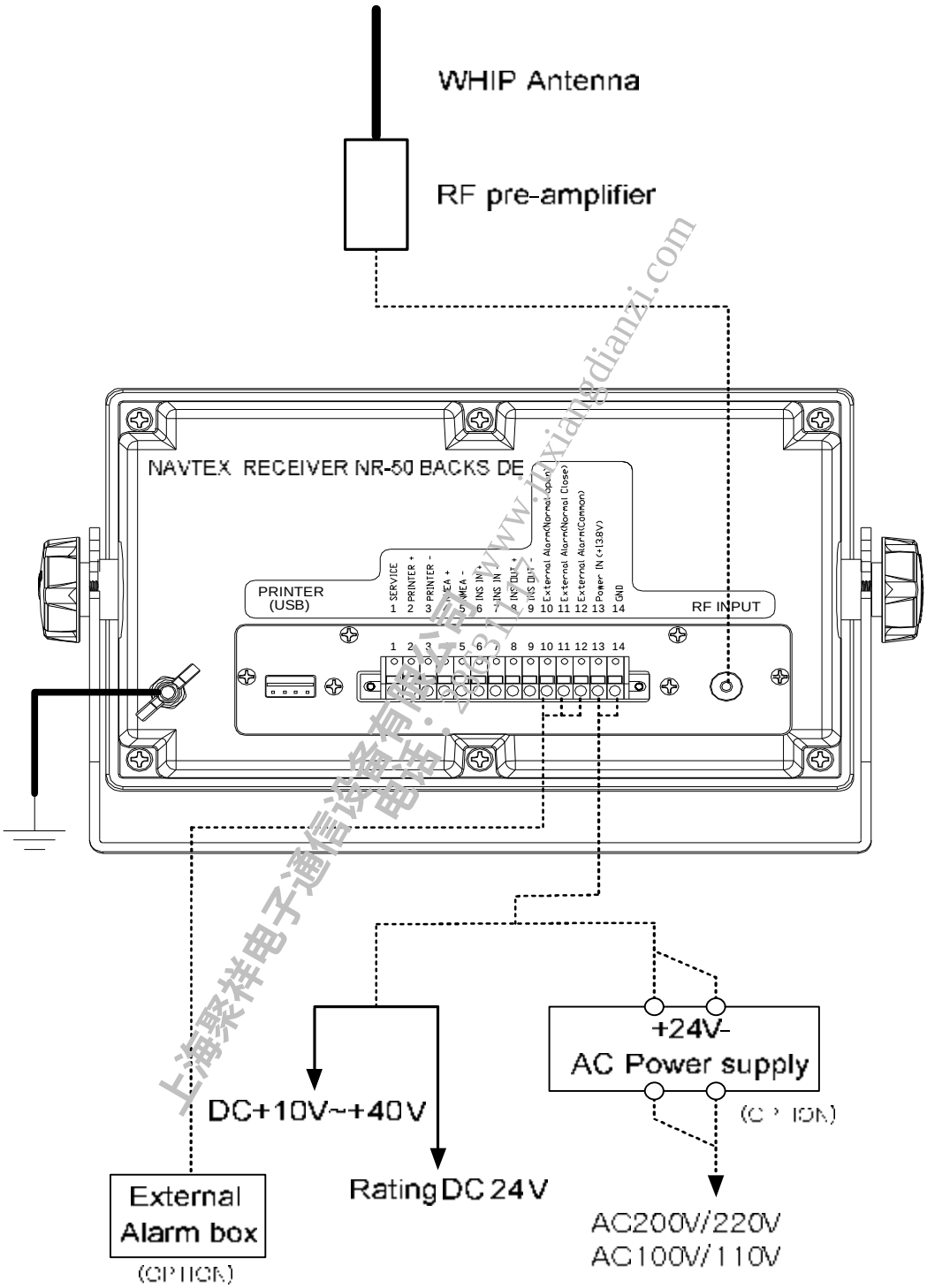

WHIP Antenna
RF pre-amplifier
NAVTEX RECEIVER NR-50 BACKS DE
PRINTER
(USB)
1 SERVICE
2 PRINTER +
3 PRINTER -
4 NMEA +
5 NMEA -
6 INS IN +
7 INS IN -
8 INS OUT +
9 INS OUT -
10 External Alarm(Normal Open)
11 External Alarm(Normal Close)
12 External Alarm(Common)
13 Power IN (+13.8V)
14 GND
RF INPUT
1 2 5 6 8 9 10 11 12 13 14
DC+10V~+40V
Rating DC 24V
+24V-
AC Power supply
(OPTION)
AC200V/220V
AC100V/110V
External
Alarm box
(OPTION)

