INSTRUCTION MANUAL

MF/HF SSB RADIO EQUIPMENT

SRG-150DN/SRG-250DN

SAMYUNG ENC

⚠ Warning

RF Exposure Warning :

※ The radiated output power of this device is below the FCC radio frequency exposure limits. Nevertheless, the device should be used in such a manner that the potential for human contact during normal operation is minimized. In order to avoid the possibility of exceeding the FCC radio frequency exposure limit, human proximity to the antenna should not be less than 142 cm during normal operation.

Information to user

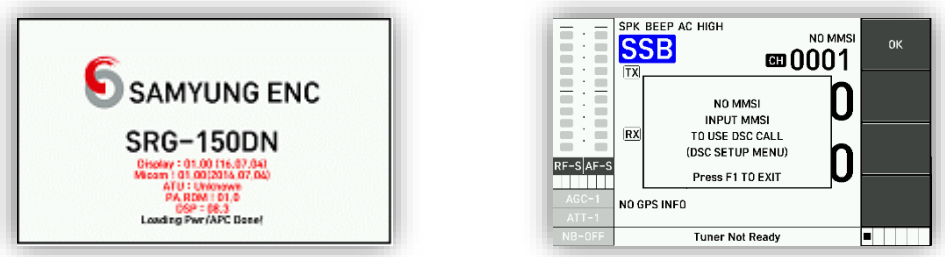
※ The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

CONTENTS

CHAPTER 1. HOW TO OPERATE THE MAIN UNIT

1-1 SET MMSI(MARITIME MOBILE SERVICE IDENTITY) ID

Press POWER key to turn on the power of the main unit and it will be changed to the following setting mode from the initial screen, as below.



➜

< Initial screen >

Press F1 button on the front panel to return to the main screen.

1-1-1 INPUT SELF(USER)-ID

If you press MORE(1/5) F4 4 times, then it will be expressed in MORE(5/5) F4 ➜ SETUP F2 ➜ 1 [1. DSC SETUP] ➜ ENTER F1 ➜ 1 [1.MMSI] ➜ In ENTER F1 you can input the desired ID number.

Example: ID 111100000 Input: if you press MORE(1/5) F4 4 times, you change it to MORE(5/5) F4 and SETUP F2 ➜ 1 [1.DSC SETUP] ➜ ENTER F1 ➜ 1 [1.MMSI] ➜ ENTER F1 ➜ Press numeric keys in order 1 1 1 1 0 0 0 0 0.

Press repeatedly EXIT F2 to exit to the MAIN screen.

(MMSID: 111100000 is displayed in the upper right corner of the MAIN screen.)

1-2 SSB MODE

1-2-1 CHANNEL SELECTION

1) MORE(2/5) F4 ➜ MODE F1 ➜ SSB mode selection.

2) Press the key CH/FR repeatedly to select CH ➜ Input the desired channel with numeric buttons and then press ENT.

1-2-2 FREQUENCY SELECTION

1) Press CH/FR on the front panel of keyboard repeatedly and select [TX]. Input the desired frequency with numeric buttons and press ENT.

2) Press CH/FR on the front panel of keyboard repeatedly and select [RX]. Input the desired frequency with numeric buttons and press ENT.

[Ref.] If frequency is out of range then it cannot be input with 'beep' alarm will be sound off. The TELEX frequency interlocked with the DSC by the Radio Regulation Appendix 15 cannot be input.

1-2-3 TRANSMISSION (TX) & RECEPTION (RX)

1) Transmission (TX)

Input the transmission / reception (TX/RX) frequency, which will be used for voice communication.

MORE(2/5) F4 ➜ MODE F1 switch to the SSB mode ➜ Input the transmission / reception (TX/RX) frequency to use it for voice communication➜ Press the microphone switch (PTT) and communicate.

[Ref.] Press the button CH/FR put on [TX] and if you press ENT, you can change the frequency with the dial from 10Hz to 10MHz by selecting it with the buttons LEFT F1, RIGHT F2.

[Ref.] In case, if there is no ATU tuning data value for the first channel then ATU tuning for the emergency TX frequency (2,182 / 2,1875 / 4,2075 / 6,312 / 8,4145 / 12,477 / 16,8045 kHz) runs automatically.

2) Reception (RX)

It is easy to hear by turning down the GAIN and turning up the VOLUME on noiseless condition of [VOLUME] and [GAIN].

[Ref.] Press the button CH/FR, put on [RX] and if you press ENT, you can change the frequency with the dial from 10Hz to 10MHz by selecting it with the buttons LEFT F1, RIGHT F2.

1-3 DSC MODE

1-3-1 CHANNEL SELECTION

MORE(2/5) F4 ➜ After setting the DSC mode to MODE F1 ➜ Rotate the channel dial to select the desired channel.

1-3-2 FREQUENCY INPUT

MORE(2/5) F4 ➜ MODE F1 ➜ After setting the DSC mode ➜ Rotate the channel dial to move to the channel, in which there is no input of frequency ➜ Repeatedly press CH/FR on the front panel of keyboard and select [TX]. ➜ Press ENT KEY to input desired frequency.

[Ref.] If frequency is out of range, frequency cannot be input with 'beep' alarm sound.

[Ref.] Press the button CH/FR, put on [TX] and if you press ENT, you can change the frequency with the dial from 10Hz to 10MHz by selecting it with the buttons LEFT F1, RIGHT F2.

[Ref.] In CH1~ CH32 there is no frequency change and it applies from CH33 ~ to CH40.

1-3-3 CALL

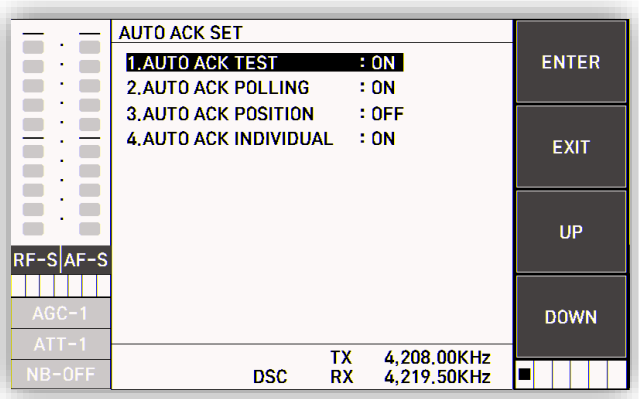
MORE(1/5) F4 ➜ CALL F1 ➜ TO : --------- ➜ ENTER F1 ➜ DIRECT INPUT ➜ ENTER F1 ➜ Input the other party's MMSI ➜ ENTER F1 ➜ Frequency selection ➜ ENTER F1 ➜ MODE selection ➜ ENTER F1 ➜ COMM Frequency selection ➜ Press CALL F4.

1-3-4 DSC MESSAGE RX AUTO REPLY

MORE(2/5) F4 ➜ MODE F1 ➜ DSC mode selection MORE(5/5) F4 ➜ SETUP F2 ➜ 1 [1. DSC SETUP] ➜ ENTER F1 ➜ 4 [4.AUTO ACK SET] ➜ ENTER F1

1. AUTO ACK TEST: ON , 2. AUTO ACK POLLING : ON ,

3. AUTO POSITION: OFF , 4 . AUTO ACK INDIVIDUAL: ON



1-4 DISTRESS TRANSMISSION

1-4-1 TRANSMIT A SIGNAL (DISTRESS) BY EMERGENCY TRANSMISSION KEY

1) Press the  KEY and hold on for 5 seconds to transmit a signal.

2) In case, if there is no response, transmit again from the 1st channel to the 6th channel after approximately 4 minutes 30 seconds (4 minutes ~ 5 minutes).

3) Press EXIT F1 to stop the transmission.

1-5 HOW TO USE SN-100 NBDP TERMINAL

1-5-1 CHANNEL SELECTION

1) Change [CH] on the screen ➜ Select the desired channel with [Numeric buttons] ➜ Press [Enter] button.

2) Press [F6] ➜ Select the desired channel with [Numeric buttons] ➜ Press [Enter] button.

1-5-2 FREQUENCY SELECTION

1) Transmission (TX)

Press [F7] ➜ Input the desired communication frequency with [Numeric buttons] ➜ Press [Enter] button.

2) Reception (RX)

Press [F8] ➜ Input the desired communication frequency with [Numeric buttons] ➜ Press the [Enter] button.

1-5-3 ARQ MODE

Press [F2] and if you select [ARQ], you can be connected by ARQ MODE to the other station with the current setting channel.

1-5-4 FEC MODE

Press [F2] and if you select [FEC], you can be connected by FEC MODE to the other station with the current setting channel.

CHAPTER 2. OVERVIEW

GMDSS(Global Maritime Distress and Safety System) is a world-wide maritime distress and safety communication system, which specifically applied to maritime and land communications, integrates communication technologies, such as digital communications, wireless telephone, wireless telex and satellite communications with emergency and safety communications, navigation alerts and weather alerts, as well as navigation management of ships, and make it use in general wireless communication and navigation security communication.

SRG-150DN / 250DN (MF / HF transmit·receiving wireless telephone and telegraph equipment) and SN-100 (NBDP terminal) are composed of MF/ HF transceiver, digital selective calling device (DSC), DSC W/K Receiver and narrow band direct printing device (NBDP) and used for digitized information communication suitable for automatic processing in distress, safety and general situations.

SN-100 is used when connected to the transceiver (SRG-150DN / 250DN) and outputs sub-carrier signal through the transceiver (SRG-150DN / 250DN) to transmit (Narrow band of direct printing) NBDP DATA, directly demodulates the received signal (RX) from the antenna and DISPLAYs the information through the LCD on the front side of the terminal.

Frequency range:

Transmission: 1.605MHz ~ 27.499MHz

Reception: 500KHz ~ 29.99990MHz

Type of radio wave and resulting output

SRG-150DN J3E : 150W(HIGH)/100W(MID)/50W(LOW)

SRG-250DN J3E : 250W(HIGH)/100W(MID)/50W(LOW)

SRG-150DN/250DN F1B : 100W(HIGH,MID)/75W(LOW)

2-1 CHARACTERISTIC

2-1-1 AVAILABLE RANGE

SRG-150DN/250DN has a built in MF/HF Transceiver, DSC W/K Receiver, digital selective calling device (DSC), Alarm (warning) automatic telephone and can be used by itself. It is

available to use NBDP function by connecting SN-100 terminal. However, it is not possible to only use NBDP terminal.

2-1-2 TOTAL CONTROL METHOD

SRG-150DN/250DN contains important circuits as an integrated circuit in its device and constructs a rational system by comprehensively controlling the related functions of each device.

Furthermore, all operations for narrow band direct printing are possible by connecting NBDP terminal (SN-100) to SRG-150DN / 250DN.

2-1-3 OPERATION

All operation, such as communication, centralized control, monitoring, are available by installing SRG-150DN/250DN, NBDP terminal (SN-100) and PRINTER in a convenient place.

In emergency, transmission of an alarm signal (DSC) to the ONE-TOUCH and automatic alarm reception from another ship are possible.

Furthermore, using NBDP terminal (SN-100) it is easy to create and transmit/receive TELEX and view with wide front display window.

2-1-4 EQUIPMENT CONFIGURATION

Because SRG-150DN/ 250DN consists of one device, it does not require a large space for operation. SN-100 terminal is also a single device, therefore can be installed and used only by connecting cable with SRG-150DN/250DN.

2-1-5 RELIABILITY

DDS (Direct Digital Synthesize) method has been newly adopted to improve sound quality, reliability, reception sensitivity and selectivity.

2-1-6 STRUCTURE CONSTRUCTION

It is made of a thick aluminum body to endure harsh marine environment.

2-1-7 EXTERNAL SHAPE

SRG-150DN / 250DN uses a large LCD (display device), that channel and frequency, transmission and reception status of device and etc. can be seen at a glance, and is designed to increase the size of the key for convenient operation. SN-100 NBDP terminal has wide screen, thin, colorful LCD and convenient keyboard.

2-2 EQUIPMENT COMPONENTS

This unit consists of SRG-150DN / 250DN and SN-100 (NBDP terminal equipment). Each device is composed of functional PCB and divided into basic components and optional components.

<< SRG-150DN basic components >>

NO	NAME	TYPE	QUANTITY	NOTES
1.	MF/HF-DSC transmitter/ receiver	SRG-150DN	1SET	SRG-150DN assembly
(1)	POWER BOARD	P103330	1	
(2)	MAIN BOARD	P103300	1	
(3)	DISPLAY BOARD	P103340	1	
(4)	TX PA	P103380(150W)	1	
(5)	TX FILTER	P103310(150W)	1	
(6)	W/K RX	P103662	1	
2.	Automatic Antenna Tuner	SAT-100	1	(Installation material included)
3.	HAND MIC	SM-1150	1	
4.	Accessory	SSB-A-C SRG-2050D-PC	1SET	
5.	User, Installation Manual	SRG-150DN/250DN(ENG)	1	

<< SRG-250DN basic components >>

NO	NAME	TYPE	QUANTITY	NOTES
1.	MF/HF-DSC transmitter/receiver	SRG-250DN	1SET	SRG-250DN assembly
(1)	POWER BOARD	P103330	1	
(2)	MAIN BOARD	P103300	1	
(3)	DISPLAY BOARD	P103340	1	
(4)	TX PA	P103380(250W)	1	

(5)	TX FILTER	P103312(250W)	1	
(6)	W/K RX	P103662	1	
2.	Automatic Antenna Tuner	SAT-100	1	(Installation material included)
3.	HAND MIC	SM-1150	1	
4.	Accessory	SSB-A-C SRG-2050D-PC	1SET	
5.	User, Installation Manual	SRG-150DN/250DN(ENG)	1	

<< SRG-150DN/250DN optional components >>

NO	NAME	TYPE	QUANTITY	NOTES
1.	Emergency Lamp	EMG-Light	1	
2.	External Speaker	SS-10W4	1	
3.	POWER SUPPLY	SP-1250ADC	1	
4.	NBDP terminal	SN-100	1	Domestic (including installation materials)
(1)	Connection Board	T-130	1	
(2)	NBDP receiver	T-132	1	
(3)	NBDP PLL	T-133	1	
(4)	Power supply	T-025	1	
(5)	CPU Board	P006920	1	
		P103160	1	
5.	KEY BOARD	SP8695	1	
6.	MF/HF Distress Box	SD-250	1	SCN-16-5P included
7.	Printer	HP-083	1	
8.	WHIP ANT(TX)	SAN-308	1	8M
9.	WHIP ANT(RX)	SAN-30R	1	6M

CHAPTER 3. REGULATION

3-1 GENERAL SPECIFICATIONS

※ This equipment has been tested in accordance with the IMO guideline for GMDSS.

1) Power supply

DC 24V(BAT) : -10% ~ +30% , Power: 1200VA

Hazardous voltage indication

Insulation resistance measurement: must be higher than 1MΩ.

2) Consumption current: DC24V±15%

2.5A when receiving, 30A (MAX) when transmitting

3) Compass safety distance

- Follow compass safety distance to prevent interference with your magnetic compass.
- Standard Compass: 2.4 m
- Steering Compass: 1.5m

4) Frequency selection

① ITU CHANNEL (Maritime Mobile service) 271EA.

② USER CHANNEL 299EA, set call and frequency directly with KEYBOARD.

③ DSC channels: 2187.5, 4207.5, 6312, 8414.5, 12577, 16804.5kHz (FIB) always receive SCAN.

④ 13 DSC channels (editable)

5) Frequency switching time

Between CHANNEL - within 5 seconds, between BAND - within 15 seconds

(Including ANTENNA MATCHING time)

6) Ambient Condition

Temperature -15 ° C to + 55 ° C

Humidity 95%, + 55 ℃

Vibration X axis: Maximum acceleration 7 [㎨] from 5 Hz ~ to 100 Hz

Test for 120 minutes at resonance frequency 24.8 Hz, 24.8 Hz

Y axis: Maximum acceleration 7 [㎨] from 5 Hz ~ to 100 Hz

Test for 120 minutes at resonance frequency 60.9Hz, 60.7Hz

Z axis: Maximum acceleration 7 [㎨] from 5 Hz ~ to 100 Hz

Test for 120 minutes at resonance frequency 79.1 Hz, 91.2 Hz

7) Dimensions (mm)

SRG-150DN / 250DN: 324 (W) X 170 (H) X 347 (D)

SN-100: 300 (W) X 255 (H) X 127 (D)

8) Weight

SRG-150DN / 250DN about 8.1Kg

SN-100 about 5Kg

SAT-100 DIR 3.4Kg

3-2 TRANSMITTER SPECIFICATIONS

1) Type of emission: J3E, FIB

2) Communication method: SIMPLEX and SEMI DUPLEX method

3) Frequency range: 1.605MHz ~ 27.499MHz, 10Hz STEP

However, TELEX frequency, which is linked with DSC, is not input.

4) Continuous operation: When using 200A battery

Operating for over 8hrs with transmitting for 1 minute, stand by for 4 minutes.

5) Antenna power:

Power reduction: 3 steps SRG-150DN (J3E 50/100/150, F1B 75/100 / 100W)

SRG-250DN (J3E 50/100/250, F1B 75/100 / 150W)

6) Stability of frequency: less than ± 10Hz, SYNTHESIZER method (within 0.3ppm)

7) Number of channels: SSB x 299, ITU x 271, DSC x 19

8) Modulation method: Low power stage balanced modulation method

9) Occupied frequency bandwidth: J3E ... Within 3kHz,

F1B ... Within 0.5kHz

10) Carrier attenuation ratio: more than 40dB (for J3E)

11) Spurious attenuation ratio: In J3E

1.5 - 4.5kHz more than 31dB

4.5 - 7.5kHz more than 38dB

More than 7.5kHz more than 43dB

In F1B

More than 138Hz 15dB

More than 276Hz 31dB

More than 500Hz 43dB

12) Comprehensive frequency characteristics: deviation at 350 - 2,700Hz is within 6dB

13) Total Distortion and Noise: more than 20dB

14) Output Impedance: 50ohm

15) Low frequency input: + 10dB / -35dB, IMPEDANCE 600 ohm

3-3 RECEIVER SPECIFICATIONS

1) Type of emission: J3E (USB), F1B (FSK)

2) Reception method: UP CONVERSION Double super-heterodyne method using phase LOCK type DIGITAL frequency SYNTHESIZER.

First intermediate frequency: 64.455 MHz, second intermediate frequency: 455 kHz

3) Frequency range: 500kHz ~ 29.99990MHz, 10Hz STEP

However, the TELEX frequency, which is interlocked with the DSC, is not input.

4) Voice output: Maximum output more than 5.6W

5) Receiving sensitivity: SSB is less than 3 μV at the frequency of 500kHz ~ 29.99990MHz.

SSB (S + N + D) / (N + D) = 20 dB, BAND width: 3 kHz,

Output: in case of 100mW DSC, NBDP character error rate at a receiver input voltage 1 μV is less than 1 $x10^{-2}$

Reception MODE: FSK, BAND Width: 0.3 kHz

6) 1 signal selectivity:

① 3kHz FILTER (for SSB) details of characteristics

6dB lowered passband bandwidth: 2.4kHz to 2.8kHz

26dB attenuation bandwidth: within ± 1.7kHz

46dB attenuation bandwidth: within ± 1.9kHz

66dB attenuation bandwidth: within ± 2.1kHz

② 0.3kHz FILTER (for DSC, NBDP) details of characteristics

6dB lowered passband bandwidth: 270Hz to 300Hz

Attenuation at ± 380Hz is more than 30dB

Attenuation at ± 550 Hz is more than 60 dB

7) Clarity: ± 200Hz

8) Comprehensive Distortion and Noise: When the input voltage of 30 μV is applied, the ratio of low frequency output 1000Hz and its unnecessary component is more than 20dB.

9) AGC characteristics: change of law frequency output for 100mV from 3 μV antenna input is less than 10dB.

10) Frequency stability: within ± 10Hz

11) Image interference ratio: more than 70dB

12) Intermediate frequency interference ratio: more than 80dB

13) SPURIOUS RESPONSE: more than 70dB

In case of DSC, NBDP when a wanted signal of 10 μV and a 31.6 mV unwanted signal(excluding the range within 750Hz of the wanted signal) whose range of IF it's three times that of the wanted signal, the symbol error rate is less than 1 x 10-2.

14) Selectivity suppression: With a wanted signal of 10 μV and an unwanted signal that is effect than 3kHz from the wanted signal, an unwanted signal input voltage of 10m suppresses the wanted scanning output to 3db.In case of DSC, NBDP with a wanted signal of 10 μV and 1 mV unwanted signal 500hz from the wanted signal, the character error rate is less than 1 x 10^{-2}.

15) Secondary emission: The power emitted from antenna terminal is less than 4000 μW.