[图 5-1] 接线图

5.6 打印机连接

NAVTEX 接收机收到的信息除了显示外，还可以通过外接打印机打印在热敏纸上。

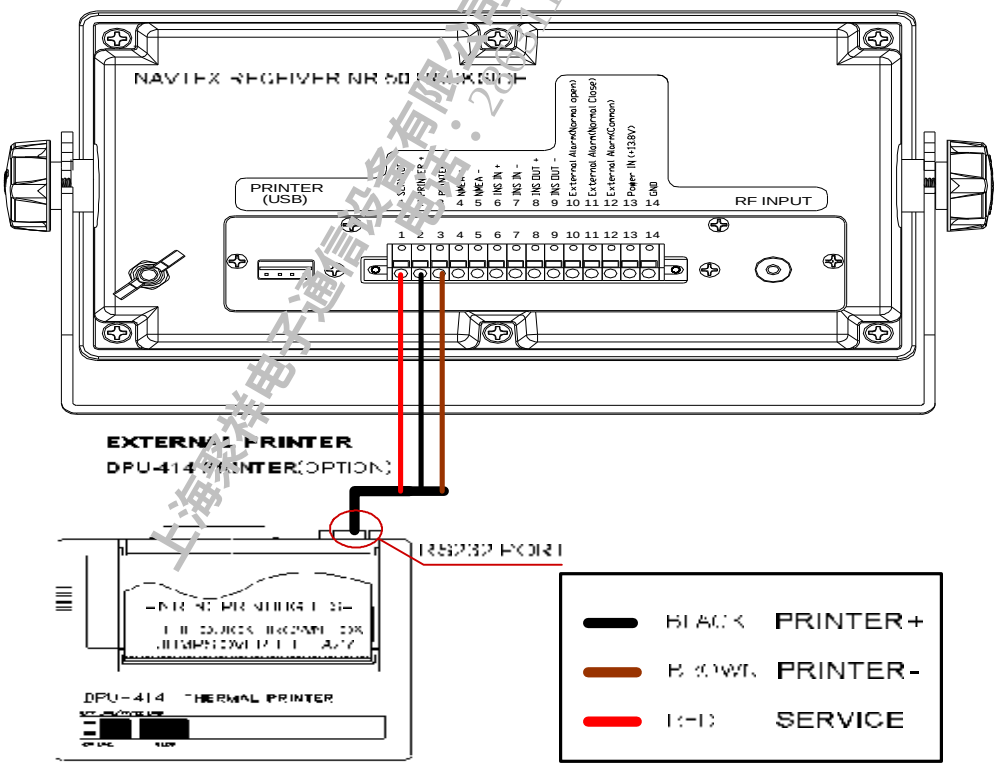
打印机应与接收机的打印口相连。

NR-50C 需使用专门的打印机：

- 品名：热敏打印机
- 型号：DPU – 414
- 参数：DC6.5V 15W

打印机与接收机间的通信方式为 RS232，所以电缆长度不应该太长。

接线方式见下图：



[图 5-2] 打印机连接

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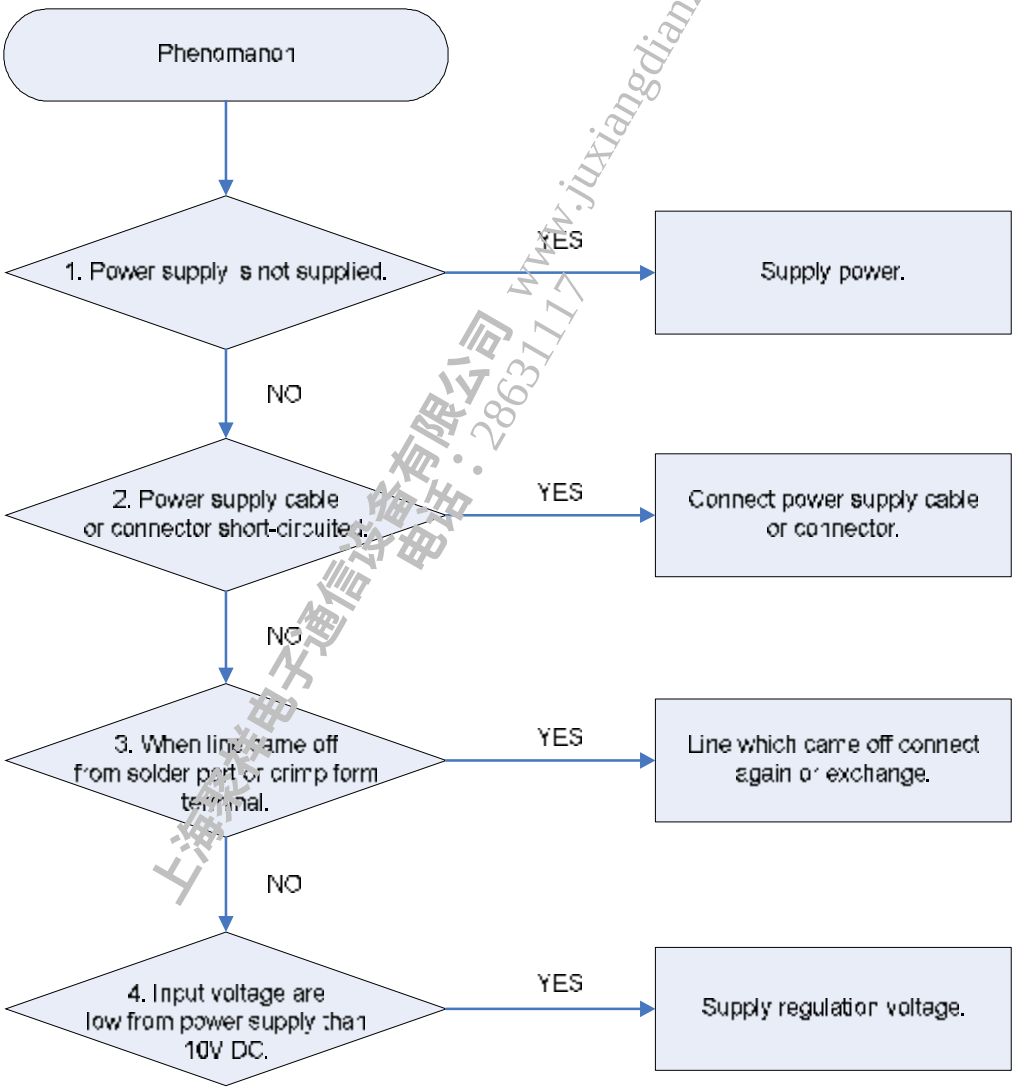
6. Breakdown inspection

Adjustment and fabrication can refer receiver fabrication and power part. And you can inspection through procedure of each part malfunction diagnosis.