16) Nominal input load: 50 ohm unbalanced

3-4 DSC (DIGITAL SELECTIVE CALL) W/K RECEIVER

1) Type of emission: F1B.

2) Frequency: 2187.5, 4207.5, 6312, 8414.5, 12577, 16804.5 kHz

3) Frequency stability: within ± 10Hz

4) Scanning reception of above frequencies is continued up to 2sec for each frequency and stop only when detects a 100 baud dot pattern.

5) Receiving sensitivity: character error rate is less than 1 x 10^{-2} at receiver input voltage 1 μV.

6) 1 signal selectivity: 6dB Bandwidth 270 ~ 300Hz

30dB Bandwidth within ± 380Hz

60dB Bandwidth within ± 550Hz

7) Nominal input load: 50 ohm unbalanced

8) DSC Receiving character display: Maximum 256 characters (numbers and letters)

9) SPURIOUS RESPONSE:

With a wanted signal of 10 μV and 31.6 mV zero modulated interference signal which excludes the range within 750hz of the wanted signal, the character error rate is less than 1 x 10^{-2}.

10) The power emitted from antenna terminal is less than 4000 μW.

3-5 MF/HF CONTROL

1) Control items: MF / HF Transceiver, DSC, WATCH-KEEPING Receiver, selection of transmitting and receiving frequencies
2) DISTRESS: 2187.5, 4207.5, 6312, 8414.5, 12577, 16804.5kHz sending alarm signal
3) Others: DISPLAY unit, remote interface, NBDP terminal, ATU BOX, ALARM BOX, HAND MIC, DIMMER, etc.
4) MAIN PROCESSOR: ADSTARD16MF512, ATMEGA64L
5) EEPROM: 24LC256
6) Display: 5 inch color LCD (800 * 480)
7) INTERFACE
   RS-232 INTERFACE: 1 CHANNEL equipment (NBDP)
   RS-232 INTERFACE: 1 CHANNEL equipment (GPS)

3-6 DIGITAL SELECTIVE CALL (DSC)

1) PROTOCOL: CCIR Recommendations 493-3 and 541-2
2) EMISSION: F1B 100BAUD
3) Modulator: Output frequency 1700Hz ± 85Hz, Output LEVEL Max. + 10dBm (600 ohm unbalanced / balanced)
4) Demodulator: Input frequency 1700Hz ± 85Hz, Input LEVEL -20dBm ~ + 5dBm (600 ohm unbalanced / balanced)
5) Processor: 10-unit ERROR detecting code shown in Code CCIR Recommendation 493-3
   - CLOCK transmitting method: correction
   - CLOCK frequency: 14,000kHz
   - CLOCK stability: within ± 5 x 10^{-6}.
6) DSC Memory function
   - Distress reception: 50
   - Ordinary reception: 50
   - Transmitting messages: 100

3-7 NARROW BAND DIRECT PRINTING (NBDP)

1) PROTOCOL: CCIR Recommendations 625, 476-4, 490, 491, 492-3 and CCIR Recommendations F130
2) Calling MODE: Individual and group call, 5-digit and 9-digit SELECT CALL number
3) Operating MODE: ARQ (Automatic repeat request)

CFEC (Collective Forward ERROR Correction)

SFEC (Selective Forward ERROR Correction)

4) Status Display: POWER ON, STAND-BY, CALLED, CALLING, FREE, SIGNAL, ARQ, CFEC, SFEC, SEND, RECEIVER, PHASING, REPHASING, REPEAT, ERR, etc.

5) Code: 7 units CODE 4B / 3Y (B: 1785 Hz, Y: 1615 Hz)

6) Memory capacity: 16M

7) SYSTEM PARAMETER: PROGRAMING OPERATOR DATA TO FLASH DISK AND keeping as BACK UP.

8) Center frequency: 1700Hz

9) Frequency SHIFT Width: ±85Hz

10) Modulation speed: 100BAUD (ARQ, FEC MODE)

11) Modulation: phase continuous AFSK

12) Frequency deviation: within 0.5Hz

13) Compass safety distance

- Follow compass safety distance to prevent interference with your magnetic compass.
- Standard Compass: 2.4 m
- Steering Compass: 1.5m

14) Demodulation input: 0dBm, 600ohm unbalanced / balanced

15) Modulation output: 0dBm, 600ohm unbalanced / balanced

3-8 PRINTER (HP-283)

1) Printer specifications

- Printing method: Direct Thermal
- Printing speed (best): 200mm/sec
- Resolution (DPI): 180 DPI (7dot/mm)
- Printing area (Number of dots a line): 512 Dots/Line
- Interval between letters: 1 DOT
- External standard: 143mm(W) × 194mm(D) × 136mm(H)
- Body weight: about 0.58Kg
- Working voltage: DC +24V ±10%

2) Operating condition

- Temperature range: -25℃ ~ 40℃
- Humidity range: 40% ~ 90% RH

3) Thermal paper specifications

- Type number: TP411-28CL(TP-411L)
- Width: 112mm
- Roll diameter: 48mm
- Roll length: about 28m

3-9 PRINTER (JP-3750)

1) Printer specifications
   - Output speed: 480CPS(12CPI standard)
   - Resolution: 180DPI
   - Printing Colums: 80 Columns
   - Buffer: 128K
   - Head life: 4 billion dots
   - Product Size: 415mm(W)*330mm(D)*120mm(H)
   - Weight: about 7.3Kg
   - Noise: 49dB

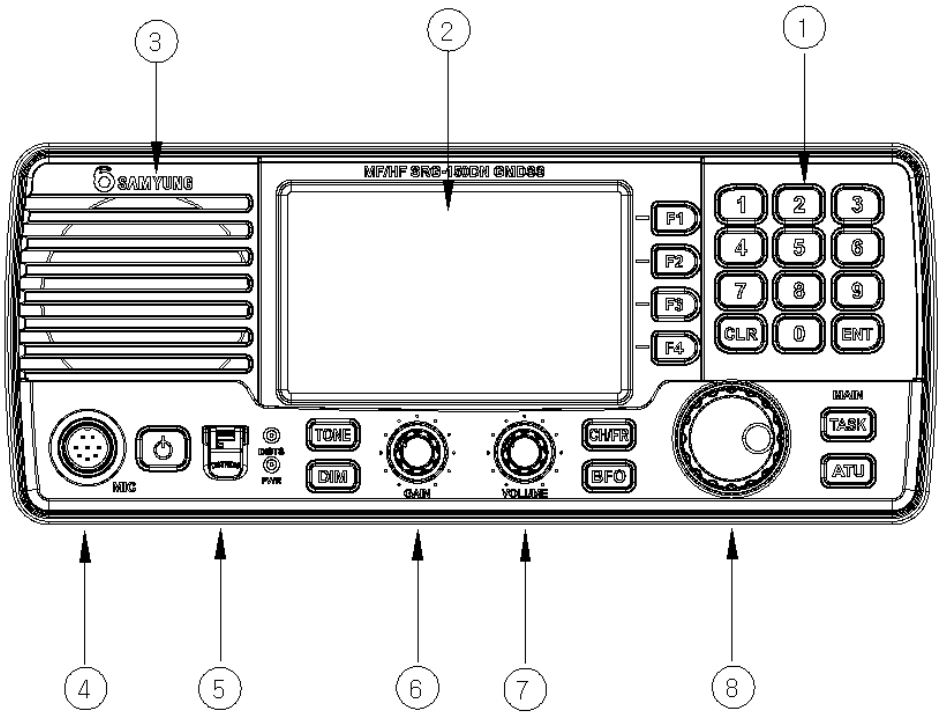
2) Paper specifications
   - Type number: 60R/L
   - Paper size: 213mm X 50mm X 25mm

3) Reliability
   - Printer head life: 200 million dots / per pin
   - Ribbon life: 4 million letters

4) Operating condition
   - Temperature range: 5℃ ~ 35℃
   - Humidity range: 30% ~ 85%

CHAPTER 4 FRONT PANEL

4-1 EXPLANATION OF KEY, KNOB AND LAMP OF THE MAIN UNIT



< SRG-150DN/250DN front panel of the main unit>

① KEY PANEL

② Front display (LCD) - indicates mode / frequency / channel / use of other functions and etc.

③ Internal speaker

④ Microphone connection jack - connects the supplied microphone.

⑤ DISTRESS – is used for DISTRESS transmission.

⑥ Sensitivity - is used to adjust the GAIN of the amplifying stage of receiver.

⑦ Volume – is used to adjust the speaker's volume.

⑧ Channel – is used to adjust the channel and frequency up / down.


Turn on / off the main unit.


Press for 5 seconds to send a digital distress alert signal.

Turn on / off the 1.4KHz test signal.

DIM Adjust the brightness of the LCD BAK LIGHT (internal light) to 6 levels of 2 types.

CH/FR Select frequency and channel.

BFO Adjust the intelligibility (adjustment to receive the received signal clearly)

ATU It is the key that the user presses when he wants to match the antenna.

ENT It is an execution key such as item selection from the menu, input expansion and etc.

TASK A short press shows the list of automatic procedures.
Return to the initial screen when you press and hold for a long time.

CLR Change the on-screen menu and exit from the main menu to the previous menu.

1 ~ 9, 0 are used for numeric key input.

[Screen Menu F1 ~ F4 Functions]

MORE(1/5) F4 : CALL DIST RELAY You can choose.

CALL F1 : DSC CALL configuration screen function.

DIST F2 : DIST COMPOSE configuration screen function.

RELAY F3 : DROBOSE COMPOSE configuration screen function.

MORE(2/5) F4 : MODE AGC ATT You can choose.

MODE F1 : As a function to select the communication method
SSB , RCV , AM , DSC choose a mode.

AGC F2 : Adjust the characteristics of automatic sensitivity.
Change to AGC-1, AGC-2, AGC-3 at the left bottom of the screen

ATT F3 : The attenuator of the receiver can be selected in three steps.
Change to ATT-OFF, ATT-1, ATT-2, ATT-3 at the left bottom of the screen.

MORE(3/5) F4 : NB PREAMP POWER You can choose.

NB F1 : Removes noise elimination pulsed noise (such as engine noise) on reception.
Change to NB-OFF, NB-1, NB-2, NB-3 at the left bottom of the screen

PREAMP F2 : Increase the sensitivity by operating the receiver's first stage amplifier.

POWER F3 : Change the transmission output to HIGH, MID, LOW.

MORE(4/5) F4 : SCAN ATU REMOTE You can choose.

SCAN F1 : You can start and end channel / frequency scans.

ATU F2 : It is a function to confirm ATU Manual and ATU Version.

REMOTE F3 : Remote mode can be turned ON / OFF.

MORE(5/5) F4 : SQL SETUP You can choose.

SQL F1 : The squelch can be turned ON / OFF.

SETUP F2 : Equipment SETUP function.

4-2 LIQUID CRYSTAL DISPLAY

Check the operation status of the following equipment with the main screen of this equipment.

1) Displays the Communication mode (SSB, RCV, AM (only RX), DSC), Speaker, Key button (ON/OFF), Power supply status, Transmission power status, SCAN, AMP, MMSI (Maritime Mobile Service Identity).
2) Displays the size of reception / transmission.
3) W / K received channel, transmitted / received frequency and channel.
4) Usage of AGC, Attenuator (ATT), Noise Blanker (N.B), and Squelch (SQL) functions.
5) Position indicating ("MAN": manual input, "GPS": GPS data), date and time display (UTC display when connecting GPS receiver)
6) Indication according to key input (For the actual display method, refer to the details of each mode).
7) The indication **SSB** indicates the communication mode in use.

ⓐ SPK : MORE(5/5) F4 ➜ SETUP F2 ➜ 4 [4.SYSTEM SETUP]➜ ENTER F1 ➜ 4 [4.SPEAKER : ON] ➜ Press ENTER F1 to turn ON/OFF.

If ON: SPK displays, If OFF : SPK delates

ⓑ BEEP : MORE(5/5) F4 ➜ SETUP F2 ➜ 4 [4.SYSTEM SETUP] ➜ ENTER F1 ➜ 5 [5.KEY TONE : ON] ➜ Press ENTER F1 to turn ON/OFF.

If ON : There is a "beep" sound during keyboard operation.

If OFF : There is no "beep" sound during keyboard operation.

ⓒ HIGH : Displays the transmission output.

HIGH : SRG-150DN (J3E:150W, FIB:100W)

SRG-250DN (J3E:250W, FIB:150W)

MID : SRG-150DN/250DN (J3E:100W, F1B:100W)

LOW : SRG-150DN/250DN (J3E:50W, F1B:75W)

ⓓ SCAN : MORE(4/5) F4 ➜ SCAN F1 ➜ 4 (4.Scan Start) ➜ Press ENTER F1 to activate SCAN.

Press QUIT F1 to stop SCAN.

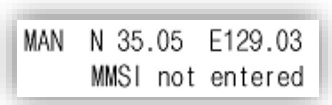
ⓔ AMP : MORE(3/5) F4 ➜ PREAMP F2 When AMP is ON PREAMP F2 Press again to turn off AMP.

ⓕ MMSID : MORE(5/5) F4 ➜ SETUP F2 ➜ 1 [1.DSC SETUP] ➜ ENTER F1 ➜ ENTER F1 ➜ Enter the MMSI ID to display the Maritime Mobile Service Identity (MMSI) ID.

ⓖ CH : Display the channel

ⓗ TX : Display the transmitted frequency

ⓘ RX : Display the received frequency



ⓙ : GPS reception data (top, longitude) is displayed. "MAN" is displayed when manually inputting coordinates, and "GPS" is displayed when data is input directly from GPS receiver.

ⓚ  : Displays the W / K frequency (6 channels) being scanned.

① AGC-OFF : Adjust the characteristics of automatic sensitivity.

MORE(2/5) F4 ➜ AGC F2 Press keys to change to AGC-OFF, AGC-1, AGC-2, and AGC-3.

ⓜ ATT-OFF : The degree of attenuation of the attenuator at the receiving end is displayed.

MORE(2/5) F4 ➜ ATT F3 Press keys to change to change to ATT-OFF, ATT-1, ATT-2, and ATT-3.

ⓝ NB-OFF : Set up the Noise Blanker function.

MORE(3/5) F4 ➜ NB F1 Press keys to change to NB-OFF, NB-ON.

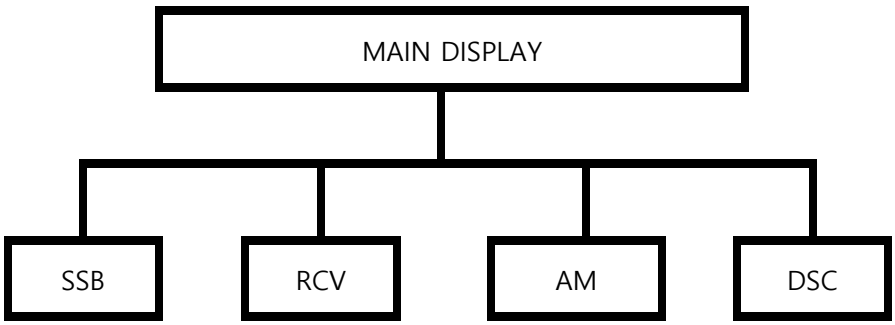
ⓞ Tuning : Press the key ATU on the front side to confirm ATU tuning.

ⓟ SQL : Set up the Squelch function .

MORE(5/5) F4 ➜ Press key SQL F1 and press 3.Start SQL to change.

If ON : SQL indication , If OFF : SQL deletion

4-3 SCREEN LCD



SSB

MORE(5/5) F4 ➜ SETUP F2 ➜ 4 [4.SYSTEM SETUP] ➜ If you press ENTER F1, the following window appears.

MAIN MENU 1. TUNING CLEAR
2. CHANNEL CLEAR
3. DATA-TIME SET
4. SPEAKER : ON
5. KEY TONE : ON
6. TX METER SET : VF/IC
7. AUTO TUNE
8. SELF TEST
9. M:01.00, C:01.00, D:08.03, WK:01.2

※ **RCV**

*** Only Receive Function

※ **AM**

*** Only Receive Function

※ **DSC**

MORE(5/5) F4 ➜ SETUP F2 ➜ If you press 1 [1.DSC SETUP] ENTER F1, the following window appears.

MAIN MENU 1. MMSI
2. POSITION
3. TIME OUT
4. AUTO ACK SET
5. MEDICAL : OFF
6. NEUTRAL : OFF
7. ALARM DISTANCE : 500NM
8. NORMAL ALARM : ON
9. DSC TEST

CHAPTER5. SSB WIRELESS TELEPHONE (TEL) MODE

5-1 SSB MODE

On the front PANEL MORE(2/5) F4 ➜ Use MODE F1 to set to mode SSB as follows.

MODE F1

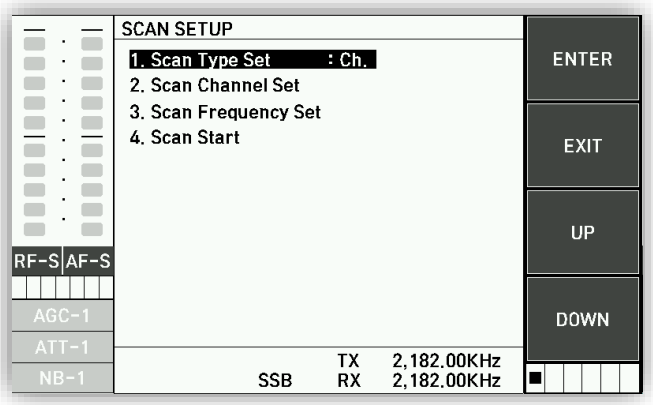
If you turn the front channel dial, the CH is converted, and you can press CH/FR, put it on the RX, press ENT, select the frequency you want to change to LEFT F1 , RIGHT F2 and change it from 10Hz to 10MHz with the dial.

[Ref.] It automatically returns when there is no signal for 5 seconds.

5-2 MENU SCREEN OF SSB

5-2-1 SCAN TYPE SET

MORE(4/5) F4 ➜ If you press SCAN F1, the following screen appears.



ⓐ It is a menu to determine the channel or frequency to scan.

1 Select 1 [1.Scan Type Set] ➜ Press the key ENTER F1 and Freq / Ch are alternately switched.

ⓑ 4 [4.Scan Start] ➜ If you choose ENTER F1, the selected SCAN Type proceeds.

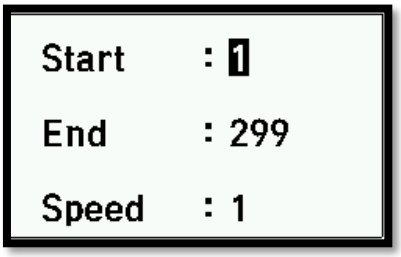
ⓒ If you going to stop SCAN, press QUIT F1 to stop and return to the main screen.

[Ref.] ☞ When the SCAN Type is [CH.], It is scanned to the channel. When the SCAN Type is [Freq.], it is scanned to the frequency.

5-2-2 SCAN CHANNEL SET

MORE(4/5) F4 ➜ SCAN F1: Set the setting value in case of scanning channels.

Choose the 2 [2.Scan Channel Set] ➜ ENTER F1 The following screen appears.



UP F3 , DOWN F4 Move to the relevant function➜ ENTER F1 setting ➜ [Numeric buttons] Enter the relevant values ➜ ENTER F1

[Start]: Set the start channel of the scan.

[End]: Set the last channel of the scan

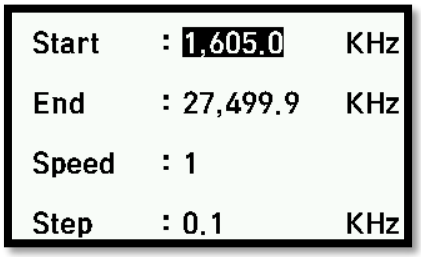
[Speed]: Set the speed of the scan (1 to 15, 1: fastest, 15: slowest)

Press EXIT F2 to return to the main screen.

5-2-3 SCAN FREQUENCY SET

MORE(4/5) F4 ➜ SCAN F1 : Set the setting value in case of scanning frequency.

Choose the 3 [3. Scan Frequency Set] ➜ ENTER F1 The following screen appears.