6.1 电源部分



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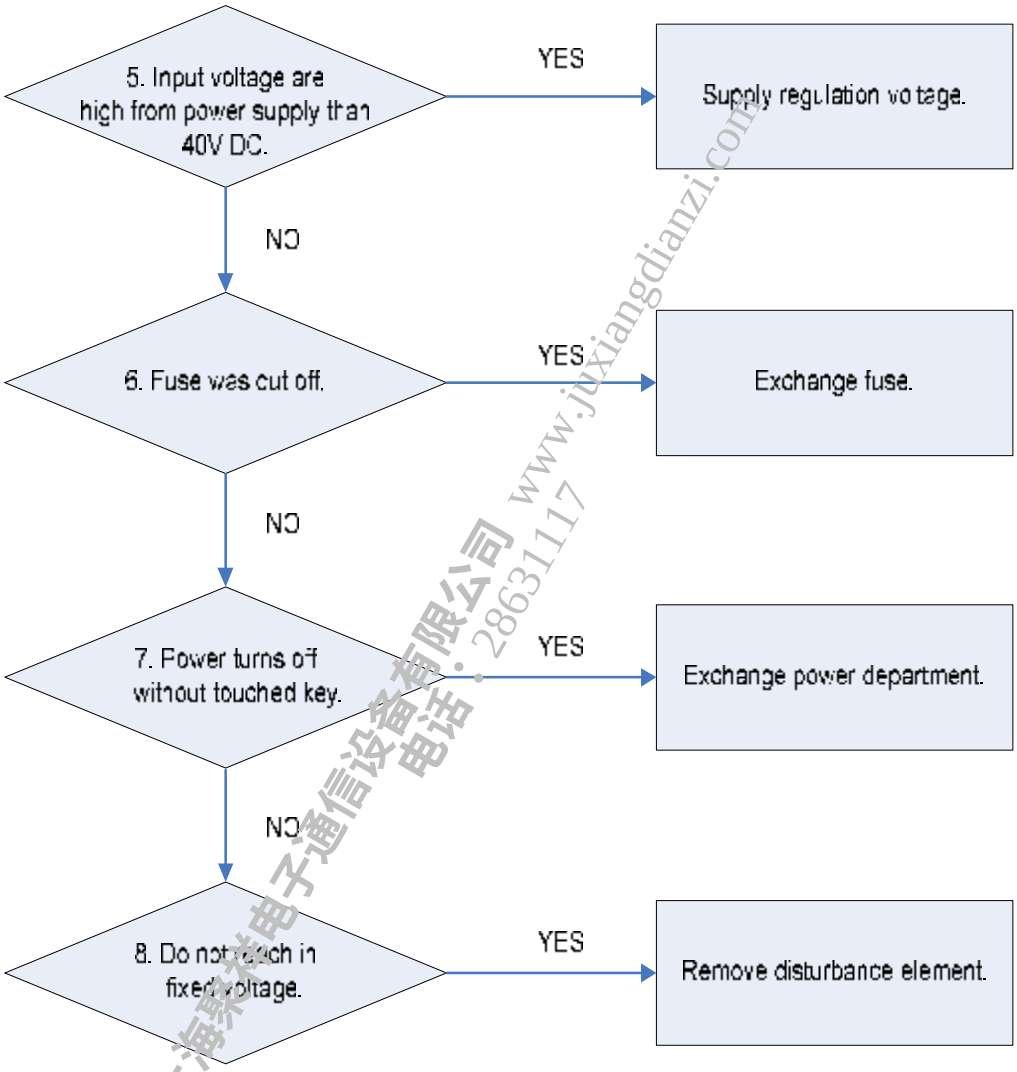

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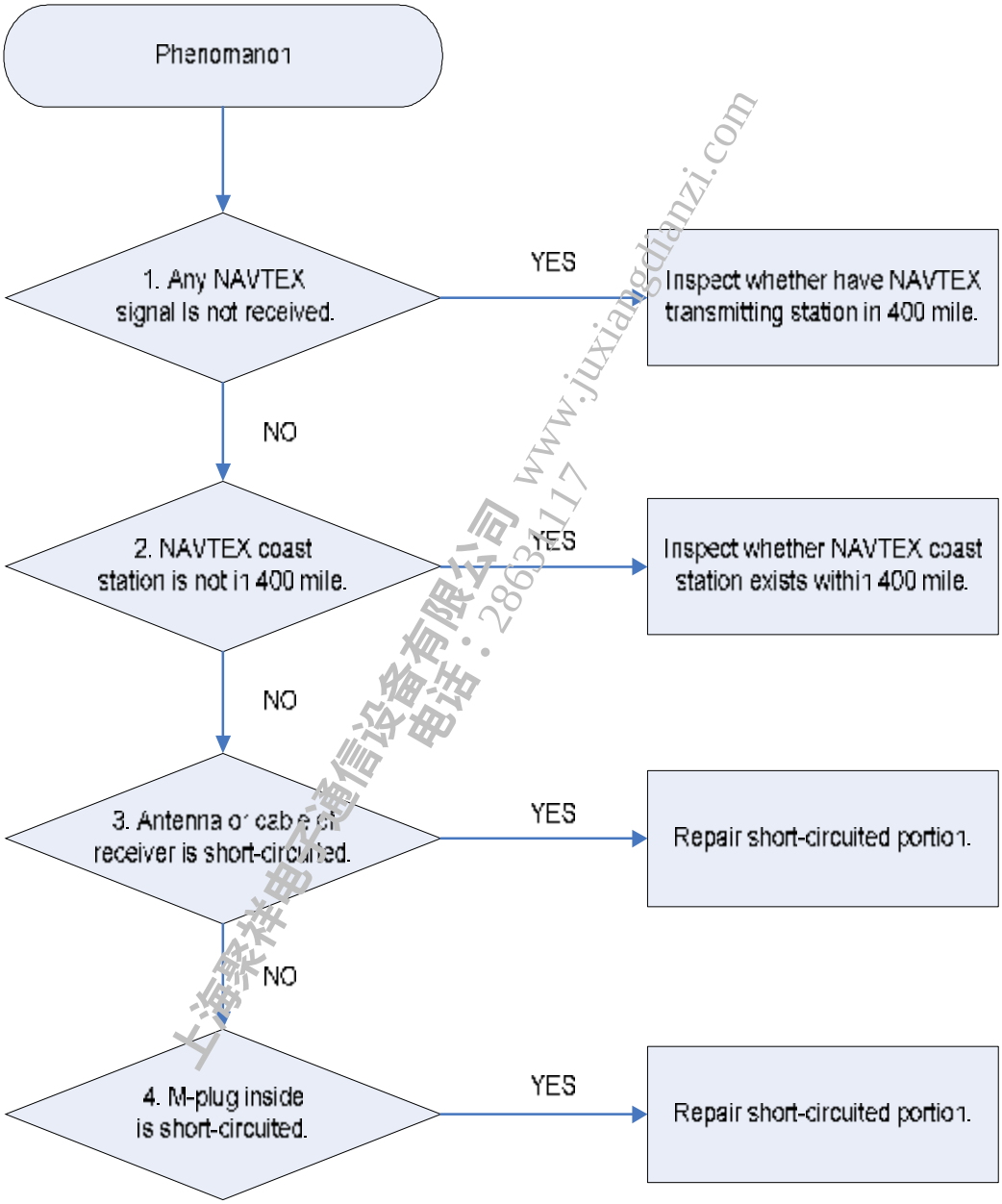
6.2 接收信号



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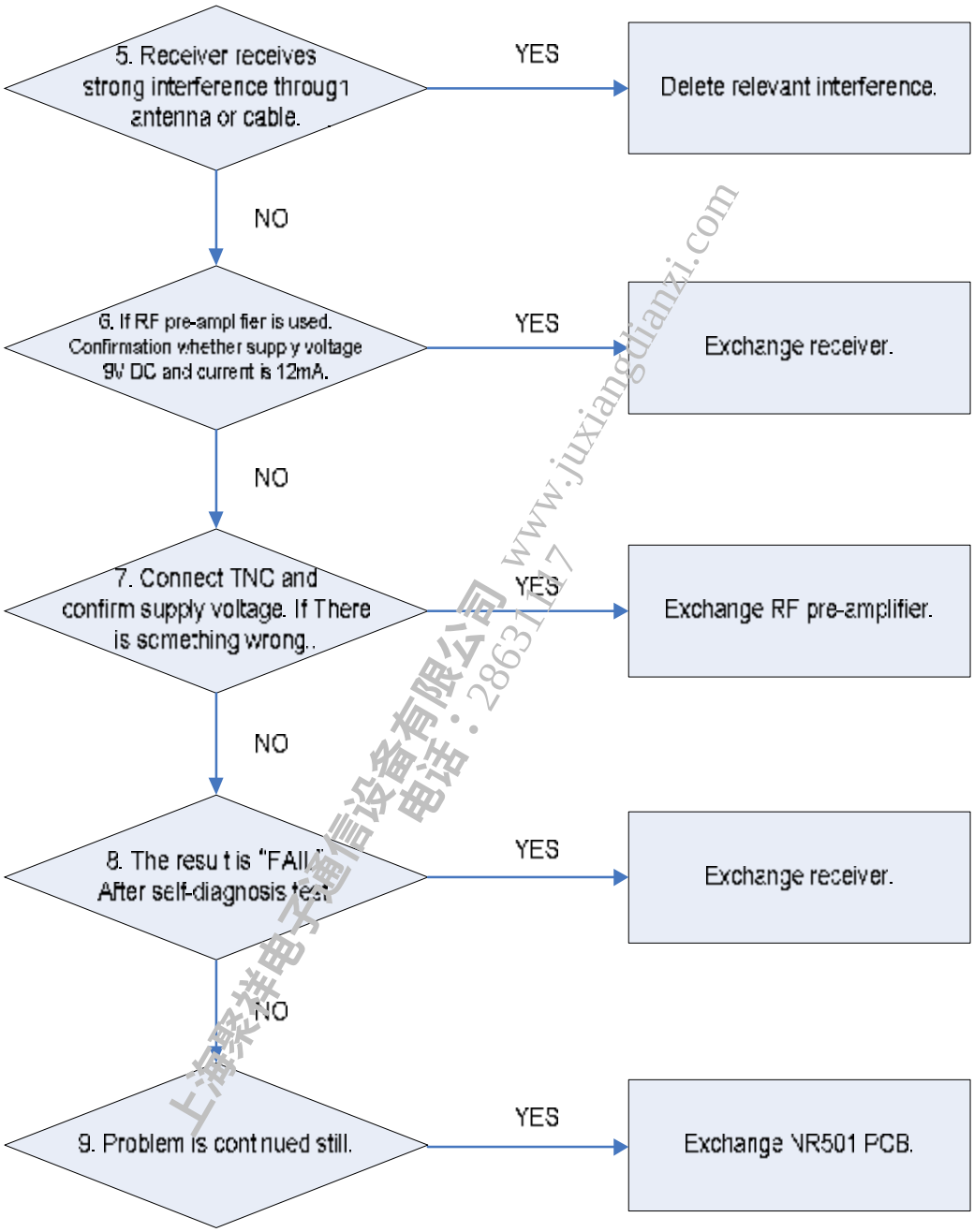

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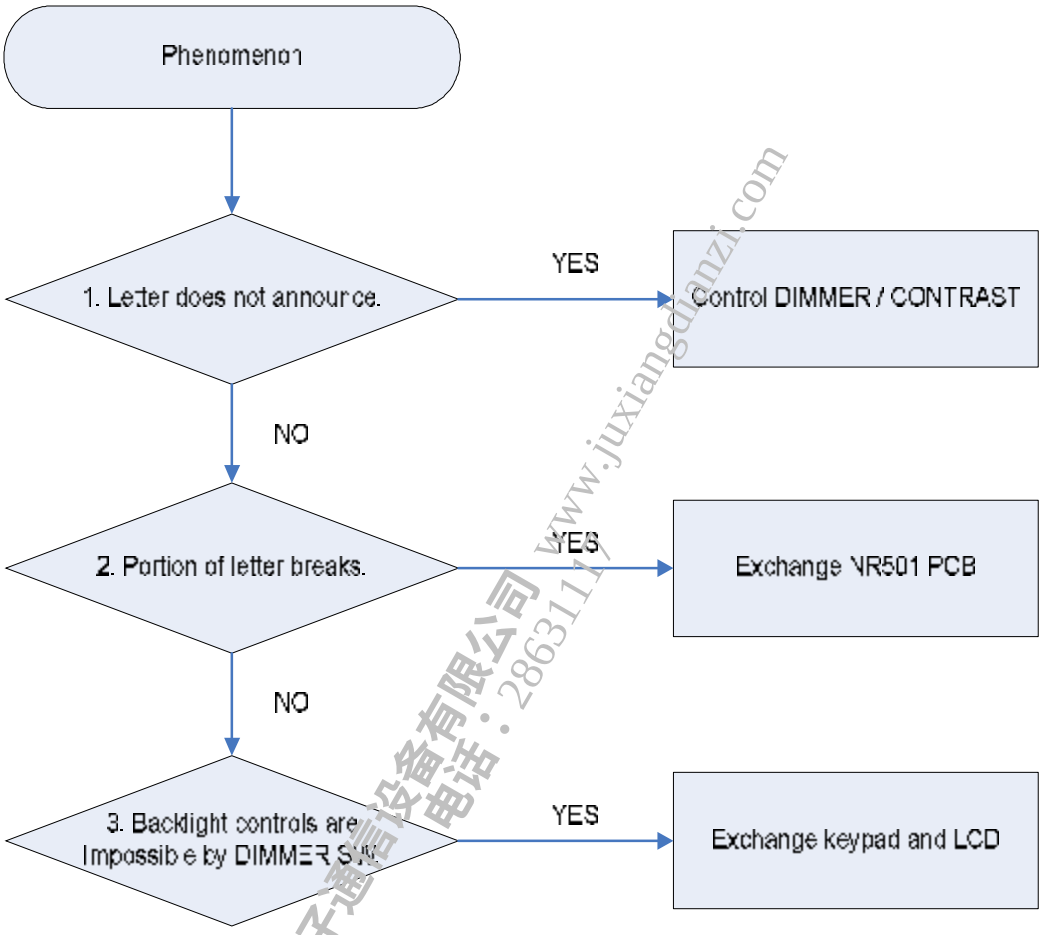
6.3 LCD