UP F3 , DOWN F4 Move to the relevant function ➜ ENTER F1 setting ➜ [Numeric buttons] Enter the relevant values ➜ ENTER F1

[Start]: Set the start frequency of the frequency scan. (1,605.0~27,499.9KHz)

[End]: Set the last frequency of the frequency scan. (1,605.0~27,499.9KHz)

[Speed]: Set the speed of the scan. (1 to 15, 1: fastest, 15: slowest)

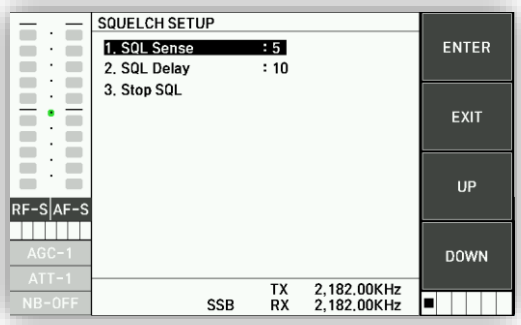
[Step]: Set the scan interval. (0.1~9.9KHz)

Press EXIT F2 to return to the main screen.

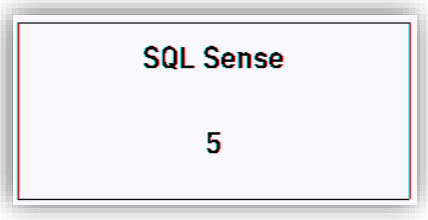
5-2-4 SQL TYPE SET

[Ref.] ☞ It is a function to remove the unique sound of SSB that occurs during reception. If it set high, it may not receive weak reception signal.

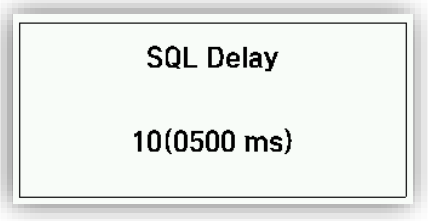
MORE(5/5) F4 ➜ If you press SQL F1, the following screen appears.



1. SQL Sense: This is menu, which sets the SQL sensitivity setting value.
   Setting range: 1 to 10, (1: low sensitivity, 10: high sensitivity)



2. SQL Delay: This is menu, which sets the SQL time setting value.
Setting range: 1 to 20 , (1: 0050ms , 20 : 1000ms)

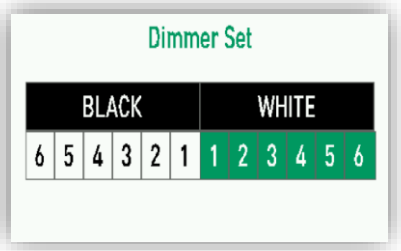


3. Stop SQL: Turn SQL ON/OFF.

Press EXIT F2 to return to the main screen.

5-2-5 LCD CONTRAST SET

If you click DIM on the front keyboard window, the following window appears.



Turn the channel to choose the background color as BLACK and WHITE, and set the LCD brightness as a number.

5-2-6 TX POWER SET

Press MORE(3/5) F4 ➜ POWER F3 to choose [HIGH] / [MID] / [LOW] in the upper LCD window.

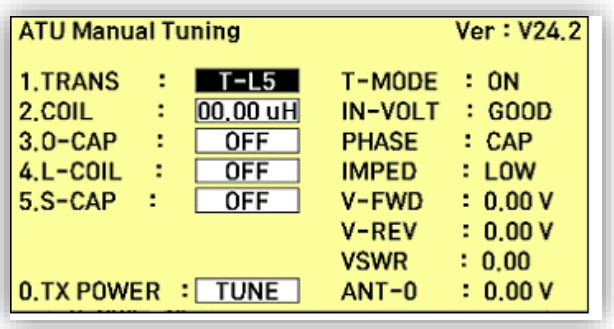
If it is HIGH, it is on top of LCD "HIGH"(J3E:150W,F1B:100W)

If it is MID, it is on top of LCD "MID"(J3E:100W,F1B:100W)

If it is LOW, it is on top of LCD "LOW"(J3E:50W,F1B:75W)

5-2-7 MANUAL TUNING

1) MORE(4/5) F4 ➜ ATU F2 ➜ 1 [1.ATU Manual Tuning] ➜ If you press ENTER F1, the following window appears.



2) [Note] It is recommended to not operate this menu because it is a menu that requires special knowledge. If you enter wrong value, equipment may be damaged.

3) It is possible to confirm and set the selected status of the components inside the antenna matching device.

4) CLR CLR Press to return to the initial screen.

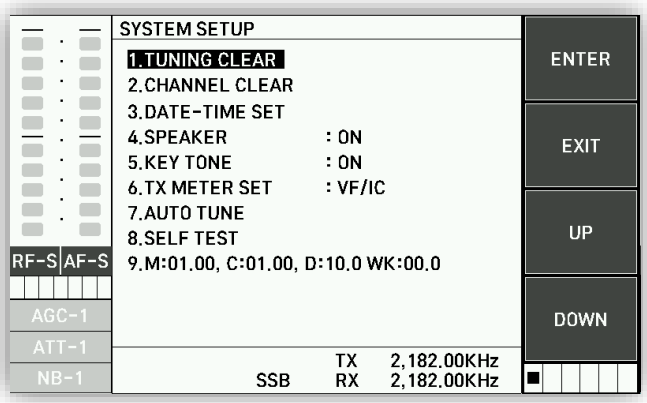
5-2-8 ATU – VERSION (ATU PROGRAM VERSION)

MORE(4/5) F4 ➜ ATU F2 ➜ 2 [2.ATU Version :XX.X] ➜ Press ENTER F1 to display the ATU version.

[Ref.] When there is a problem with the ATU DATA cable connection, "None" is displayed.

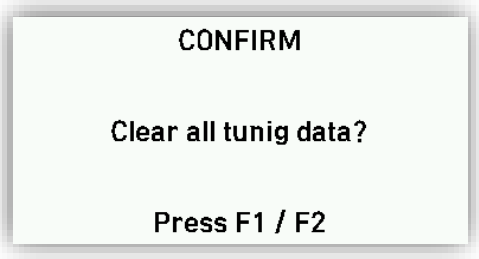
5-2-9 SYSTEM SET

MORE(5/5) F4 ➜ SETUP F2 ➜ 4 [4.SYSTEM SETUP] ➜ If you press ENTER F1, the following screen appears..



1) [1.Tuning Clear]: It is menu to delete all memorized tuning data.

1 [1.TUNING CLEAR] ➜ If you press ENTER F1, the following screen appears.



Press OK F1 to delete all memorized tuning data.

Press EXIT F2 to return to the SYSTEM SETUP screen.

2) [2.SSB-CH Clear]: It is menu to delete SSB channel data and set basic channel.

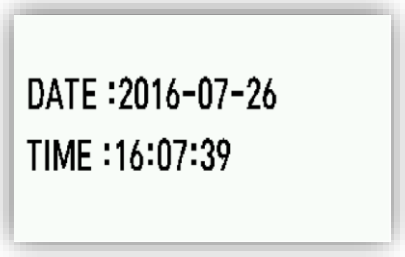
2 [2.CHANNEL CLEAR] ➜ If you press ENTER F1 the following screen appears.

Press OK F1 to delete memorized SSB channel data and set it as the basic channel.

Press EXIT F2 to return to the SYSTEM SETUP screen.

3) [3.Data-Time Set]: You can set the date and time displayed on the system.

3 [3.DATA-TIME SET] ➜ If you press ENTER F1 the following screen appears.



※ It is displayed as UTC (Universal Time Coordinated) when inputting GPS external data

4) [4.SPEAKER]: You can set the speaker sound.

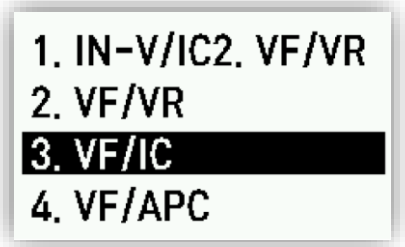
4 [4.SPEAKER: ON] ➜ ENTER F1 ➜ Press ENTER F1 to turn speaker sound ON / OFF.

5) [5.Key Tone]: You can turn the keyboard sound ON / OFF.

5 [5.KEY TONE: ON] ➜ ENTER F1 ➜ Press ENTER F1 to turn the tone on or off.

6) [6.TX METER SET]: You can change the type of front bar graph.

6 [6.TX METER SET: VF/IC] ➜ Press ENTER F1 to display the next screen.



Rotate the channel and choose the value you want to display.

IN-V: Indicates the input voltage.

VF: Indicates the size of the traveling wave.

VR: Indicates the size of the reflected wave.

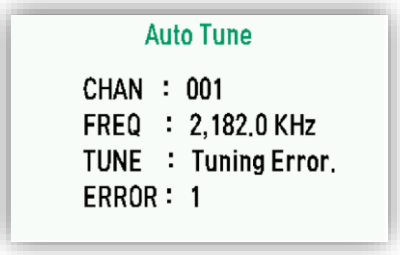
IC: Indicates the magnitude of the current.

APC: Displays the size of APC.

Choose ENTER F1 and press EXIT F2 to return to the initial screen.

7) [7.Auto Tune]

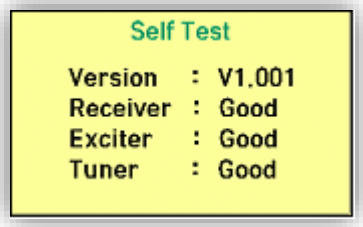
7 [7.AUTO TUNE] ➜ If you press ENTER F1, the following screen will appear and automatic ATU tuning will be executed.



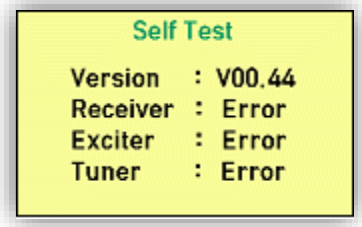
Press EXIT F2 to return to the initial screen.

8) [8.SELF TEST]

8 [8.SELF TEST] ➜ If you press ENTER F1, the following screen appears.



[normality]



[abnormality]

Press EXIT F2 to return to the initial screen.

9) [9.M:01.00, C: 01.00, D: 08.3, WK: 01.00]

9 [9.M:01.00, C: 01.00, D: 08.3, WK: 01.00]: MAIN, CONTROLL, DSP, W/K displays the program version.

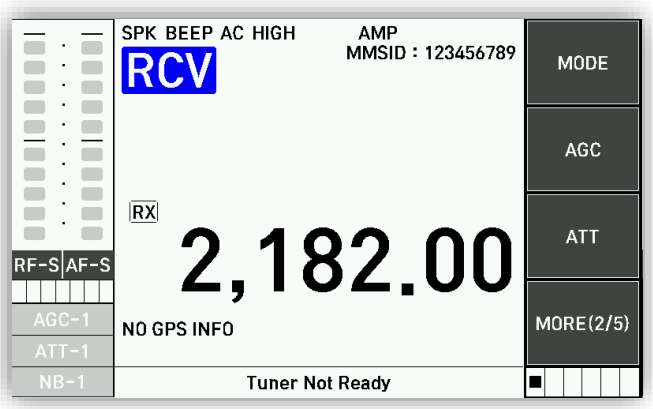
5-3 ADDITIONAL FUNCTIONS (ITU CHANNEL, RCV, AM, DSC MODE, ETC.)

5-3-1 ITU CHANNEL

ITU Channel 은 [CH401~CH2510]채널은 SSB 모드에서 [숫자 버튼]으로 선택 가능하며 채널 선택이 해당범위 안에 있으면 전면 채널 다이얼로 Channel 변경이 가능하다. For the ITU Channel, [CH401 ~ CH2510] channel can be chosen in SSB mode with [Numeric Buttons]. If channel selection is within the relevant range, it is possible that channel can be changed to the front channel dial.

5-3-2 RCV MODE

MORE(2/5) F4 ➜ If you press MODE F1 the following screen appears.



If you turn with the front channel dial, it will be converted into 100Hz unit. Press CH/FR, put on RX and press ENT, choose frequency LEFT F1 , RIGHT F2, to which you going to change and change the frequency from 10Hz to 10MHz with the dial.

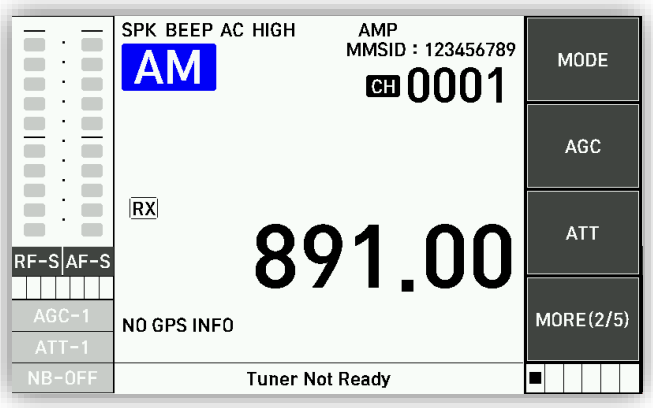
[Ref.] It automatically returns when there is no signal for 5 seconds.

Press MODE F1 to switch to another mode.

[Ref.] In [RCV] mode TX frequency cannot be displayed.

5-3-3 AM MODE

MORE(2/5) F4 ➜ MODE F1 ➜ If you press MODE F1 the following screen appears.



If you turn with the front channel dial, press CH/FR, put on RX and press ENT, choose frequency LEFT F1 , RIGHT F2, to which you going to change and change the frequency from 10Hz to 10MHz with the dial.

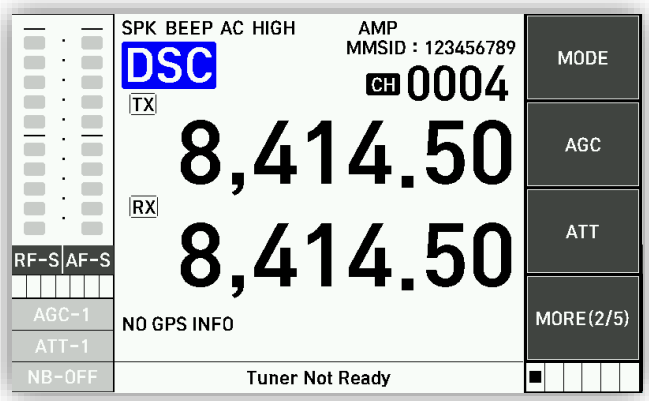
[Ref.] It automatically returns when there is no signal for 5 seconds.

Press MODE F1 to switch to another mode.

[Ref.] In [AM] mode TX frequency cannot be displayed (only RX) and AGC is set automatically.

5-3-4 DSC MODE

MORE(2/5) F4 ➜ MODE F1 ➜ MODE F1 ➜ If you press F1, the following screen appears.



If you turn with the front channel dial, press CH/FR, put on RX and press ENT, choose frequency LEFT F1 , RIGHT F2, to which you going to change and change the frequency from 10Hz to 10MHz with the dial.

[Ref.] CH1 to CH32 have no frequency change, and applies CH33 ~ CH40.

[Ref.] It automatically returns when there is no signal for 5 seconds.

Press MODE F1 to switch to another mode.

CHAPTER6. DIGITAL SELECTIVE CALLING(DSC)

6-1 OVERVIEW

1) DSC is abbreviation for Digital Selective Calling.

2) DSC uses MF / HF bands to send digital disaster and general calls to ships, configure and send station responses.

3) There are 16 call frequencies, using for the DSC distress, safety and urgency of the MF / HF bands: 2187.5 / 4207.5 / 6312.0 / 8414.5 / 12577.0 / 16804.5 Khz.

4) Reception of a normal DSC call is possible in DSC mode.

5) Distress, safety, urgency DSC calls are received by the W / K receiver.

6-2 DSC MESSAGE

1) DSC messages are divided into two major types.

- DISTRESS message

DISTRESS ALERT / DISTRESS RELAY AREA / DISTRESS RELAY INDIVIDUAL

-General messages (Safety, urgency, routine)

INDIVIDUAL / GROUP / TEST / POSITION / AREA / POLLING

Call	Explanation
DISTRESS ALERT	DISTRESS message
DISTRESS RELAY AREA	Deliver the received DISTRESS message to all vessels in specific area
DISTRESS RELAY INDIVIDUAL	Deliver the received DISTRESS message to all specific vessels
INDIVIDUAL	Call to a specific address
GROUP	Call to a specific GROUP
TEST	Send a test signal to a vessel
POSITION	Require the location of another vessel
AREA	Call all ships in a specific area MEDICAL/NEUTRAL OPTION functions
POLLING	Confirm that other vessels can communicate (only reception is possible)

2) MMSI

- The ID of the ship, the ID of the calling station, the ID of the coast station start with '00', and the GROUP ID starts with '0'.

3) PRIORITY

DISTRESS	A significant and an imminent danger and an immediate support demand
URGENCY	The reception of calling station in case of very urgent call about safety of the vessel or airplane, or safety of people transportation
SAFETY	Reception when an important voyage or meteorological warning are included
ROUTINE	An ordinary call

4) Communication mode (COMM)

- TELEPHONE : Voice call through the daily microphone speaker.
- TLX ARQ : ARQ TELEX mode via NBDP terminal
- TLX FEC : FEC TELEX mode via NBDP terminal

5) Communication frequency

- Frequency used by voice communication or NBDP by the call.
- The sending station must specify the frequency to be used by the receiving station.

6) Location

- Location can be entered automatically or manually.

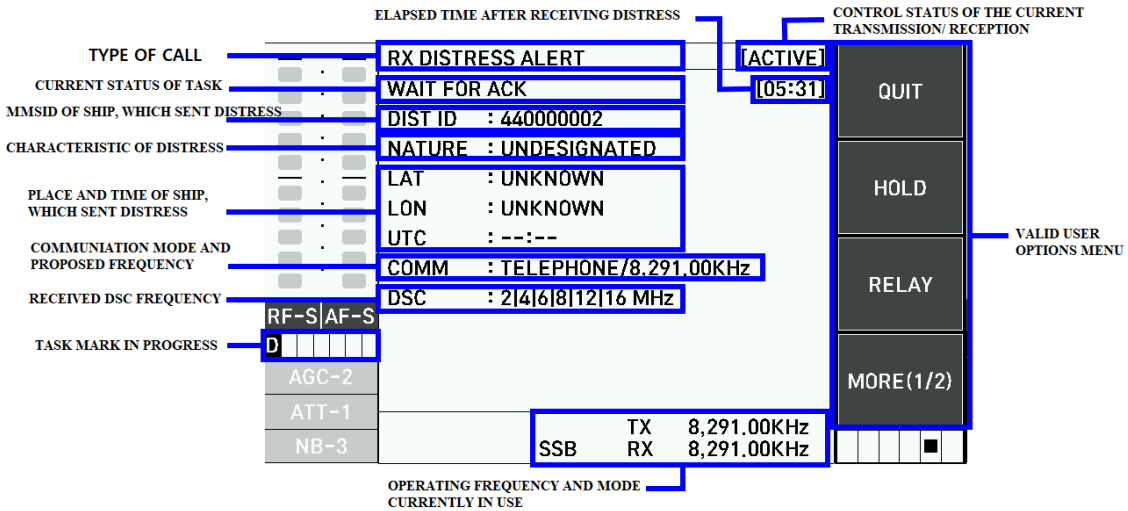
7) DSC frequency

- Frequency at which messages are transmitted / received, when calling DSC.
- PRIORITY chooses the DSC distress frequency, which is SAFETY / URGENCY / DISTRESS.