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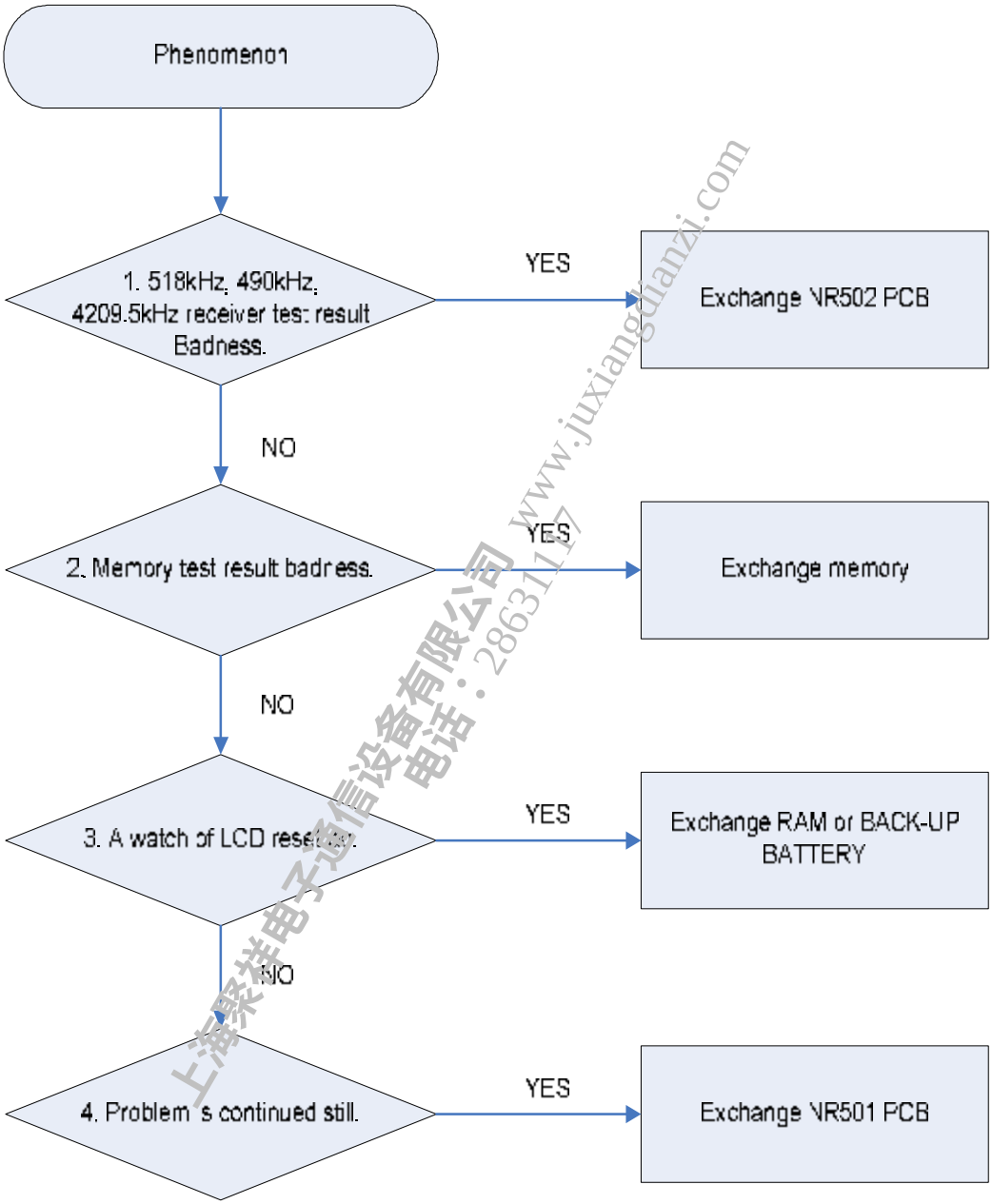
6.4 自测



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Appendix

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RADIO NAVIGATIONAL WARNINGS

Worldwide NAVTEX Transmitting Stations

NAV/MET Area I

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
Beigium	Oostende	0200,0600,1000,1400,1800,2200	51-11N 02-48E	518	150	M
		0310,0710,1110,1510,1910,2310	51-11N 02-48E	518	55	T
Estonia	Tallinn	0320,0720,1120,1520,1920,2320	59-30N 24-30E	518	250	U
Iceland	Reykjavik	0250,0650,1050,1450,1850,2250	64-05N 21-51W	518	550	R
		0350,0750,1150,1550,1950,2350	64-05N 21-51W	518	250	X*
Ireland	Valentia	0340,0740,1140,1540,1940,2340	51-27N 09-49W	518	400	W
	Malin Head	0240,0640,1040,1440,1840,2240	51-27N 09-49W	518	400	Q
Netherlands	Coast Guard	0230,0630,1030,1430,1830,2230	52-57N 04-47E	518	250	P
Norway	Bodo	0010,0410,0810,1210,1610,2010	67-16N 14-23E	518	450	B
	Rogaland	0150,0550,0950,1350,1750,2150	58-48N 05-34E	518	450	L
	Vardo	0330,0730,1130,1530,1930,2330	70-22N 31-06E	518	450	V
	Orlandet	0210,0610,1010,1410,1810,2210	63-40N 09-33E	518	450	N
Russian-Federation	Murmansk	0020,0420,0820,1220,1620,2020	68-46N 32-58E	518	300	C
	Arkhangel'sk	0050,0450,0850,1250,1650,2050	64-51N 40-17E	518	300	F
Sweden	Bjuroklubb	0110,0510,0910,1310,1710,2110	64-28N 21-36E	518	300	H
	Gislovshammer	0130,0530,0930,1330,1730,2130	55-29N 14-19E	518	300	J
	Grimeton	0030,0430,0830,1230,1630,2030	57-06N 12-23E	518	300	D
United-Kingdom	Cullercoats	0720,1220	55-04N 01-28W	490	270	U
		0100,0510,0910,1310,1710,2110	55-04N 01-28W	518	270	G
	Portpatrick	0820,2020	54-51N 05-07W	490	270	C
		0320,0610,1010,1410,1810,2210	54-51N 05-07W	518	270	O
	Niton	0520,1720	50-35N 01-18W	490	270	I
		0040,0440,0840,1240,1640,2040	50-35N 01-18W	518	270	E