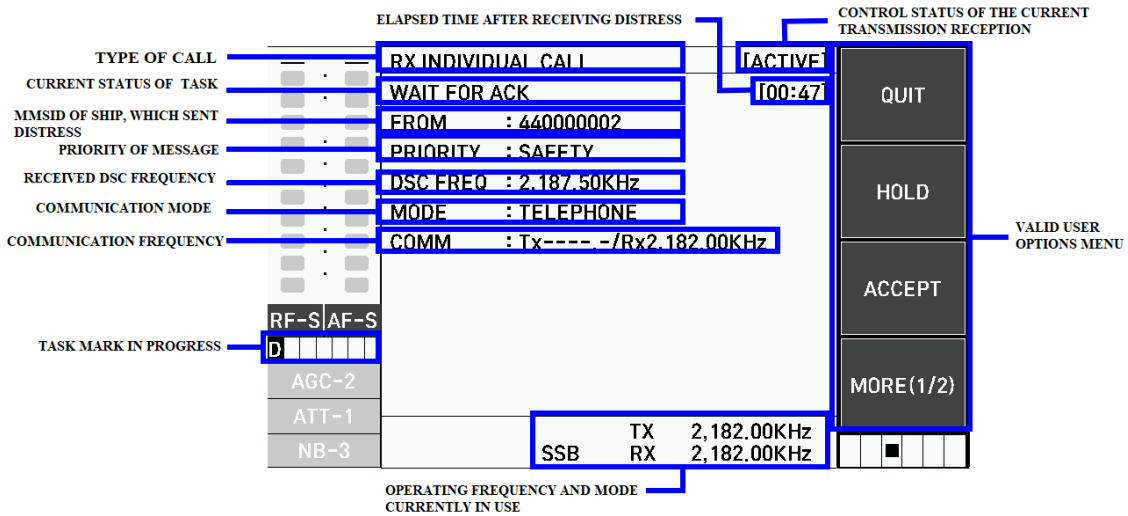
6-3 DSC DISTRESS SCREEN COMPOSITION

6-3-1 RECEPTION

1) DISTRESS ALERT



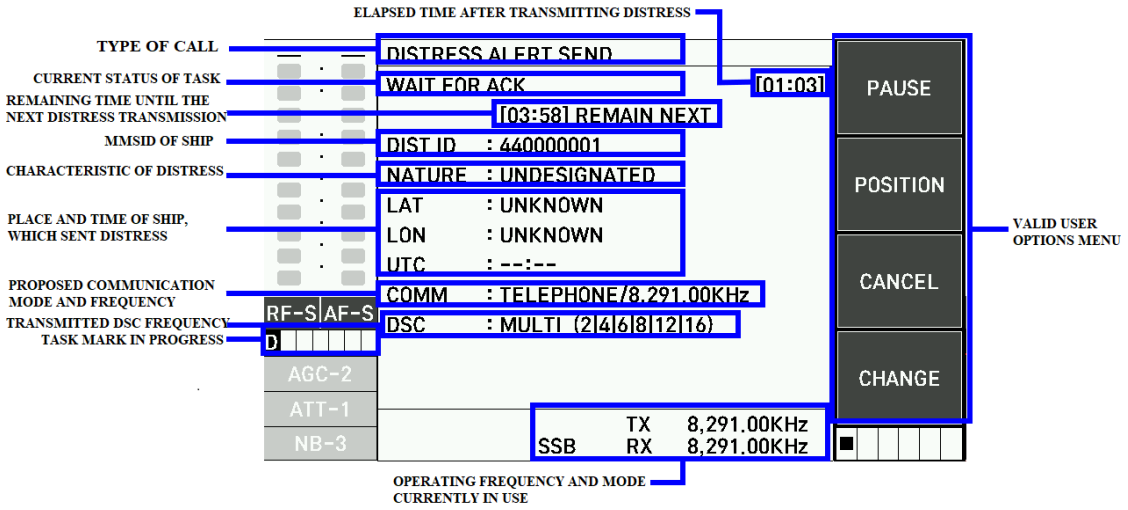
2) Individual Rx call



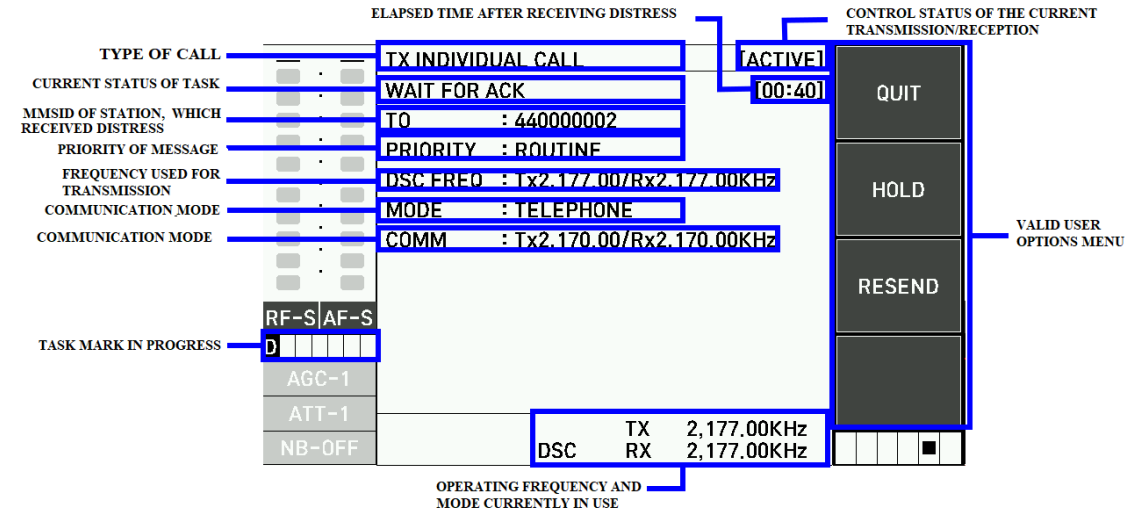
- "*" indicates that the data with the error has been received.
- "-" means that there is no information.

6-3-2 TRANSMISSION

1) DISTRESS ALERT



2) Individual Tx call



CHAPTER 7. DSC DISTRESS OPERATION

7-1 DISTRESS ALERT (DISATER ALERT) HOW TO SEND

- The GMDSS ship is loaded with the DSC terminal, which transmits the Distress Alert to a life-threatening situation.
- The coast station receives the Distress Alert and sends the Distress Alert response call to the ship in disaster.
- After the response of the coast station, start communication of voice and Telex between the disaster ship and the coast station.

Distress Alert transmission and Distress Alert response reception proceed automatically. .

※ ( Start by pressing a key)

- There are two types of Distress Alert such as MULTI / SINGLE, MULTI is common.

Please refer to Chapter 8-1-2 to set details of SINGLE and MUTI.

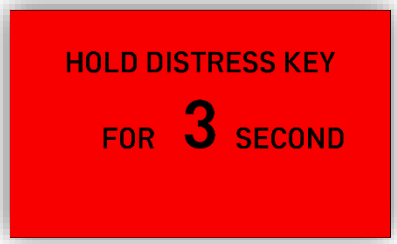
7-1-1 SEND A DISTRESS ALERT WITHOUT MODIFYING INFORMATION

1) Open the Distress key cover and press the DISTRESS key button for 3 seconds.

2) The alarm sounds when the key is pressed, and the red / white screen is changed to the intersection.

3) A countdown message appears while holding the Distress key.

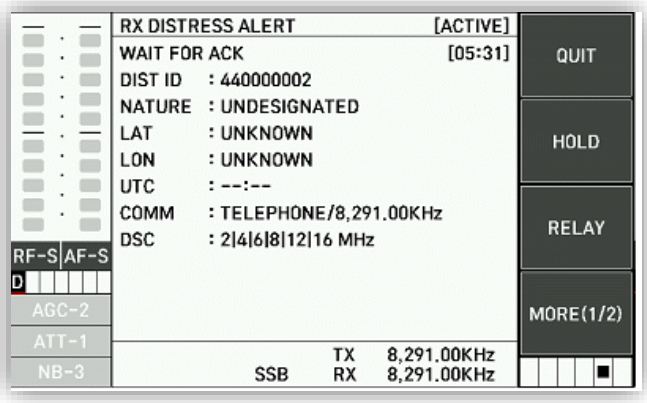
[3 -> 2 -> 1 -> 0 SECOND]



4) When the countdown reaches zero, it starts sending the Distress Alert.

5) Before sending the Distress Alert for 2 seconds sounds a continuous alarm, together with a message ''Distress Send [Frequency]" transmits Distress Alert with each DSC frequency.

6) After sending all of the Distress Alert, wait for the Distress Alert response from the coast station and display "WAIT FOR ACK" on the screen.

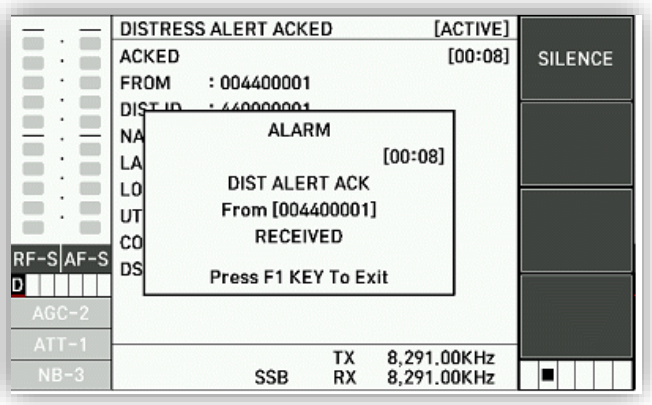


7) If no response is received from the coast station, wait 3 minutes 30 seconds to 4 minutes 30 seconds for a Distress Alert automatic retransmission response.

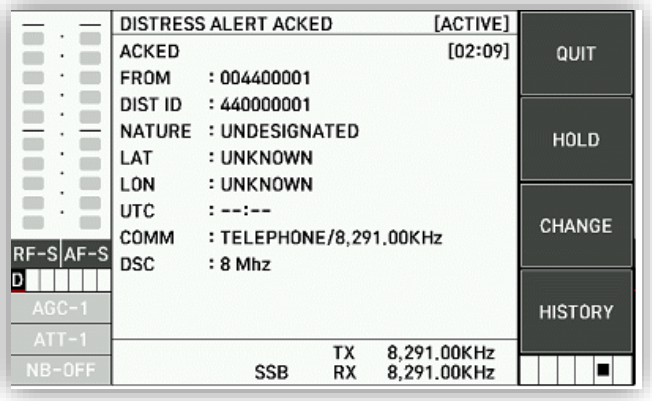
8) Press the key PAUSE F1 to temporarily stop the countdown for retransmission,
Is displayed by RESUME F1.
Press the key RESUME F1, while is displayed, will again start the countdown.

9) Press the key , retransmission will happen regardless of the countdown.

10) In case if a Distress response is received, the alarm sounds and the following alarm window appears on the screen.



11) If you press the key SILENCE F1, the alarm window disappears and the following screen appears.

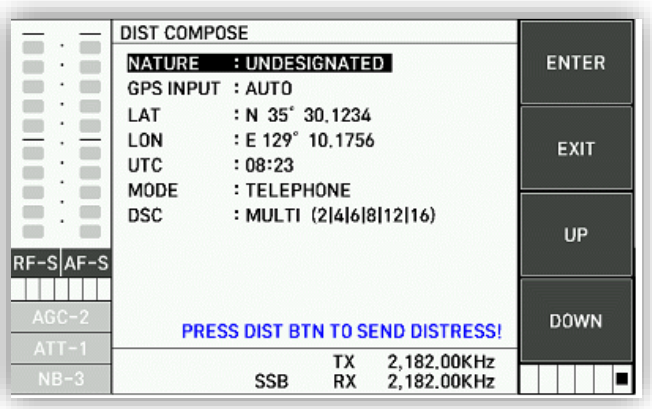


12) The elapsed time after the DISTRESS transmission is changed to the last time after receiving the Distress Alert response.

7-1-2 MODIFY THE INFORMATION AND SEND A DISTRESS ALERT.

If you have time to modify the Distress information, you can do the following.

1) If you press DIST F2 of the main screen, the following screen will appear.



2) With NATURE selected, press the ENTER key

3) Choose one of the 11 listed below and press the ENTER key.

FIRE	LIST	ABANDON
FLOOD	SINK	PIRACY
COLLISION	DISABLED	OVERBOARD
GROUND	UNDESIGNATED	

4) With GPS INPUT selected, press the ENTER key.

AUTO
MANUAL
NOINFO

AUTO : The location information is automatically input from the external GPS input terminal.

MANUAL : Manually enter location information

NOINFO : Input location information as NO INFORMATION

- If you enter MANUAL, you will receive latitude / longitude information 5) and UTC information 6).

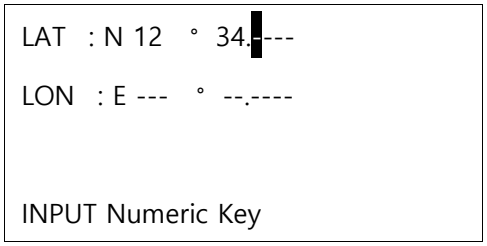
5) Use the numeric keys to enter latitude / longitude.

LAT : N -- ° --.----

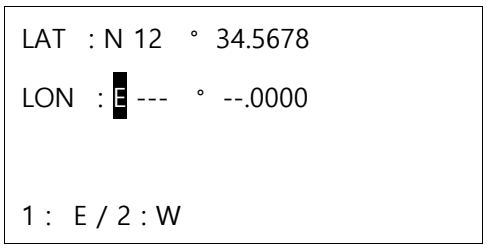
LON : E --- ° --.----

1 : N / 2 : S

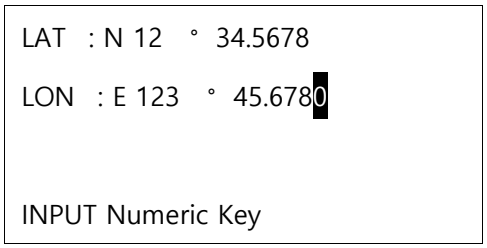
Numeric key 1 is the North, 2-South input



If you input ENTER at this time, you cannot input below the decimal minute (point) unit

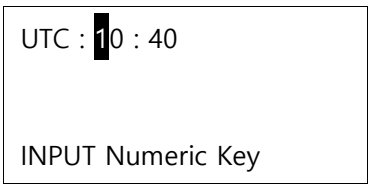


Numeric key 1 is the East, 2-West input



Enter the numeric key until you reach the end and move on to UTC input.

6) Use the numeric key to enter UTC.



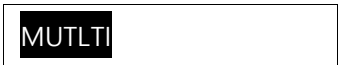
Use the numeric key to enter UTC and move on to the next item.

7) Press the ENTER key with MODE selected.

After choosing move on to the next item.

※ TELEX : NBDP-FEC mode

8) With DSC selected, press the ENTER key.

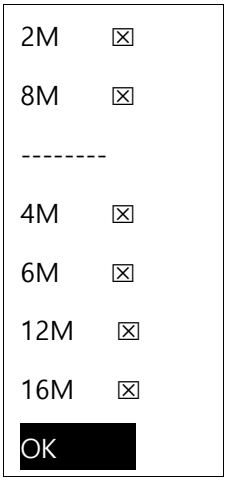


SINGLE

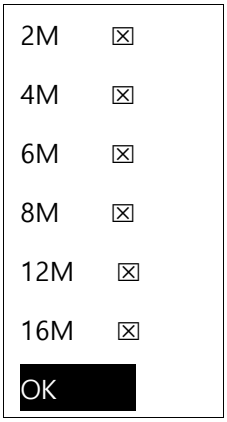
MULTI – sends the Distress Alert on 2~6 frequencies, automatically selected 2Mhz / 8Mhz and can choose 4Mhz / 6Mhz / 12Mz / 16Mhz.

SINGLE - can be transmitted at the selected Distress frequency.

2/4/6/8/12 / 16Mhz, and repeats it continuously (at least one frequency must be selected).With selected frequency among 2/4/6/8/12/16Mhz



[MULTI]



[SINGLE]

9)  Press the key for 3 seconds to send a Distress Alert.

While pressing the key, an alarm sounds and the screen is repeated the intersection in red and white.

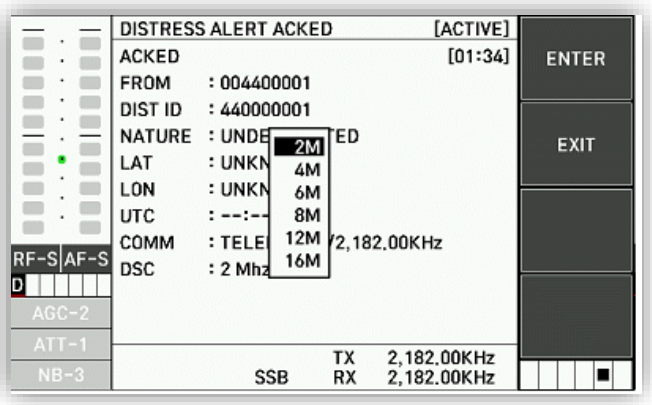
The countdown screen appears while pressing the key.

When the countdown reaches zero, Distress Alert will be sent.

10) If a Distress Alert response call is received from the coast station, voice and telex communication will be used.

At this time, if you press the key CHANGE F2, menu to change the used frequency appears as follows. If you choose, it will be set the same frequency as it shown in the following table in frequency of voice and Telex.

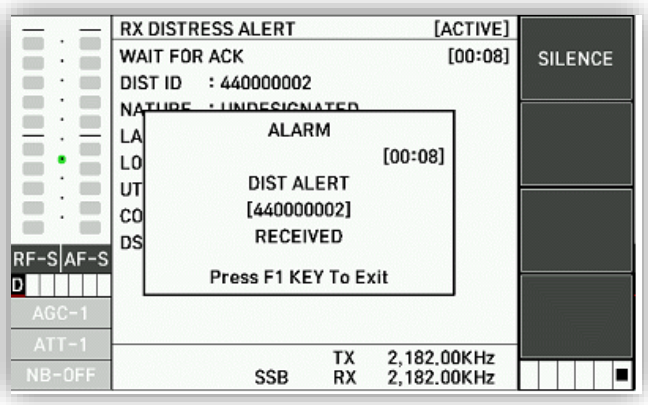
In the case of telex, the frequency of the connected telex automatically changes if it is not communicating.



treason	voice	TELEX
2M	2182 Khz	2174.5 Khz
4M	4125 Khz	4177.5 Khz
6M	6215 Khz	6268 Khz
8M	8291 Khz	8376.5 Khz
12M	12290 Khz	12520 Khz
16M	16420 Khz	16695 Khz

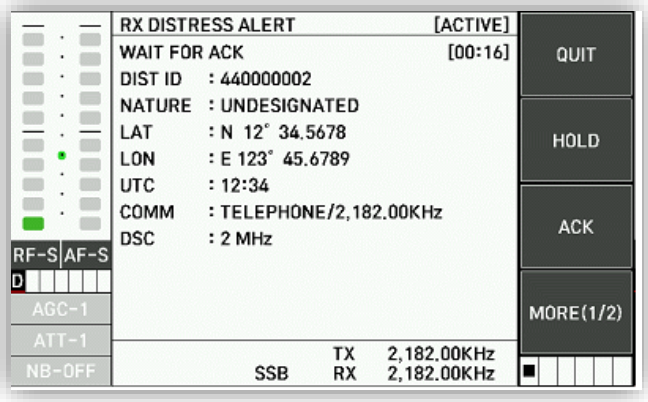
7-2 RECEPTION OF DISTRESS ALERT (DISATER WARNING)

※ When a Distress Alert is received from another vessel in disaster, an alarm sound is ringing. At the same time, Distress Alert is received in the alarm window and DSC TASK indicator is displayed on the Task display window, as it shows below. If you press the key F1 at this time, the alarm sound stops and the alarm window disappears (the alarm sound also will stop, if you press another key)



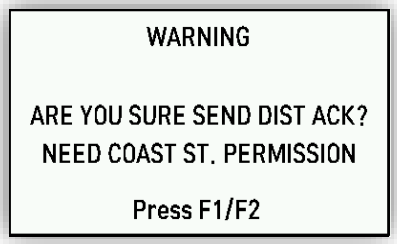
7-2-1 RECEPTION OF DISTRESS ALERT (DISASTER WARNING) IN MF BAND

1) Press SILENCE F1 to turn off the alarm and close the alarm window.

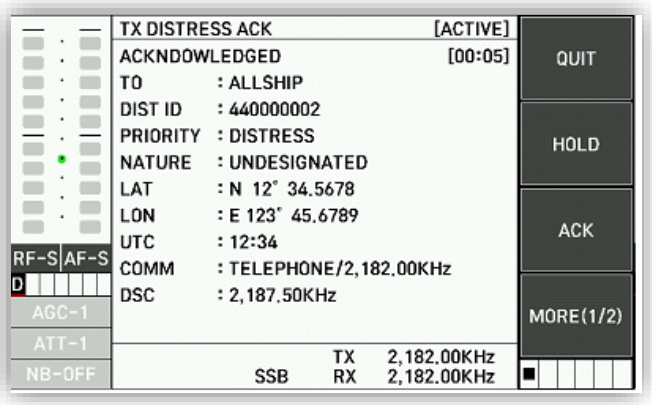


2) If there is no response call from the coast station while receiving a Distress Alert more than two times, contact the vessel, which received disaster, with radio.

3) Press ACK F3, if OK is selected according to the following message, the 2M BAND Distress Alert response is transmitted immediately.



4) After transferring, the following screen is displayed.



7-2-2 RECEPTION OF DISTRESS ALERT (DISASTER WARNING) IN HF BAND

In case when a Distress Alert is received from the HF band, a DISTRESS ALERT response can't be send.

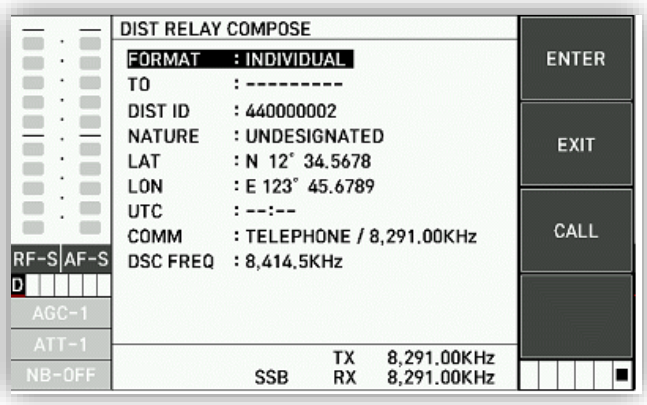
Relay the Distress Alert in the following cases.