NAV/MET Area II

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
France	Corsen(CROSS)	0040,0440,0840,1240,1640,2040	48-28N 05-03E	490	300	E
		0000,0400,0800,1200,1600,2000	48-28N 05-03E	518	300	A
Portugal	Horta	0120,0520,0920,1320,1720,2120	38-32N 28-38W	490	640	J
		0050,0450,0850,1250,1650,2050	38-32N 28-38W	518	640	F
	Monsato	0100,0500,0900,1300,1700,2100	38-44N 09-11W	490	530	G
		0250,0650,1050,1450,1950,2350	38-44N 09-11W	518	530	R
Spain						
	Coruna	0030,0430,0830,1230,1630,2030	43-21N 08-27W	518	400	D
	Tarifa	0100,0500,0900,1300,1700,2100	36-01N 05-34W	518	400	G
	Las Palmas	0120,0520,0920,1320,1720,2120	28-10N 15-25W	518	400	I

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NAV/MET Area III

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
Bulgaria	Varna	0130,0530,0930,1330,1730,2130	43-04N 27-46E	518	350	J
Croatia	Split	0240,0640,1040,1440,1840,2240	43-30N 16-29E	518	85	Q
Cyprus	Cyprus	0200,0600,1000,1400,1800,2200	35-03N 33-17E	518	200	M
Egypt	Alexandria	0210,0610,1010,1410,1810,2210	31-12N 29-52E	518	350	N
France	La Garde (CROSS)	0300,0700,1100,1500,1900,2300	43-06N 05-59E 43-06N 05-59E	490 518	250 250	S W
Greece	Iraklion Kerkira Limnos	0110,0510,0910,1310,1710,2110 0140,0540,0940,1340,1740,2140 0150,0550,0950,1350,1750,2150	35-20N 25-07E 39-37N 19-55E 39-52N 25-04E	518 518 518	280 280 280	H K L
Israel	Haifa	0020,0420,0820,1220,1620,2020	32-49N 35-00E	518	200	P
Italy	Roma Augusta Cagliari Trieste	0250,0650,1050,1450,1950,2350 0330,0730,1130,1530,1930,2330 0310,0710,1110,1510,1910,2310 0320,0720,1120,1520,1920,2320	41-48N 12-31E 37-14N 15-14E 39-14N 09-14E 45-41N 13-46E	518 518 518 518	320 320 320 320	R V T U
Malta	Malta	0220,0610,1010,1410,1810,2210	35-49N 14-32E	518	400	O
Romania	Constanta	0150,0550,0950,1350,1750,2150	44-12N 28-40E	490	250	L
Russian-Federation	Novorossiysk Astrakhan (Caspian Sea)	0300,0700,1100,1500,1900,2300 0340,0740,1140,1540,1940,2340	44-36N 37-58E 45-47N 47-33E	518 518	300 250	A W
Spain	Cabo de la Nao	0350,0750,1150,1550,1950,2350	38-43N 00-09E	518	300	X
Turkey	Istanbul Samsun Antalya Izmir	0010,0410,0810,1210,1610,2010 0030,0430,0830,1230,1630,2030 0000,0600,1000,1400,1800,2200 0000,0400,0800,1200,1600,2000 0040,0440,0840,1240,1640,2040 0030,0430,0830,1230,1630,2030 0050,0450,0850,1250,1650,2050 0020,0420,0820,1220,1620,2020 0120,0520,0920,1320,1720,2120	41-04N 28-57E 41-04N 28-57E 41-04N 28-57E 41-17N 36-20E 41-17N 36-20E 36-53N 30-42E 36-53N 30-42E 38-21N 26-35E 38-21N 26-35E	490 518 4209.5 490 518 490 518 490 518	300 300 300 300 300 300 300 300 300	B D M A E D F C F
Ukraine	Kerch Odessa	0100,0500,0900,1300,1700,2100 0230,0630,1030,1430,1830,2230	45-23N 36-28E 46-29N 30-44E	518 518	120 280	B C

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NAV/MET Area IV

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
Bermuda	Bermuda	0010,0410,0810,1210,1610,2010	32-23N 64-40W	518	280	B
Cannada	Rivirer-au-Renard	0020,0420,0820,1220,1620,2020	50-15N 66-10W	518	300	C
	Wiarton	0110,0510,0910,1310,1710,2110	44-20N 81-10W	518	300	H
	St.john's	0220,0610,1010,1410,1810,2210	47-30N 52-40W	518	300	O
	Thunder Bay	0230,0630,1030,1430,1830,2230	48-25N 89-20W	518	300	P
	Sydney	0240,0640,1040,1440,1840,2240	46-10N 60-00W	518	300	Q
	Labrador	0350,0750,1150,1550,1950,2350	53-42N 57-02W	518	300	X
	Iqaluit	0300,0700,1100,1500,1900,2300	63-43N 68-33W	490	300	S
		0310,0710,1110,1510,1910,2310	63-43N 68-33W	518	300	T
Netherlands Antilles	Curacao	0110,0510,0910,1310,1710,2110	12-10N 68-52W	518	400	H
United-States	Miami	0000,0400,0800,1200,1600,2000	25-37N 80-23W	518	240	A
	Boston	0045,0445,0845,1245,1645,2045	41-43N 70-30W	518	200	F
	New Orleans	0300,0700,1100,1500,1900,2300	29-53N 89-57W	518	200	G
	Chesapeake (Portsmouth)	0130,0530,0930,1330,1730,2130	36-43N 76-00W	518	280	N
	Savannah	0040,0440,0840,1240,1640,2040	32-08N 81-42W	518	200	E