- 1.After receiving a Distress call in case of not receiving Distress Alert response call from the coast station for 5 minutes.
- 2. In case of not receiving Distress Relay from another vessel.
- 3. In case of not receiving disaster communication from the other vessel by wireless communication
- 4. In case, if vessel delivering Distress Relay is available to connect communication with a station, to which can directly help.

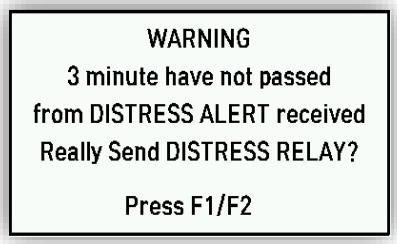
Sending a DISTRESS RELAY

1) Press SILENCE F1 to turn off the alarm and close the alarm window.

2) Press RELAY F3 to enter the RELAY configuration screen.



If 3 minutes didn't pass, the following warning will appear. Press F1 to enter the RELAY configuration screen, press F2 to return to the original screen.



3) If you choose INDIVIDUAL in FORMAT, you can RELAY to individual vessel

4) If you choose GEOGRAPHIC in FORMAT, you can RELAY to all the vessels in specific area. (In case, if location data is valid, you can input / modify the target of the ship within 500NM of the charity automatically.)

5) DSC FREQ is selected as default to 8414.5 KHz in the case of MUTI FREQ DISTRESS ALERT. In the case of DISTRESS ALERT received from one frequency, the frequency, which received a call, is set to default. If you input ENT, you can change it. In the case of changing the COMM frequency, it is changed to each band according to TELEPHONE /TELEX mode

6) If you finish entering, press CALL F3 to complete the Distress Relay

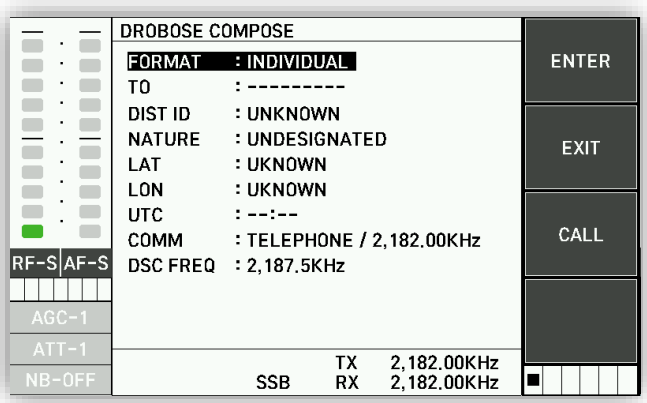
7-3 THE WAY TO SEND A DISTRESS RELAY INSTEAD OF SHIP IN A DISASTER

※ Distress Relay can be sent to the coast station instead of the ship in disaster if the ship is in the vicinity of the ship in disaster.

7-3-1 SEND DISTRESS RELAY TO A COAST STATION

1) If you press RELAY F3 on the main screen, "DROBOSE COMPOSE" screen will be configured.

DROBOSE : Distress Relay Behalf Of a Some Else



2) Leave INDIVIDUAL in Format and select the TO item.

3) If you select the TO item, the screen to select [DIRECT INPUT] / [ADDRESS BOOK] will appear.

[DIRECT INPUT]: Enter the MMSI by directly entering the numeric key

[ADDRESS BOOK]: Input MMSI by selecting from the input names.

If you select this article, then you can select [SHIP STATION] / [COAST STATION] individually.

4) If you select DIST ID, you can input the MMSI of the ship in disaster. If you do not know, you do not have to input it.

5) If you select NATURE, you can input the attribute of emergency of the ship in disaster. If you do not know, you do not have to input it.

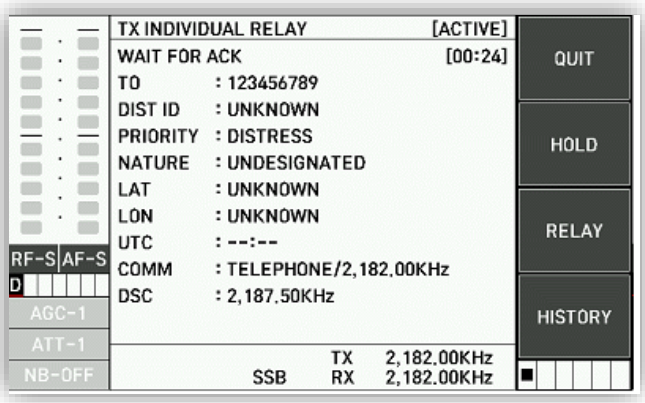
6) If you select LAT, you can input the location of the ship in disaster. If you do not know, you do not have to input it. For the input method, refer to the article 5) in Chapter 8-1-2.

7) If you select UTC, you can input the disaster time. If you do not know, you do not have to input it. For the input method, please refer to the article 6) in Chapter 8-1-2.

8) If you select COMM, you can select [TELEPHONE] / [TELEX].

9) If you select DSC FREQ, you can select the frequency to send a RELAY call.

10) If you press CALL F3 you can send a DISTRESS RELAY call.



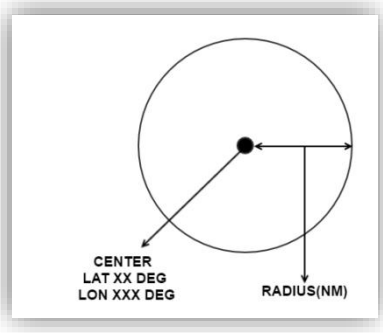
7-3-2 SENDING A DISTRESS RELAY TO THE AREA NEAR THE SHIP

If the coast station instructs the Distress Relay to be sent to the area near the ship, you have to follow the procedure below. The Distress Relay shall not be transmitted unless instructed by the coast station.

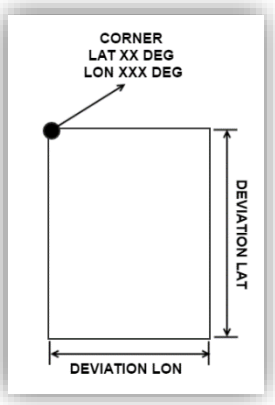
1) If you press RELAY F3 on the main screen, "DROBOSE COMPOSE" screen will be configured.

2) Push the button Enter in the Format field and select GEOGRAPHIC. Then the following caution window will appear. If you select F1, area input is possible.

3) If you select TO, then appears the window [CENTER / RAD] / [CONER / DEV] with selection



[CENTER/RAD]



[CONER/DEV]

Use numeric keys to input. In case if there is location input, the area within 500NM is automatically entered at the location of the charity.

4) The subsequent input is the same as the DISTRESS RELAY, which was sent to the coast station.

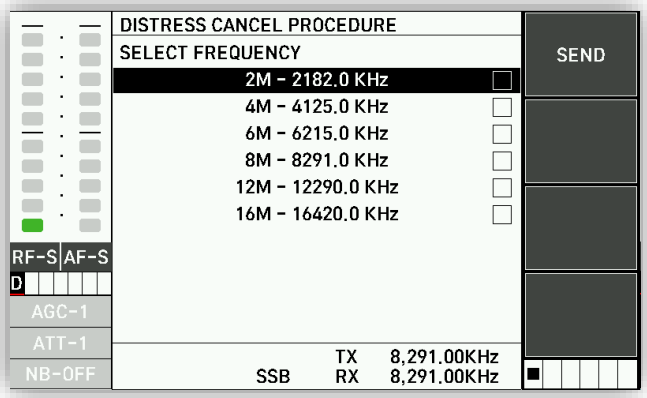
7-4 DISTRESS CANCEL SENDING A CANCEL MESSAGE

※ According the procedure below you can cancel a Distress Alert while sending a Distress Alert message and waiting for a response.

1) If you press CANCEL F3, the following alert window will appear and alarm sound will sound and the cancellation procedure will start.

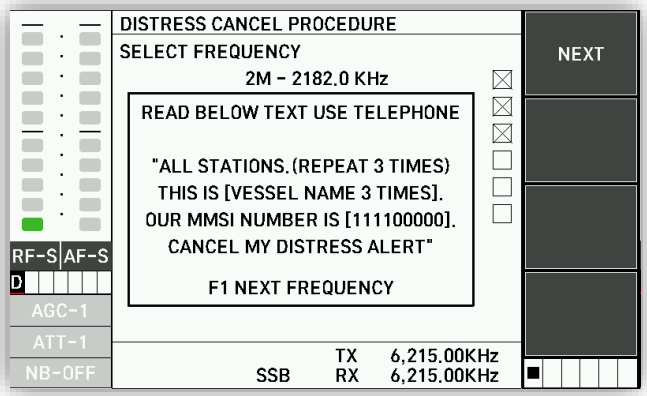
At this time, if you push the button EXIT F1 the frequency band, which sent the DISTRESS ALERT, is displayed and you will send the cancel message to that frequency band.

2) If you press EXIT F1, it will be changed to the screen, where you can choose the frequency to send a Distress Cancel and the frequency to send a cancel message.

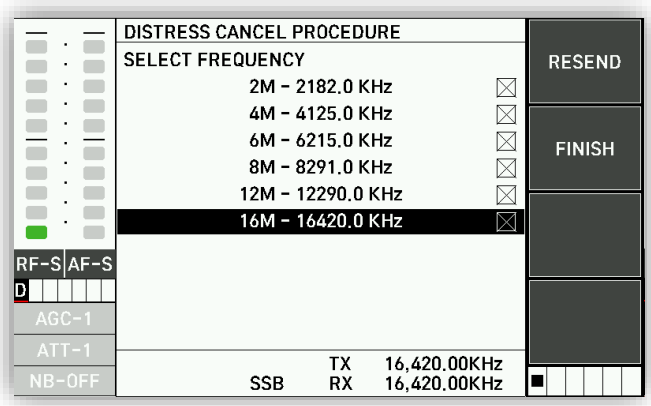


At this time press SEND F1 and you will send a Distress Cancel call to the relevant band at the DSC frequency and a window will appear with instructions according to the corresponding communication mode.

If it is a telephone, you need to read a cancel message with microphone. If it is a Telex, you need to write a relevant message by using the NBDP.



3) For sending a Distress Cancel to all bands will be used button FINISH F2. At this time, you can turn the knob (front channel change knob) to select a frequency and press RESEND F1 to send a Distress Cancel call again to the corresponding DSC frequency band.



4) Push the button FINISH F2 and the Distress Cancel procedure will end.

7-5 AN EXAMPLE OF PROCESSING MULTIPLE DISASTER MESSAGES.

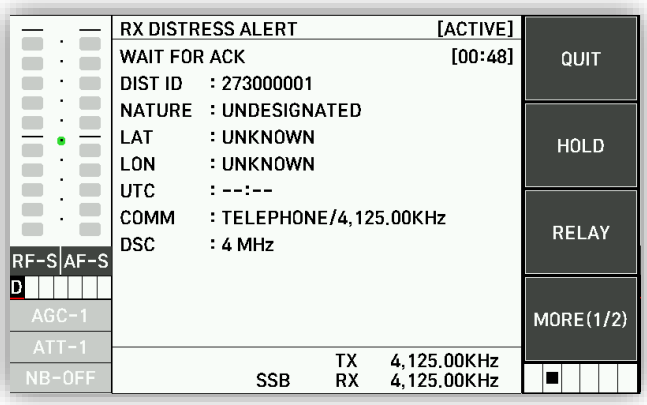
7-5-1 DISASTER MESSAGE SCENARIO

No	Time	Type	DSC FREQ	Note
1	00:00	DISTRESS	4207.5Khz	Dist id 273000001
2	01:20	DISTRESS ACK	4207.5Khz	From 273000005
3	02:40	DISTRESS	12577Khz	Dist id 273000001
4	04:00	DISTRESS ACK	12577Khz	From 273000006

7-5-2 RECEIVING THE FIRST MESSAGE

Message: DISTRESS ALERT

Received DSC frequency: 4207.5Khz



1) DISTRESS ALARM sound

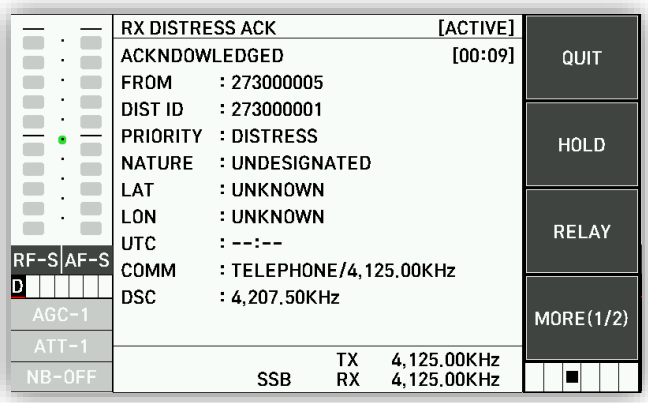
2) The alarm is completed only by manual operation.

3) The communication frequency changed to 4125.00Khz.

7-5-3 RECEIVING THE SECOND MESSAGE

Message: DISTRESS ACK

Received DSC frequency: 4207.5Khz



1) DISTRESS ALARM sound

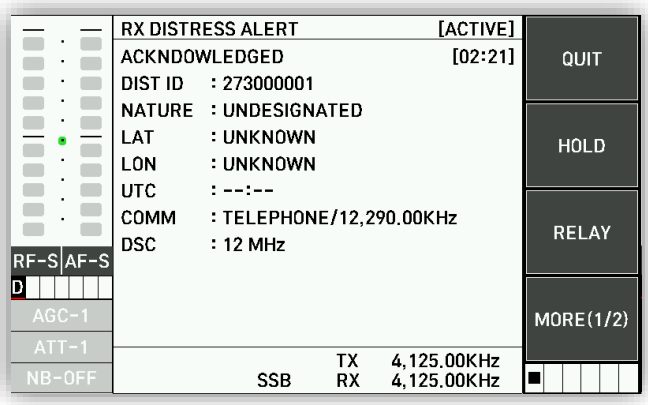
2) The alarm is completed only by manual operation.

3) The communication frequency is maintained at 4125.00Khz.

7-5-4 RECEIVING THE THIRD MESSAGE

Message: DISTRESS ALERT

Received DSC frequency: 12577Khz

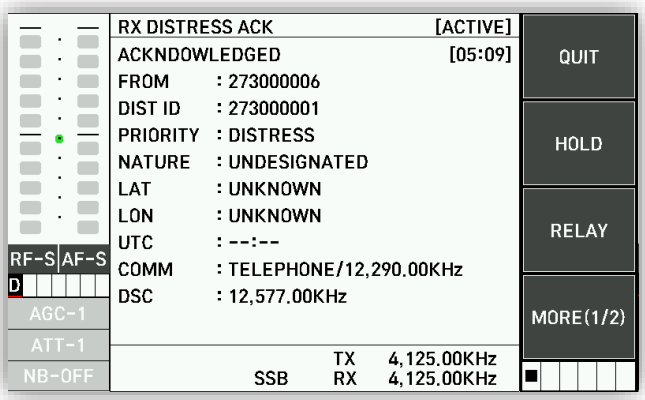


1) DISTRESS ALARM sound
2) The alarm is completed automatically after 10 seconds.
3) The communication frequency is maintained at 4125.00Khz.
4) Input MORE(1/2) F4 ➜ CH TUNE F2 to change the communication frequency of 12290KHz.
5) Here is the following message.

7-5-5 RECEIVING THE FOURTH MESSAGE

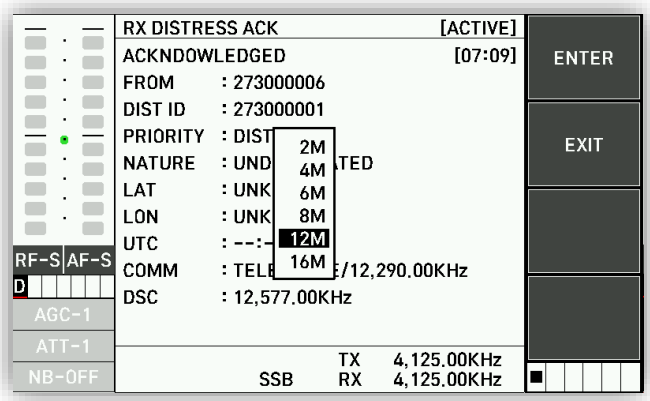
Message: DISTRESS ACK

Received DSC frequency: 12577Khz



1) DISTRESS ALARM sound
2) The alarm is completed automatically after 10 seconds.
3) The communication frequency is maintained at 4125.00Khz.
4) Input MORE(1/2) F4 ➜ CH TUNE F2 to change the communication frequency of 12290KHz.

5) Input MORE(1/2) F4 → CHANGE F2 to select from 6 frequency bands.



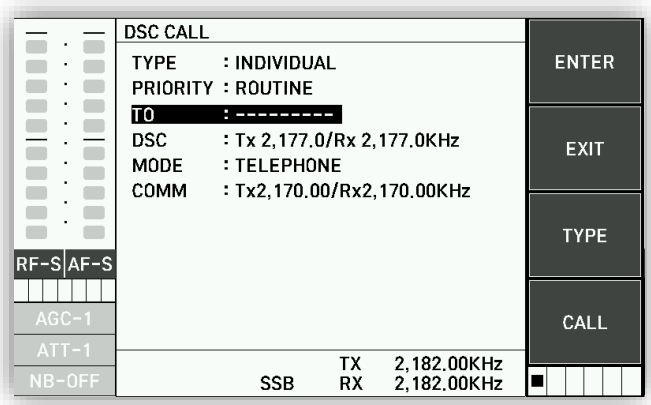
CHAPTER8. COMMON DSC MESSAGE CALLING AND RECEIVING

8-1 INDIVIDUAL CALL

The individual call calls the specified station.

8-1-1 INDIVIDUAL CALL TRANSMISSION

1) If you press CALL F1 of the main screen, then the "DSC CALL" screen will be configured.



2) Since the default call type of "DSC CALL" is INDIVIDUAL, there is no need to change the call type.

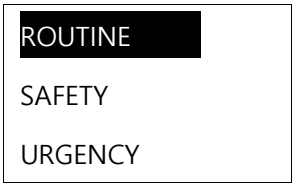
3) If you select from the TO article, the screen to select [DIRECT INPUT] /[ADDRESS BOOK] appears.

[DIRECT INPUT]: Input the MMSI by directly entering the numeric key.

[ADDRESS BOOK]: It is a method to input MMSI by selecting from entered names.

If you select this article, you can select [SHIP STATION] / [COAST STATION] individually.

4) If you select [PRIORITY], then you can select [ROUTINE] / [SAFETY] / [URGENCY].



5) If you select the DSC article, [ROUTINE] and [SAFETY] / [URGENCY] will be displayed differently.

-When is ROUTINE Priority

2M
4M
6M
8M
12M
16M
18M
22M
25M

If select a band, the callable DSC TX / RX frequency will be displayed and you can select one of them.

2Mhz : If it is a ship call (if MMSI does not start with 00).

INT :Tx2177.0/Rx2177.0

2Mhz : If it is a coast station call (if MMSI starts with 00)

INT :Tx2189.5/Rx2177.0

4MHz

INT :Tx4208.0/Rx4219.5
LOC1 :Tx4208.5/Rx4220.0
LOC2 :Tx4209.0/Rx4220.5

6MHz

INT :Tx6312.5/Rx6331.0
LOC1 :Tx6313.0/Rx6331.5
LOC2 :Tx6313.5/Rx6332.0

8MHz

INT :Tx8415.0.5/Rx8436.5
LOC1 :Tx8415.5/Rx8437.0
LOC2 :Tx8416.0/Rx8437.5

12MHz

INT :Tx12577.5/Rx12567.0
LOC1 :Tx12578.0/Rx12567.5
LOC2 :Tx12578.5/Rx12568.0

16MHz

INT :Tx16805.0/Rx16903.0
LOC1 :Tx16805.5/Rx16903.5
LOC2 :Tx16806.0/Rx16904.0

18MHz

INT :Tx18898.5/Rx19703.5
LOC1 :Tx18899.0/Rx19704.0
LOC2 :Tx18899.5/Rx19704.5

22MHz

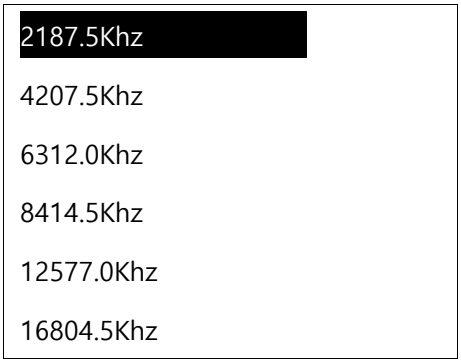
INT :Tx22374.5/Rx22444.0
LOC1 :Tx22375.0/Rx22444.5

25MHz

INT :Tx25208.5/Rx26121.0
LOC1 :Tx25209.0/Rx26121.5

LOC2 :Tx22375.5/Rx22445.0	LOC2 :Tx25209.5/Rx26122.0

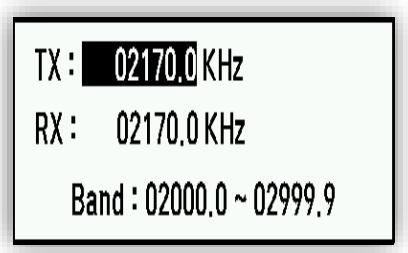
- When is Safety/Urgency Priority



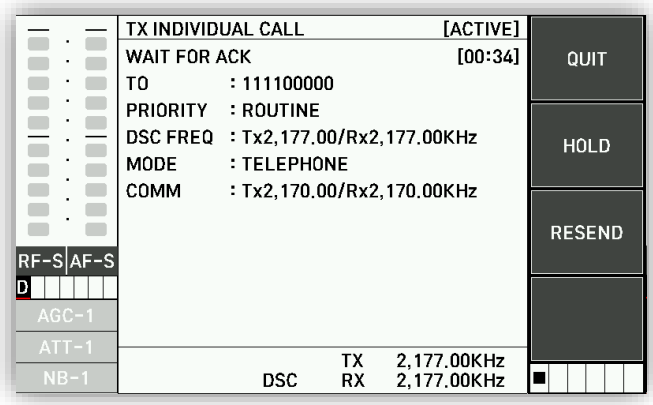
Select the DSC frequency you want to call.

6) If you choose MODE, you can choose [TELEPHONE]/ [TLX FEC]/ [TLX ARQ].

7) Select COMM (communication and communication frequency) to input used communication frequency, only input of the same band as the DSC calling frequency is possible. If you select it in the DSC article, the recommended frequency will be entered. If it is a coast station call (MMSI starts with '00'), it will be impossible to input.

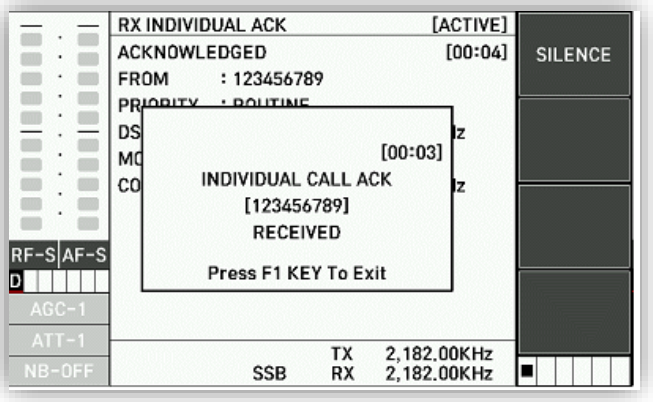


8) Press CALL F4 to send an Individual call and wait for a response at the transmitted DSC frequency.



9) If you receive a response, an alarm sounds and an alarm window is displayed.

If you press SILENCE F1, the alarm window disappears and the alarm sound stops. Passed time is displayed after the response at the top-right of the screen. The communication frequency can be changed according to the type of response and it can communicate with the other station.



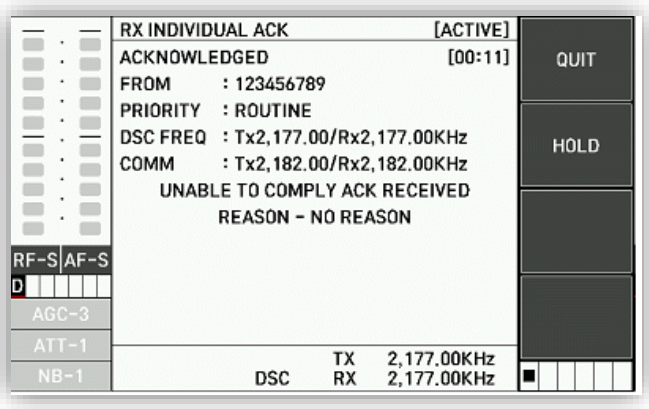
10) There are 3 types of response [ACCEPT]/[REFUSE]/[CHANGE].

[ACCEPT] - The response agreed to communication frequency, at which was sent an Individual call.

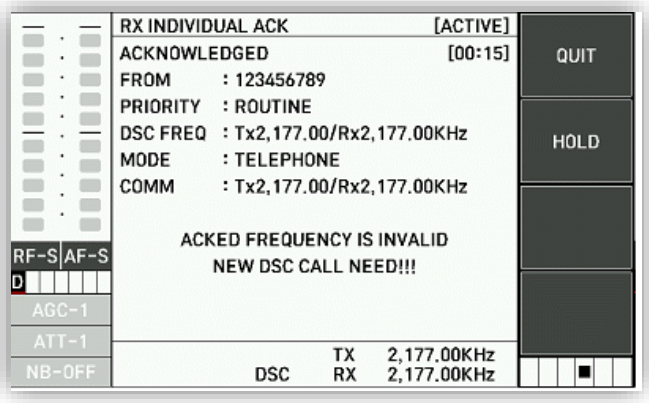
[REFUSE] - The refusal to communicate from the station, which received an Individual call, for the following reasons

NO REASON	TEMP UNAVAILABLE
BUSY	EQUIP DISABLED
QUEUE INDICATION	UNABLE TO USE CH
STATION BARRED	UNABLE TO USE MODE

NO OPERATOR	



[CHANGE] – The response after changing the communication frequency at the called station, which received an Individual call. In this case, if the frequency, which cannot be used as follows, comes in the response, it does not change to the corresponding frequency.



8-1-2 RECEIVING AN INDIVIDUAL CALL

1) Set up REFUSE auto responder

If the communication frequency or mode of the received call is not available, you can set the answer back function by putting [UNABLE TO USE CH] in REASON.

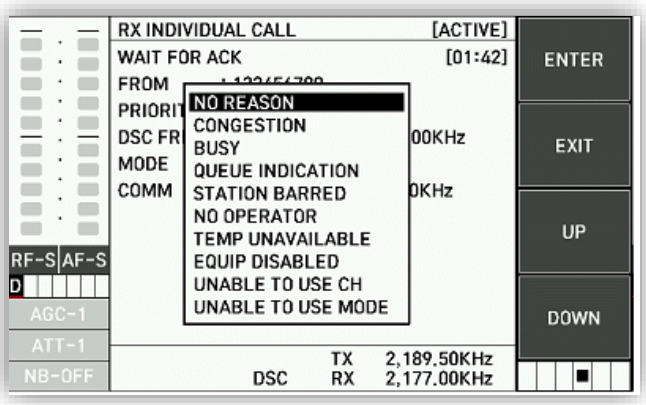
MORE(5/5) F4 ➜ SETUP F2 ➜ 1 [1.DSC SETUP] ➜ ENTER F1 ➜ 4 [4.AUTO ACK SET] ➜ In 4 [4.AUTO ACK INDIVIDUAL : ON] you can turn ON.

2) Send a manual response

① There are [ACCEPT] / [REFUSE] / [CHANGE] types when sending a manual response.

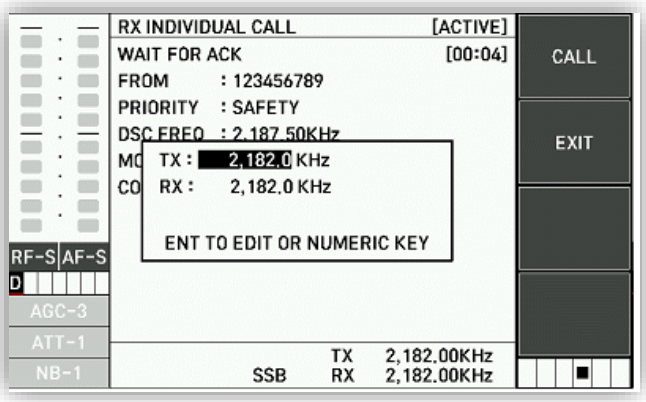
[ACCEPT] - Respond to the communication frequency, at which was sent an Individual Call, as agreed, by pressing ACCEPT F3, it responds immediately and can be changed to the communication frequency to communicate with the other station.

[REFUSE] -Reject the communication frequency, at which was sent an Individual Call, for the following reasons by pressing MORE(1/2) F4 ➜ REFUSE F1, its REASON selection window appears, where you can select the response.



[CHANGE] - Response with changing the communication frequency at the station after receiving an Individual call.

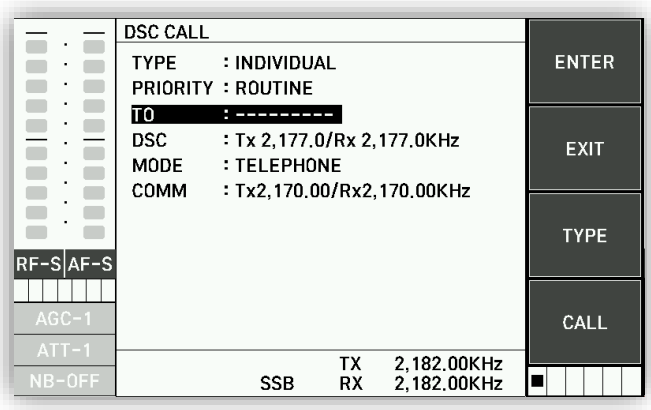
MORE(1/2) F4 ➜ If you press CHANGE F2, then frequency change window appears and after changing if you press CALL F1. After the response, it changes to the set frequency and it is possible to communicate with the other station.



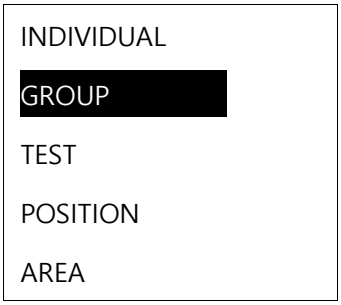
8-2 GROUP CALL

8-2-1 SEND A GROUP CALL

1) If you press CALL F1 on the main screen, The "DSC CALL" screen is configured.



2) If you press TYPE F2, "TYPE" selection window is displayed, select the [GROUP].



3) If you select from the TO article, the screen to select [DIRECT INPUT] /[ADDRESS BOOK] appears.

[DIRECT INPUT]: Input the MMSI by directly entering the numeric key, starts from '0'.

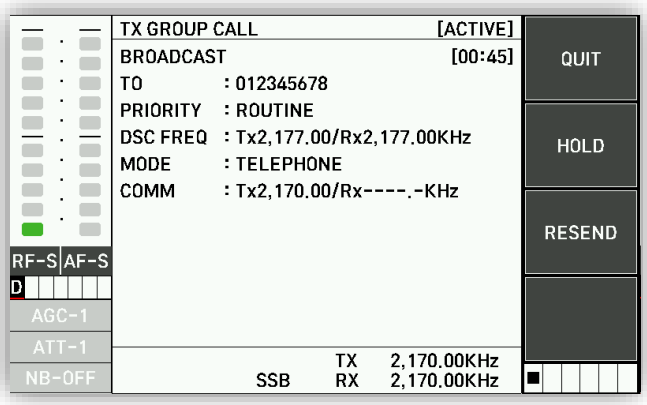
[ADDRESS BOOK]: It is a method to input MMSI by selecting from entered names.

4) DSC article is the same as the PRIORITY ROUTINE input of INDIVIDUAL.

5) You can select [TELEPHONE]/ [TELEX] in MODE article.

6) If COMM (communication and communication frequencies) is selected, the using communication frequency can be input and only the input of the same band as the DSC calling frequency is possible. If you select in the DSC article, recommended frequency is automatically entered.

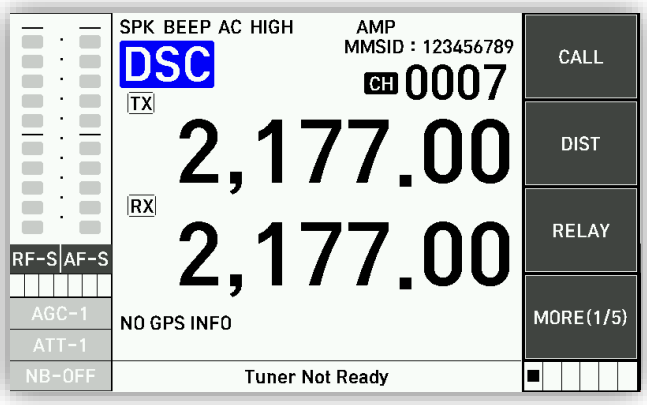
7) Press CALL F4 to send a GROUP call and it will be changed to set up communication frequency and communication mode and communication is enabled.



8-2-2 RECEIVE A GROUP CALL

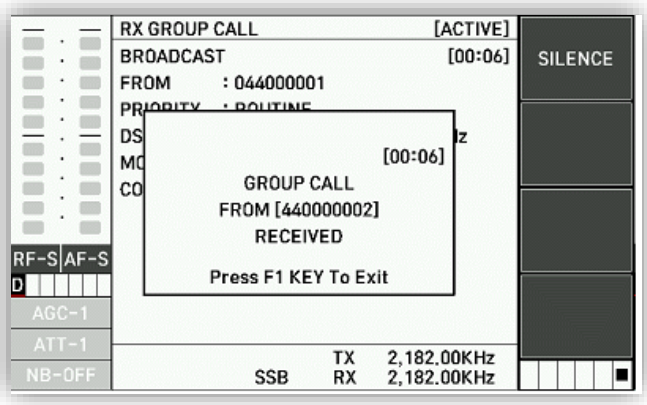
1) After changing to the DSC mode, change to the channel, at which you are going to receive, and wait for DSC reception.

(GROUP call is called at the frequency, which W / K cannot receive)



2) MORE(5/5) F4 ➜ SETUP F2 ➜ 3 [3. ADDRESS BOOK] ➜ In case of receiving GROUP call it is received by GROUP MMSI, registered in 2 [2. GROUP]

3)When it is received, the alarm sounds and settings are changed to the communication frequency and mode set in the call.



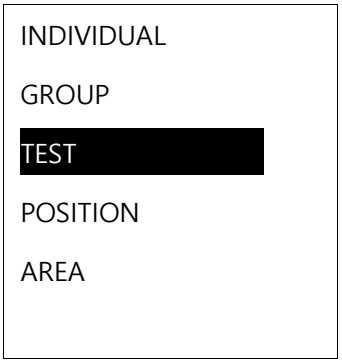
4) SILENCE F1 The alarm sound stops and the alarm window disappears.

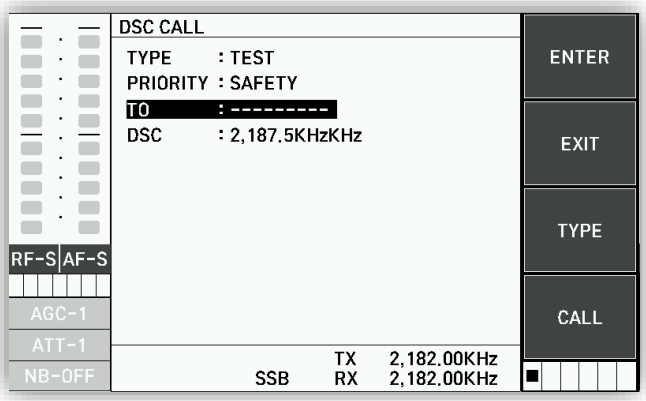
8-3 TEST CALL

8-3-1 TEST CALL RECEIVING

1) Press CALL F1 on the main screen and the "DSC CALL" screen is configured.

2) If you press TYPE F3, "TYPE" selection window is displayed, if you select [TEST], it shifts into TEST call configuration screen.





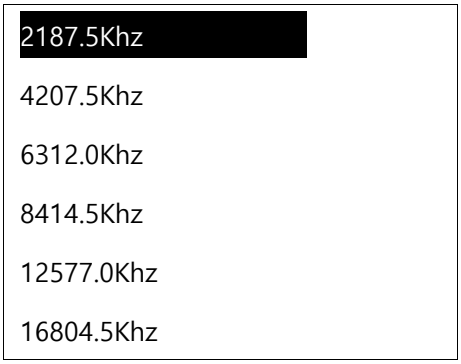
3) If you select from the TO article, the screen to select [DIRECT INPUT] / [ADDRESS BOOK] appears.

[DIRECT INPUT]: Input the MMSI by directly entering the numeric key.

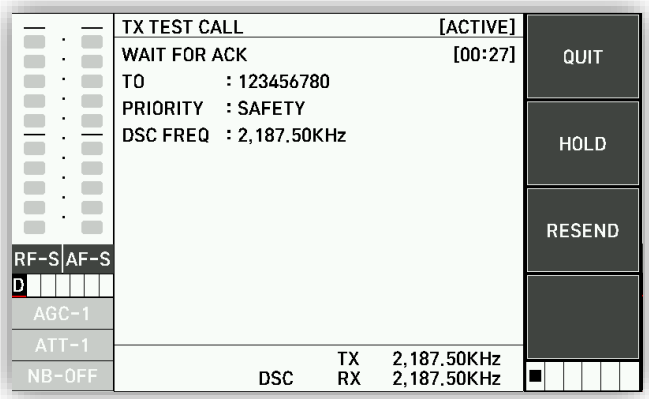
[ADDRESS BOOK]: It is a method to input MMSI by selecting from entered names.

If you select this article, you can select [SHIP STATION] / [COAST STATION] individually

4) If you select the DSC item, enter the DSC frequency you want to call.



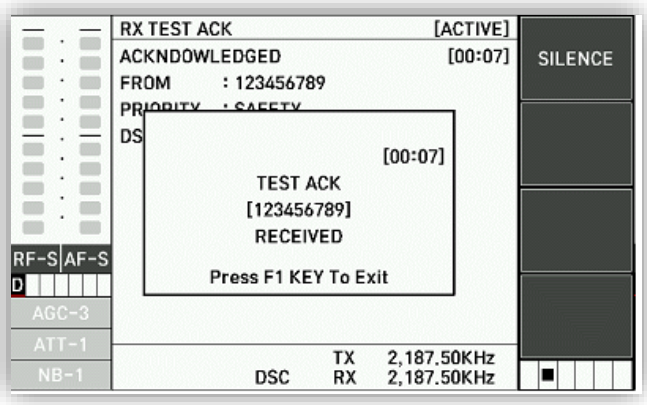
5) Press CALL F4 to send TEST call and wait for the response at transmitted DSC frequency.



6) When a response is received, an alarm sounds and an alarm window is displayed.

If you press SILENCE F1 the alarm window disappears and the alarm stopes.

It is displayed after the response in the upper right corner of the screen.



8-3-2 RECEIVING A TEST CALL

1) Set up an auto response

It is possible to set the function to respond automatically when TEST call is received.

MORE(5/5) F4 ➜ SETUP F2 ➜ 1 [1.DSC SETUP] ➜ 4 [4.AUTO ACK SET] ➜ You can turn it ON in 1 [1.AUTO ACK TEST : ON] ON.

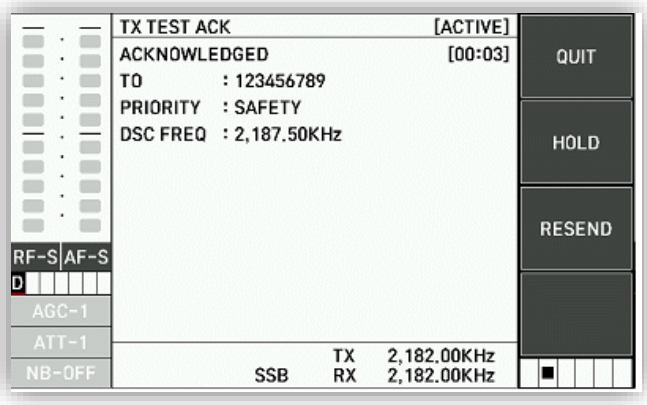
※ When AUTO ACK is ON, when receiving TEST call alarm doesn't sound and alarm window doesn't appear on the screen. Also, the TEST DSC receiving screen is not displayed.

2) Send a manual response

① There is only [ACK] when sending a manual response.

[ACK] – Answer the TEST call.

Press ACK F3 to send a response call to the received DSC frequency.