NAV/MET Area VI

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
Argentina	Ushuaia	0600,1400,2200	54-48S 68-18W	518	280	M
	Rio Gallegos	0610,1410,2210	51-37S 65-03W	518	280	N
	Comodoro-Rivadavia	0620,1420,2220	45-51S 67-25W	518	280	O
	Bahia Blanca	0630,1430,2230	38-43S 62-06W	518	280	P
	Mar del Plata	0640,1440,2240	38-03S 57-32W	518	280	Q
	Buenos Aires	0650,1450,2250	34-36S 58-22W	518	560	R
Uruguay	La Paloma	0000,0400,0800,1200,1600,2000	34-40S 54-09W	490	280	A
		0050,0450,0850,1250,1650,2050	34-40S 54-09W	518	280	F

NAV/MET Area VII

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
Namibia	Walvis Bay	0010,0410,0810,1210,1610,2010	23-03S 14-37E	518	378	B
South Africa	Cape Town	0020,0420,0820,1220,1620,2020	33-40S 18-43E	518	500	C
	Port Elizabeth	0120,0520,0920,1320,1720,2120	34-02S 25-33E	518	500	I
	Durban	0220,0610,1010,1410,1810,2210	30-00S 31-30E	518	500	O

NAV/MET Area VIII

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Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
India	Bombay	0100,0500,0900,1300,1700,2100	19-05N 72-50E	518	250	G
	Madras	0230,0630,1030,1430,1830,2230	13-08N 80-10E	518	250	P
Mauritius	Mauritius	0020,0420,0820,1220,1620,2020	20-10S 57-28E	518	400	C

NAV/MET Area IX

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
Bahrain	Hamala	0010,0410,0810,1210,1610,2010	26-09N 50-28E	518	300	B
Egypt	Ismailia	0350,0750,1150,1550,1950,2350	30-28N 32-22E	518	400	X
	(Serapeum)	0750,1150	30-28N 32-22E	4209.5	400	X
	Quseir (Kosseir)	0330,0730,1130,1530,1930,2330	26-06N 34-17E	518	350	V
Iran	Bushehr	0000,0400,0800,1200,1600,2000	28-59N 50-50E	518	300	A
	Bandar Abbas	0050,0450,0850,1250,1650,2050	27-07N 56-04E	518	300	F
Saudi-Arabia	Dammam	0100,0500,0900,1300,1700,2100	26-26N 50-06E	518	390	G
	Jiddah	0110,0510,0910,1310,1710,2110	21-23N 39-10E	518	390	H
Oman	Muscat	0200,0600,1000,1400,1800,2200	23-36N 58-30E	518	270	M
Pakistan	Karachi	0230,0630,1030,1430,1830,2230	24-51N 67-03E	518	400	P

NAV/MET Area X

Australia is only providing coastal warnings through the International SafetyNET Service (AUSCOAST).

NAV/MET Area XI

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
China	Sanya	0200,0600,1000,1400,2200	18-14N 109-30E	518	250	M
	Guangzhou	0210,0610,1010,1410,2210	23-08N 113-32E	518	250	N
	Fuzhou	0220,0620,1020,1420,2220	26-01N 119-18E	518	250	O
	Shanghai	0240,0640,1040,1440,2240	31-08N 121-33E	518	250	Q
	Dalian	0250,0650,1050,1450,2250	38-52N 121-33E	518	250	R
Indonesia	Jayapura	0000,0400,0800,1200,1600,2000	02-31S 140-43E	518	300	A
	Ambolna (Ambon)	0010,0410,0810,1210,1610,2010	03-42S 128-12E	518	300	B
	Makassar	0030,0430,0830,1230,1630,2030	05-06S 119-26E	518	300	D
	Jakarta	0040,0440,0840,1240,1640,2040	06-06S 106-54E	518	300	E
Japan	Otaru	0130,0530,0930,1330,1730,2130	43-19N 140-27E	518	400	J
	Kushiro	0140,0540,0940,1340,1740,2140	42-57N 144-36E	518	400	K
	Yokohama	0120,0520,0920,1320,1720,2120	35-14N 139-55E	518	400	I

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Japan(cont)	Moji	0110,0510,0910,1310,1710,2110	34-10N 130-56E	518	400	H
	Naha	0100,0500,0900,1300,1700,2100	26-05N 127-40E	518	400	G
Malaysia	Pinang	0320,0720,1120,1520,1920,2320	05-26N 100-24E	518	350	U
	Miri	0310,0710,1110,1510,1910,2310	04-28N 114-01E	518	350	T
	Sandakan	0300,0700,1100,1500,1900,2300	05-54N 118-00E	518	350	S
Korea,-Republic of	Chukpyon	0130,0530,0930,1330,1730,2130	37-03N 129-26E	490	200	J
		0330,0730,1130,1530,1930,2330	37-03N 129-26E	518	200	V
	Pyonsan	0140,0540,0940,1340,1740,2140	35-36N 126-29E	490	200	k
		0340,0740,1140,1540,1940,2340	35-36N 126-29E	518	200	W
Singapore	Singapore	0020,0420,0820,1220,1620,2020	01-25N 103-52E	518	400	C
Taiwan	Chi-lung (Keelung)	0330,0730,1130,1530,1930,2330	25-08N 121-45E	490, 4209.5	540	V
		0350,0750,1150,1550,1950,2350	25-08N 121-45E	490, 4209.5		X
		0230,0630,1030,1430,1830,2230		518		P
Thailand	Bangkok	0050,0450,0850,1250,1650,2050	13-43N 100-34E	518	200	F
United-States	Guam	0100,0500,0900,1300,1700,2100	13-29N 144-50E	518	100	V
Vietnam	Ho Chi Minh-City	0350,0750,1150,1550,1950,2350	10-47N 106-40E	518	400	X
	Da Nang	0140,0540,0940,1340,1740,2140	16-05N 108-13E	518	400	K
Hong Kong (China)	Hong Kong	0150,0550,0950,1350,1750,2150	22-13N 114-15E	518	400	L

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NAV/MET Area XII

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
Canada	Prince Rupert	0030,0430,0830,1230,1630,2030	54-17N 130-25W	518	300	D
	Tofino	0110,0510,0910,1310,1710,2110	48-55N 125-32W	518	300	H
United-States	Pt. Reyes (SanFrancisco)	0000,0400,0800,1200,1600,2000	37-55N 122-44W	518	350	C
	Kodiak	0300,0700,1100,1500,1900,2300	57-46N 152-34W	518	200	J
		0340,0740,1140,1540,1940,2340	57-46N 152-34W	518	200	X
	Honolulu	0040,0440,0840,1240,1640,2040	21-22N 158-09W	518	350	O
	Camona (Long Beach)	0045,0445,0845,1245,1645,2045	35-31N 121-03W	518	350	Q
	Astoria	0130,0530,0930,1330,1730,2130	46-10N 123-49W	518	216	W

NAV/MET Area XIII

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
Russian-Federation	Vladivostok	0000,0400,0800,1200,1600,2000	43-23N 131-54E	518	230	A
	Kholmsk	0010,0410,0810,1210,1610,2010	47-02N 142-03E	518	300	B
	Petropavlovsk	0020,0420,0820,1220,1620,2020	53-15N 158-25E	518	300	C
	Magadan	0030,0430,0830,1230,1630,2030	59-41N 150-09E	518	120	D
	Okhotsk	0100,0500,0900,1300,1700,2100	59-22N 143-12E	518	300	G

NAV/MET Area XV

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
Chile	Antofagasta	0400,1200,2000	23-40S 70-25W	518	300	A
		0000,0800,1600	23-40S 70-25W	518	300	H
	Valparaiso	0410,1210,2010	32-48S 71-29W	518	300	B
		0010,0810,1610	32-48S 71-29W	518	300	I
	Talcahuano	0420,1220,2020	36-42S 73-06W	518	300	C
		0020,0820,1620	36-42S 73-06W	518	300	J
	Puerto Montt	0430,1230,2030	41-30S 72-58W	518	300	D
		0030,0830,1630	41-30S 72-58W	518	300	K
	Punta Arenas	0440,1240,2040	53-09S 70-58W	518	300	E
	(Magallanes)	0040,0840,1640	53-09S 70-58W	518	300	L
	Isla de Pascua	0450,1250,2050	27-09S 109-25W	518	300	F
		0050,0850,1650	27-09S 109-25W	518	300	G

NAV/MET Area XVI

Country	NAVTEX Coast Station	Transmission times (UTC)	Position	Freq (kHz)	Range (NM)	ID
Peru	Paita	0300,0700,1100,1500,1900,2300	05-05S 81-07W	518	400	S
	Callao	0320,0720,1120,1520,1920,2320	12-03S 77-09W	518	400	U
	Mollendo	0340,0740,1140,1540,1940,2340	17-01S 72-01W	518	400	W

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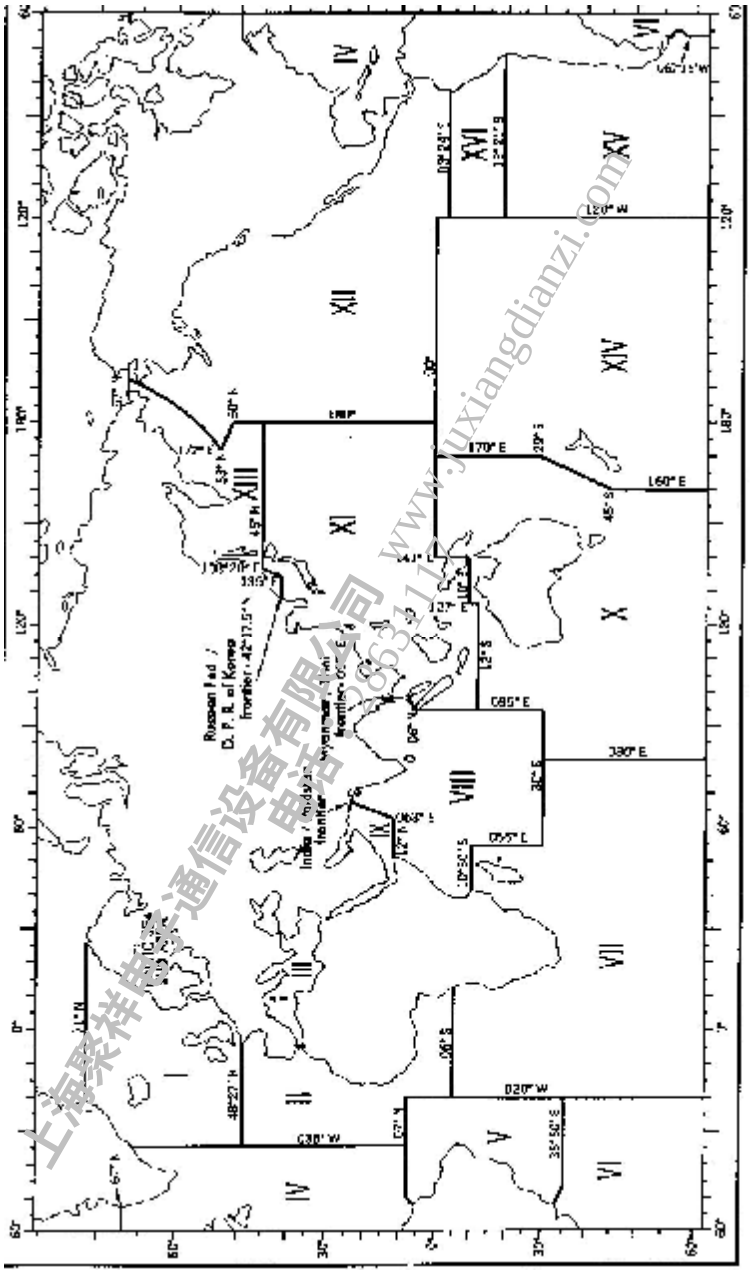
Appendix

GEOGRAPHICAL AREAS FOR CO-OPERATING AND PROMULGATING NAVAREA WARNING



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