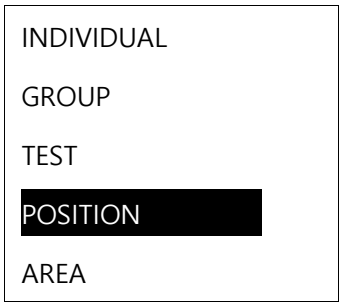


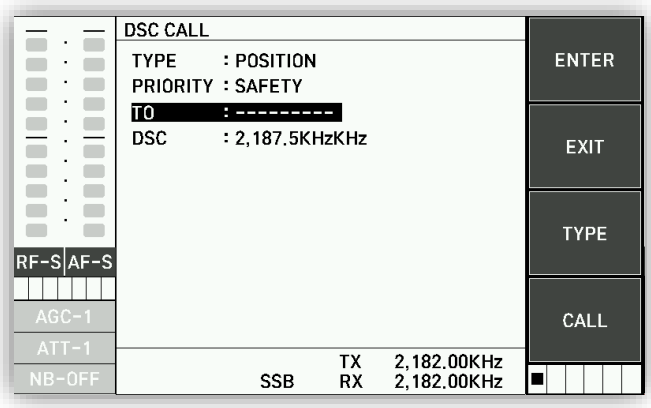
8-4 POSITION CALL

8-4-1 TRANSMISSION REQUEST CALL FOR LOCATION INFORMATION

1) If you press CALL F1 on the main screen, "DSC CALL" is configured.

2) If you press TYPE F3, "TYPE" selection window is displayed. If you select [POSITION], it changes to POSITION call configuration screen.



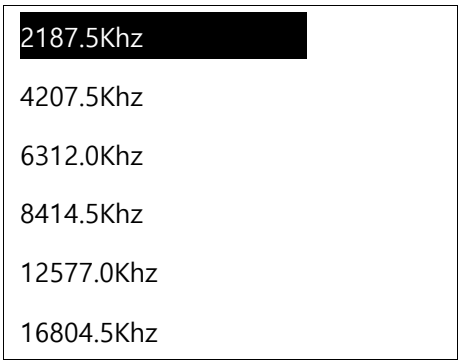


3) If you select the TO article, the screen to select [DIRECT INPUT] / [ADDRESS BOOK] appears.

[DIRECT INPUT]: Input the MMSI by directly entering the numeric key.

[ADDRESS BOOK]: It is a method to input MMSI by selecting from entered names.

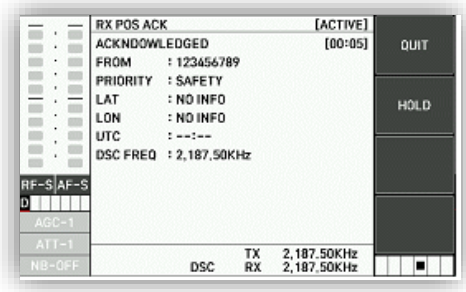
4) If you select the DSC article, input the DSC frequency you want to call.

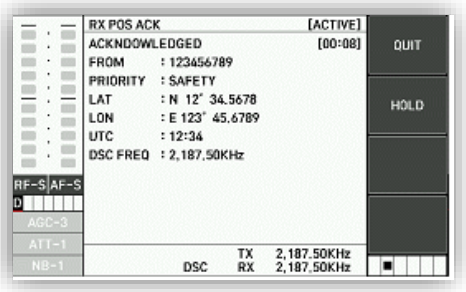


5) Press CALL F4 to send a POSITION call, wait for the response at transmitted frequency.

6) When a response is received, an alarm sounds and an alarm window is displayed.

If you press SILENCE F1 the alarm window disappears and the alarm stops. It is displayed after the response in the upper right corner of the screen. Depending on the response, the location information may or may not be included as follows.





<When there is no location information><When there is location information>

8-4-2 RECEPTION REQUEST CALL FOR LOCATION INFORMATION

1) Set up an auto response

It is possible to set a function to respond automatically when receiving a request call for location information.

MORE(5/5) F4 ➜ SETUP F2 ➜ 1 [1.DSC SETUP] ➜ 4 [4.AUTO ACK SET]

➜ You can turn it ON in 3 [3.AUTO ACK POSITION: ON].

※ When AUTO ACK is ON, when receiving a call request for location information, a call response is sent without displaying the alarm sound and alarm window on the screen, the POSITION DSC receiving screen is also not displayed.

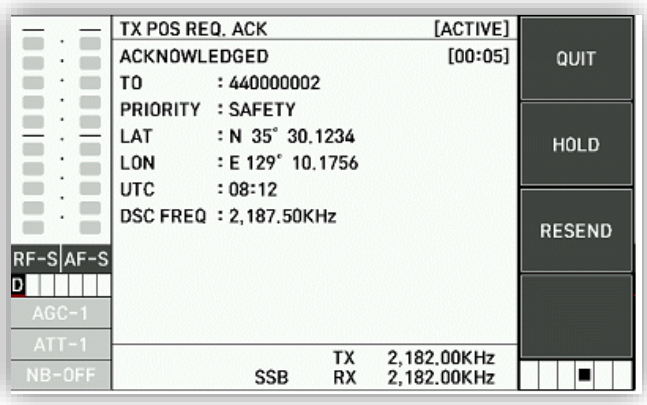
2) Send a manual response

① There are [ACCEPT] / [REFUSE] types when sending a manual response.

※ Only REFUSE can be sent if the device does not have location information

Press the key ACCEPT to respond with the received DSC frequency immediately and transmit the location information and time of the equipment.

If you press REFUSE, it responds with the received DSC frequency and transmits the position information and time with NO INFO. TASK is automatically completed after the response.

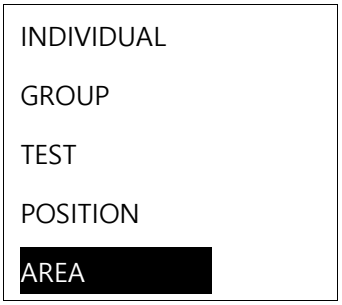


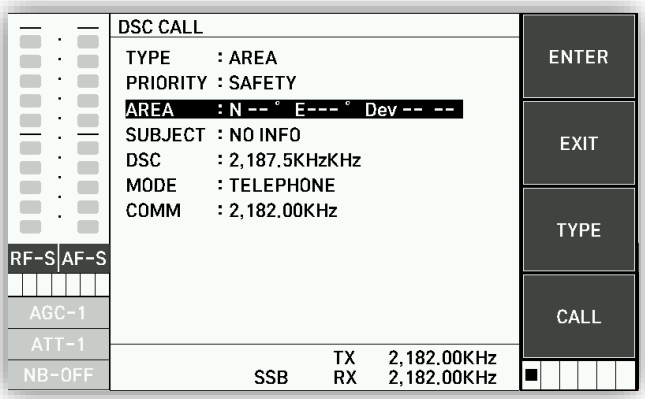
8-5 AREA CALL

8-5-1 AREA CALL TRANSMISSION

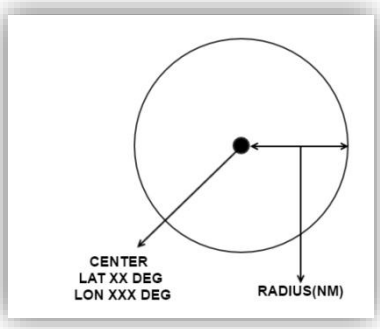
1) If you press CALL F1 on the main screen, "DSC CALL" is configured.

2) If you press TYPE F2, "TYPE" selection window is displayed. If you select [AREA], it changes to AREA call configuration screen.

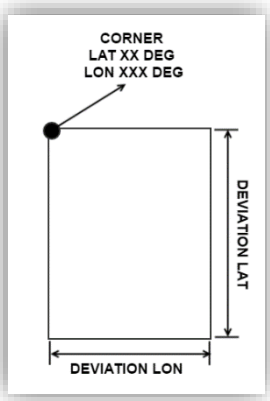




3) If you select the TO article, the window to select [CENTER/RAD]/ [CONER/DEV] appears.



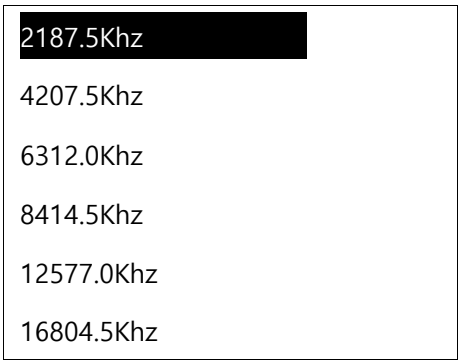
[CENTER/RAD]



[CONER/DEV]

You should use numeric keys to input. If there is a position input, the area within 500NM is automatically entered at the position of the ship.

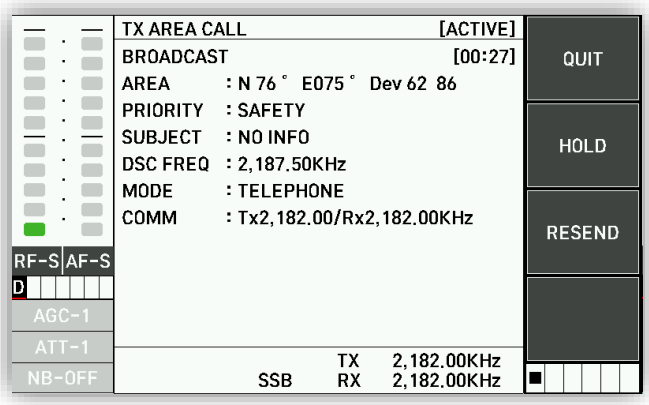
4) When you select the DSC article, input the DSC frequency you want to call.



5) You can select [TELEPHONE]/[TELEX] in the article MODE

6) If you select COMM, you can input the communication frequency to be used and only the input of the same band as the DSC calling frequency is possible. If you select in the DSC item, the recommended frequency is automatically entered.

7) Press CALL F4 to send the AREA call and change to the set communication frequency and the communication mode and will be able to communicate.

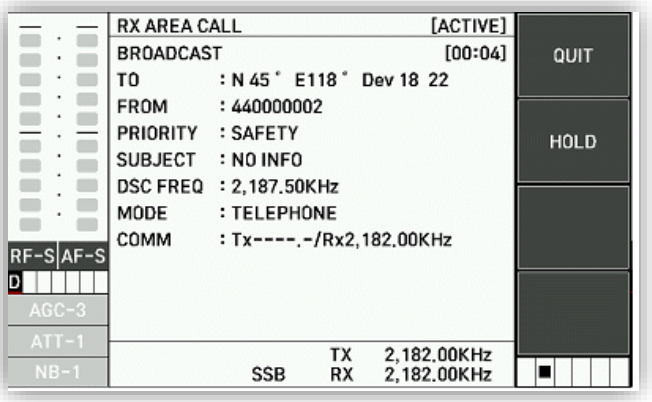


※ To put DSC information related to MEDICAL Craft/NEUTRAL Transport in AREA call press MORE(5/5) F4 ➜ SETUP F2 ➜ 1 [1.DSC SETUP] ➜ Turn ON 5 [5.MEDICAL : ON] and you can enter if select the SUBJECT in the AREA configure screen.

8-5-2 RECEPTION OF AREA CALL

1) When it is received, the alarm sounds and the settings are changed to the set communication frequency and mode in the call.

2) If you press EXIT F1 the alarm stops and the alarm window disappears.



8-6 DSC TEST

8-6-1 DSC DOT TRASMIT

1) MORE(5/5) F4 ➜ SETUP F2 ➜ 1. DSC SETUP ➜ ENTER F1 ➜ 9. DSC TEST ➜ ENTER F1 ➜ 1.Dot Trasmit ➜ ENTER F1

2) Send the Dot pattern at 4207.50KHz.

8-6-2 MARK TRASMIT

1) MORE(5/5) F4 ➜ SETUP F2 ➜ 1. DSC SETUP ➜ ENTER F1 ➜ 9. DSC TEST ➜ ENTER F1 ➜ 2.Mark Trasmit ➜ ENTER F1

2) Send the Mark signal at 4207.50Khz.

8-6-3 SPACE TRASMIT

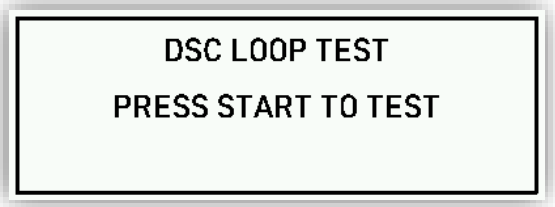
1) MORE(5/5) F4 ➜ SETUP F2 ➜ 1. DSC SETUP ➜ ENTER F1 ➜ 9. DSC TEST ➜ ENTER F1 ➜ 3.Space Trasmit ➜ ENTER F1

2) Send the Space signal at 4207.50Khz.

8-6-4 LOOP TEST

MORE(5/5) F4 ➜ SETUP F2 ➜ 1. DSC SETUP ➜ ENTER F1 ➜ 9. DSC TEST ➜ ENTER F1 ➜ 4.DSCLOOP TEST ➜ ENTER F1

The following screen appears.



1) Press START F1.
2) Operate DSC LOOP TEST at 4207.50Khz
3) If successful: Output PASSED.
4) If failed: Output FAILED.

CHAPTER 9. PRINTER

9-1 HP-283 PRINTER

1) Precautions for use

① The printing paper used in HP-283 PRINTER is special paper that develops color by thermochemical reaction. Therefore, the following handling should be avoided as it may cause discoloration, discoloration and discoloration.

- Storage in heat, humidity and light.
- Contact with sweaty hands.
- rub it with a solid object.
- Pasting of organic solvent system such as bond
- Stick with adhesive tape. (You can attach double-sided tape to back / front.)
- Prolonged contact with vinyl chloride film
- Contact with JiaJo and wet COPY immediately after copying.
- Contact with organic solvent

② Precautions during operation

Empty parameters should be avoided when the PRINTER paper is not inserted. During printing, do not turn off the power switch but switch the head of PRINTER to HOME POSITION and turn off the switch.

This unit has a single PRINTER TEST function.

2) Precautions during operation

① POWER switch

When it is raised to the upper side, the power is turned on to this unit, and the PRINTER HEAD is one round trip, pushing PRINTER paper by one row.

However, the power switch of the SRG-150DN / 250DN main unit to which this unit is connected must be ON.

② FEED switch

PRINTER Press this button to forcibly feed paper.

Press once to FEED for one row and continue pressing FEED continuously.

③ CUTTER

PRINTER When jamming the paper, pull the paper up to this cutter and pull it up firmly to break the paper.

④ Paper exit

The exit of PRINTER paper.

⑤ PAPER COVER (Paper storage part)

In this cover, the printer paper is stored.

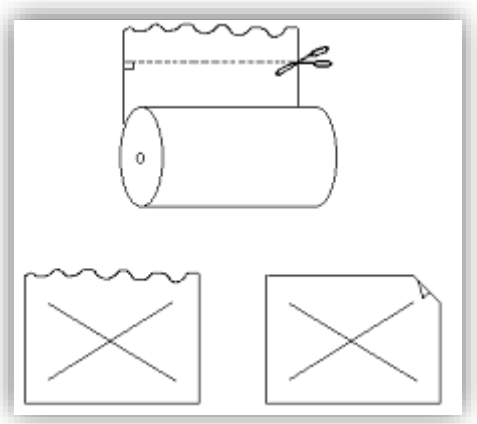
3) Normal operation

- Check that the power of the SRG-150DN / 250DN main unit connected to this unit is turned on.
- Turn the POWER switch up to turn on the power
- This automatically puts the DSC MESSAGE and DATA of the transmission and reception sent from the SRG-150DN / 250DN into operation.

4) How to install PRINTER paper

① PRINTER Cut the end of the paper at right angles.

If paper is inserted in a wrinkled state, paper clogging may occur.



How to use PRINTER paper

② Set the POWER switch on the PRINTER to OFF.

③ Open the cover and remove the cover shaft.

④ Insert the CENTER SHAFT into the center of the paper, and push the end of the paper into the paper insertion slot.

⑤ Insert the POWER switch, then press the FEED switch repeatedly until the paper is sucked in.

⑥ When the paper is sucked in, hold the CENTER SHAFT in the holder.

⑦ Keep pressing the FEED switch until the end of the paper is coming out.

⑧ Close the Paper cover and press the top of the cover until it locks.

9-2 JP-3750 PRINTER

1) Normal operation

① Make sure that the power of the SRG-150DN / 250DN main unit connected to this unit is turned on

② Turn on the POWER switch and turn on the power

③ It automatically enters the DSC MESSAGE and DATA of the transmission and reception sent from the SRG-150DN / 250DN.

2) How to install and use ROLL paper

① Open the cover

② Put the ROLL paper holder in the holes on both sides of the printer

③ Insert the ROLL paper support cap into the socket on the back of the printer.

④ Move the handle lever toward the front side so that the column indicator comes off the platen.

⑤ Position the paper release lever at the front position.

⑥ Put the paper rod on the ROLL paper core, and open the guide of the ROLL paper support.

⑦ Insert the paper from the back of the platen over the paper barrel, and check that the end of the paper lies on the end of the platen.

⑧ Lightly push the paper, close the paper release lever, and turn the platen handle so that the paper is in front of the platen.

⑨ Close the handle lever.

⑩ Place the cover in place.

CHAPTER10. HOW TO USE SD-250(ALARM BOX)

10-1 DISTRESS TRANSMITTING

1) If you press 'Distress key' (Red Button) for 3 sec., it alarms for 3 seconds.
   After that, the red light is turned on with bip-sound.
   While Distress Key is blinking, transmitting is started to work and location of disaster, time, ship's ID are sent to DSC 6 CH in order.
   If there is no answer, it does sending till getting an answer through CH1 to CH 6.
2) In order to stop the transmitting, press the 'Reset key'

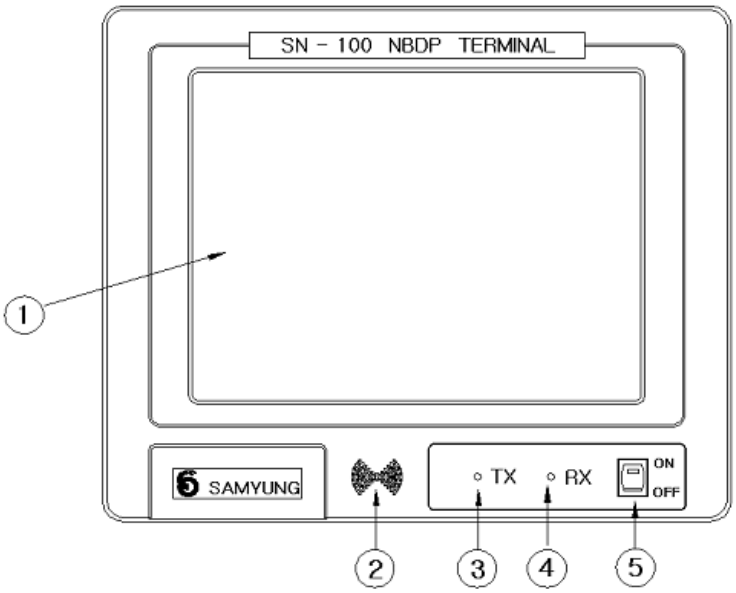
※ If distress signal is sent by mistakes, contact to marine police or station, SAR.

10-2 IN CASE OF RECEIVING DISTRESS SIGNAL

1) Distress LED blinks and sounds 'bip'.
   Check contents displayed on the screen and press Reset key to stop.

CHAPTER 11. NBDP TERMINAL

11-1 DESCRIPTION



<NBDP Unit>

① Front display (LCD) – Display channel, Transmit / receive frequency indication, VOLUME, RF.GAIN, CLARIFY, ATT, TX POWER, AGC and Function key.

② Speaker - Sounds when receiving data or receiving alarm.

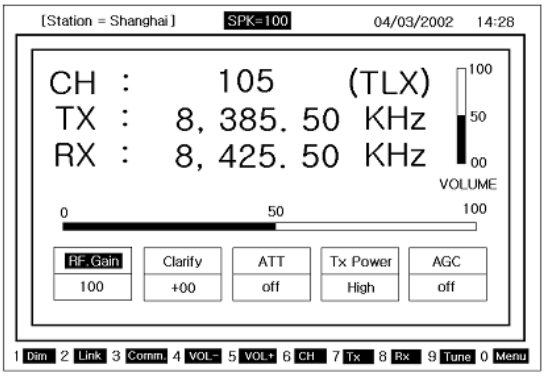
③ Transmitting LED – LED turns red when transmitting.

④ Receiving LED - Blinks green when data is received.

⑤ Power switch - The SN-100 can be turned on / off

11-2 INTIAL SCREEN OF NBDP TERMINAL

When the power switch is turned on, the initial screen is displayed as shown below.



11-2-1 INITIAL SCREEN FUNCTION DESCRIPTION

CH — Displays the call to CHANNEL and the current CHANNEL.

TX — Set the transmission frequency.

RX — Set the receive frequency.

 Displays RF.GAIN setting value as a graphical bar .

RF.Gain — You can increase or decrease the RF gain by using the up / down arrow keys and adjust it to an appropriate value. (0 to 100 steps)

Clarify — This function adjusts intelligibility when receiving. It can be increased or decreased by using up / down buttons to adjust receive listening best. (Adjustment range: ± 10Hz)

ATT — It is a function to attenuate reception gain. It can be adjusted in 4 steps by up / down buttons.

OFF : 0dBm 1 : 10 dBm

2 : 20dBm 3 : 30 dBm

Tx Power — The transmission output can be adjusted to HIGH / MID / LOW.

AGC — It automatically adjusts the gain of the input signal and can be turned ON / OFF by the up and down arrow keys.

Display the level of the volume as a graphic bar with 0 to 100 steps.

11-2-2 FUNCTIONS ON THE INITIAL SCREEN BUTTON DESCRIPTION

- [1 Brightness] : You can adjust the backlight brightness of the LCD screen in five steps with the [F1] button.
- [2Connection] : The [F2] button allows you to set the Automatic Repeat request mode and the FEC mode.
- [3 Coast Station] : Press [F3] button, Call registered frequency CHANNEL
- [4 Volume-] : Press [F4] button, Speaker volume can be reduced.
- [5 Volume+] : Press [F5] button, Speaker volume can be increased.
- [6 CH] : [F6] button is a function to select a channel.
- [7TX] : [F7] button is a function to set the transmission frequency.
- [8RX] : [F8] button is a function to set the reception frequency.
- [9 Tuning] :[F9] button is a function when User wants to match the antenna.

. [0 Menu] : [F10] button display Main Menu.

0. [ARQ] : Communicate Automatic Repeat Request mode
1. [FEC] : Communicate Forward Error Correction mode.
2. Station Edit : Register the frequency of the other station.
3. Station Print : Print out the frequency of registered the other station.
4. Macro Command : Write Macro Command. (Write short sentence in 20 words)
5. Editor : Edit file and save content.
6. System set : Use while adjusting TELEX mode condition.
7. NBDP Test : Transmit Dot, Mark, Space signal, Printer test and NBDP transmission/reception test.
8. LCD-off(F12) : The function of LCD off and in the case that LCD is off, if any button is pressed, LCD is on.

11-2-3 CONTROL FUNCTION IN KEYBOARD

- [PgUp] : Adjust channel to next channel, But if next channel is not registered, it moves to next channel of it.
- [PgDn] : [PgDn] : Adjust channel to forward channel, But if forward channel is not registered, It moves to forward channel of it.

11-3 SETTING TX/RX FREQUENCY

※ Unit: kHz

11-3-1 SETTING TX FREQUENCY

① Press [F7] button on the keyboard.

② Input the frequency with [Number button].

[Ref.] ☞ While inputting frequency if press **[◀], [▶],** curser will move.

③ Press [ENTER] button.

[Ref.] ☞ Available TX Frequency range: 1.605MHz ~ 27.499MHz.

11-3-2 SETTING RX FREQUENCY

① Press **[F8]** button.

② Input the frequency with **[Number button].**

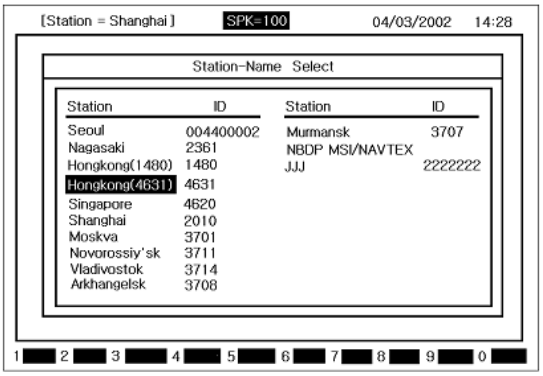
[Ref.] ☞ While inputting frequency if press **[◀], [▶],** curser will move.

③ Press [Enter] button.

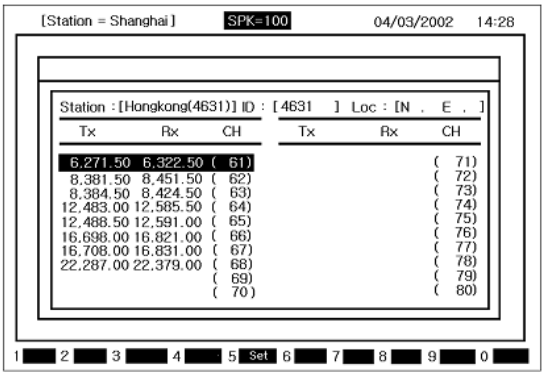
[Ref.] ☞ Available RX Frequency range: 95 KHz ~ 29.99990MHz.

11-3-3 COAST RADIO STATION TX/RX FREQUENCY SETUP

A. Press **[F3]** button, display as followings



① Revert the other station you want to communicate using **[▶][Enter] button,** the following screen will show.



② Revert the channel you want to communicate using **[▲],[▼],[◀],[▶]** button.
press **[Enter]** button. Set TX/RX frequency to registered freq. on channel displaying the first display of NBDP.

11-3-4 SETTING TX/RX FREQUENCY BY CALLING CHANNEL

① Press [F6] in Keyboard.

② Input the channel with **[Number button]**.

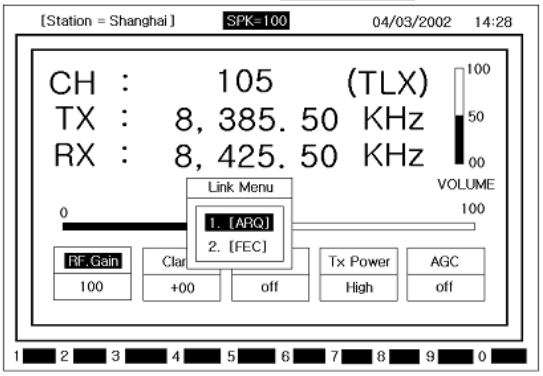
③ Press [Enter] button.

11-4 [ARQ] MODE

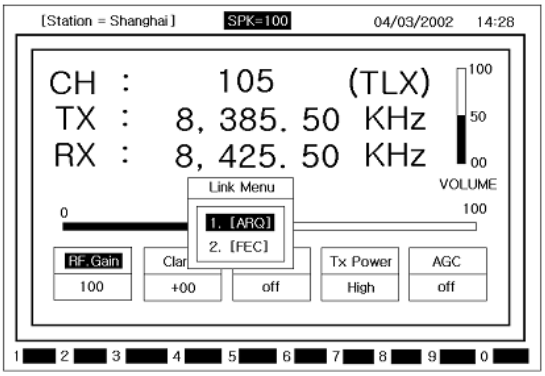
11-4-1 CONNECTING WITH THE OTHER STATION BYARQMODE

※ Connecting by present adjusting channel.

① Press **[F2]** button on the keyboard and **Link Menu** screen shows.

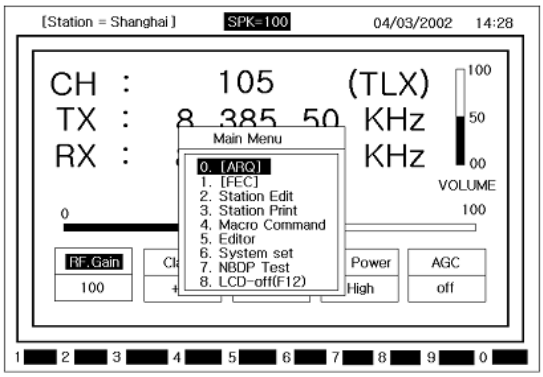


② Move the cursor with **[▲]/[▼]** button to **'1. [ARQ]'** ➜ press **[Enter],** then it will be connected with other party through **[ARQ]** mode in present setting Channel.

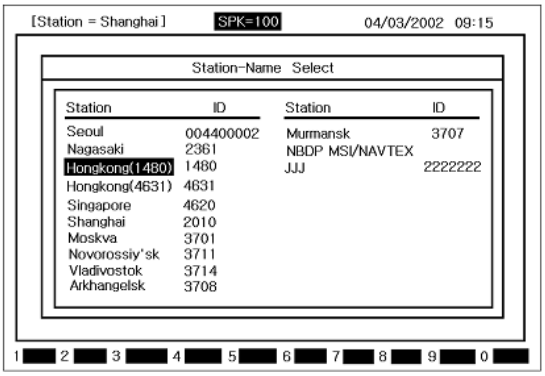


11-4-2 CONNECTING BY DESIGNATION OTHER STATION

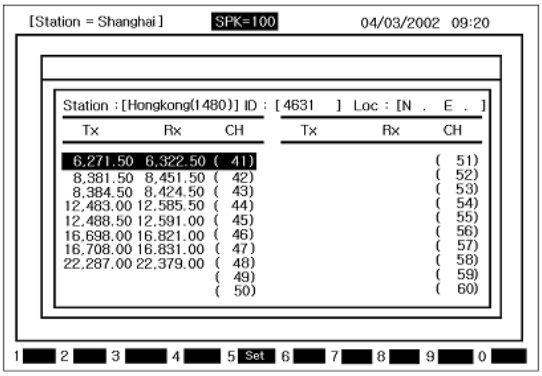
① Press **[F10]** on the keyboard, Main Menu screen display.



② Move the cursor with **[▲]/[▼]** button to **'0. [ARQ]'** ➜ press**[Enter]** and the following screen will appear.



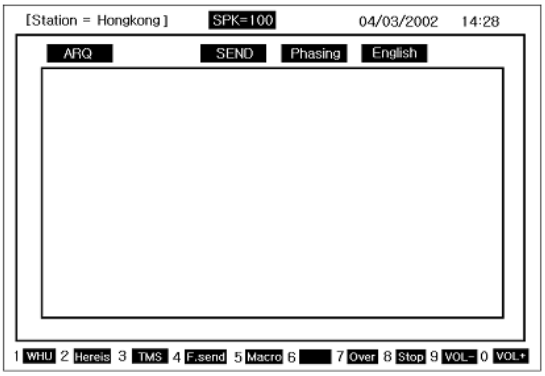
③ Revert the other station you want to communicate using **[▲],[▼],[◀],[▶]** button. ➜ press **[Enter]** button, the following screen will show.



[Ref.] ☞ can be back to forward display pressing **[ESC]** button.

④ Revert the channel you want to communicate using **[▲],[▼],[◀],[▶]** button, press **[Enter]** button.

⑤ Call the other station with selected frequency displaying next **[ARQ]** mode first display.



[Ref.] ☞ to stop calling, press **[F8]** and it will be back to Telex initial screen.

⑥ If connected, cursor blinks on the left top of the screen.

11-4-3 COMMUNICATION IN ARQ MODE

Perform 14-4-1 or 14-4-2, and operate as below order.

① As long as you can connect with the other station in [ARQ mode], above screen is displayed. You can keep communicating in this condition.

② After typing the message with keyboard, press [Enter] button.

[Ref.] ☞ Before you press [Enter] button, transmitting is not complete.

③ Usable keys in ARQ mode

※ Usable characters : ABDCDEFGHIJKLMNOPQRSTUVWXYZ1234567890-?().,'=/+
abcdefghijklmnopqrstuvwxyz

※ Back space : Delete one character on the left.

※ Enter : Send one line.

※ [Left Shift] + [Space] : Covert language.(English, Russian)

☞ Caution!!) [Korean] is selected : [Korean] / [English] shift
[English] is selected : [English]
[Russian] is selected : [Russian] / [English] shift

④ The use of [Function] button on the initial screen of [ARQ] mode

[Ref.] ☞ Message can be transmitted by [Function] button on the [ARQ] mode initial screen.

※ Press the function button➔ Press [Enter] button to transmit.

※ Select the function with material ➔ Press [Enter] button to transmit.

- [F1] : [1WHU]- Demand Answer back code of the other station.
- [F2] : [2Hereis] – Transmit Answer back code of yourself.
- [F3] : [3TMS] – Transmit the present time.
- [F4] : [4F.send] – Transmit the file written in edit mode.(Refer to '14-4-4 TX of file)
- [F5] : [5Macro] – You can use the sentence no. Written in Macro Command. (Refer to '14-4-5 Macro Command RX)
- [F7] : [7Over] – Convert the direction of transmitting the message.
- [F8] : [8Stop] – Stop communication.
- [F9] : [9VOL-] – Volume can be reduced.
- [F10] : [0VOL+] – Volume can be increased.

11-4-4 TRANSMITTING FILE

※ After performing `14-4-1' or '14-4-2', operate the unit as below order.

① Press Function button [F4] ➔Move the cursor to the file you want using **[▲]/[▼]** button ➔Press **[Enter]** button

③ The file will be transmitted showing the full contents on the screen.

[Ref.] ☞ Pressing [F8] button is able to stop transmitting.

11-4-5 TRANSMITTING MACRO COMMAND

※ After performing `14-4-1' or '14-4-2', operate the unit as below order.

① Press Function button [F5] ➔Move the cursor to the sentence no. to be transmitted using **[▲]/[▼]** button ➔Press **[Enter]** button.

② The sentence will be transmitted showing the command contents on the screen.

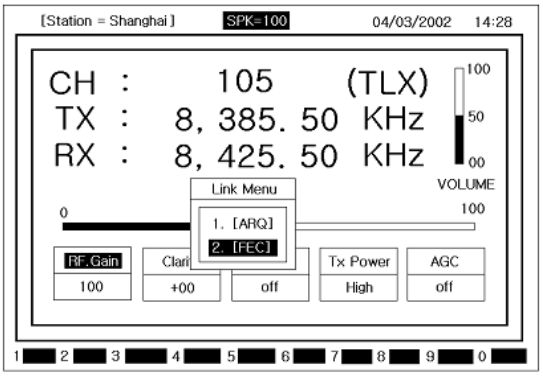
[Ref.] ☞ pressing **[F8]** button is able to stop transmitting.

11-5 [FEC] MODE

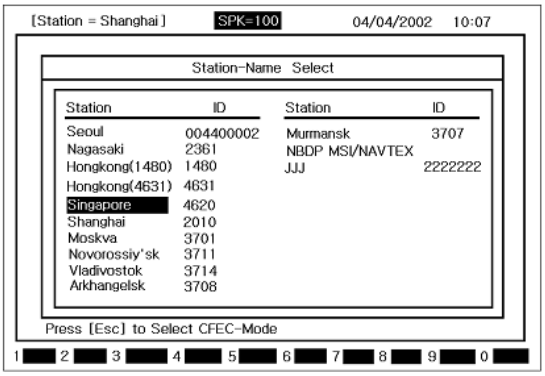
11-5-1 CONNECTING THE OTHER STATION BY SELECTIVE FECMODE

1) Communication with present selection Channel

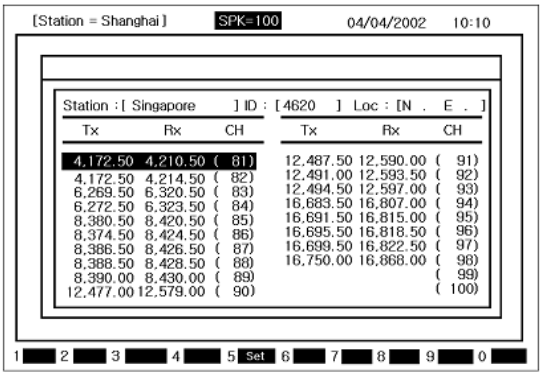
① Press [F2] button on the keyboard and LINK MENU screen shows.



② Move the cursor to **2. [FEC]** with **[▲]/[▼]** button ➜Press **[Enter]** and the following screen shows.



③ Revert the other station you want to communicate using **[▲],[▼],[◀],[▶]** button. ➜press **[Enter]** button, the following screen will show.

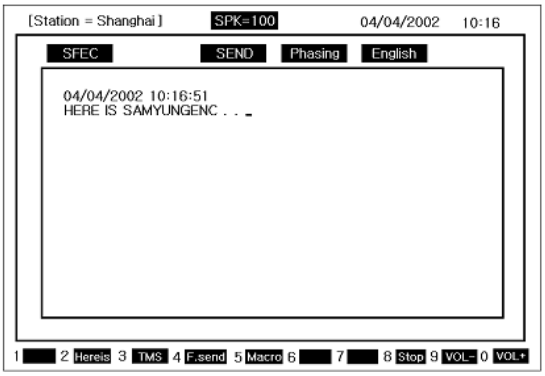


[Ref.] ☞ To be back to forward display, Press [ESC] button.

④ Revert the channel you want to communicate using **[▲],[▼],[◀],[▶]** button. ➜ press

[Enter] button.

⑤ Call the other station with selected frequency displaying next [SFEC] mode first display.

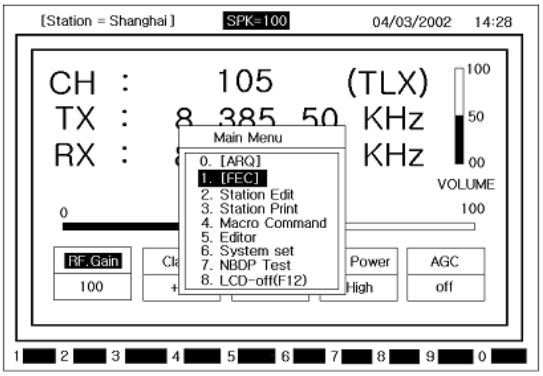


[Ref.] ☞ To stop calling, press [F8] and it will be back to Telex initial screen

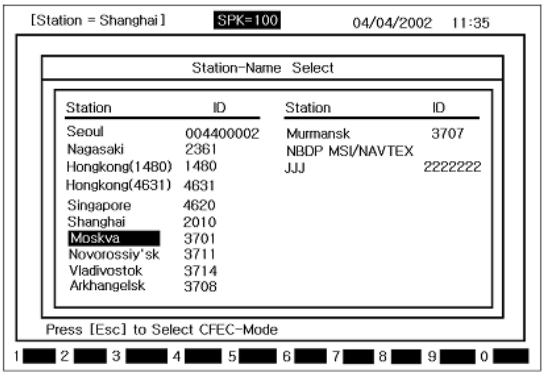
⑥ If connected with other station, cursor blinks on the left top of the screen.

11-5-2 CONNECTING WITH THE OTHER STATION BY COLLECTIVE FEC MODE

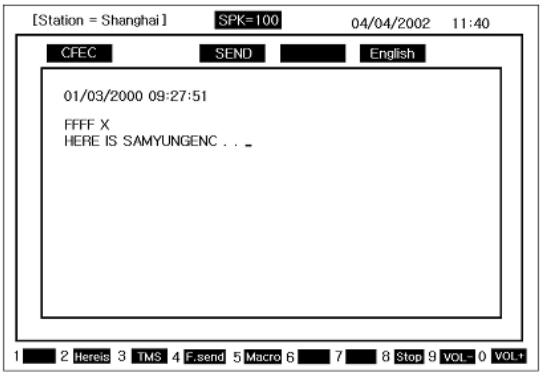
① Press [F10] button on the keyboard and Main Menu screen shows.



② Move the cursor to **1. [FEC]** with **[↑]/[↓]** button ➔Press **[Enter]** and the following screen shows



③ Press [Esc] button and [FEC] mode initial screen shows. Indicate other station on selected channel frequency.



[Ref.] ☞ To stop calling, press [F8], then it is changed to first display of Telex

④ When the call is connected with other station, cursor blinks on the top left of message screen.

11-5-3 FEC MODE COMMNICATION

※ Carry out above 14-5-1or 14-5-2 then follow next step to communicate by using below function.

① Connected by FEC mode with other party, initial screen for [FEC] Mode will be displayed and carry out communication.

② Type a message via KEYBOARD, then press ➜ [Enter] allow transmitting.

[Ref.] ☞ if do not press [Enter], then transmit cannot be made.

③ Keys can be used by FEC mode

※ Characters : ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890-?().,'=/+
abcdefghijklmnopqrstuvwxyz

※ Back space : delete one character of the left.

※ Enter : one line will be transmitted.

※ left Shift + Space : exchange language. (English, Russian)

☞ when [Korean] is set : [Korean] / [English] exchange
When [English] is set : [English]
When [Russian] is set : [Russian] / [English] exchange

④ the function of [function] key of initial [FEC] mode screen

[Ref.] ☞ using [function] key transmit message.

- After press applicable function button ➜ transmit by pressing [Enter].
- If detailed information is available choose detailed information ➜ press [Enter] in order to transmitting.

- [F2] : [2Hereis] – transmit answering code of your vessel (Answer back code).
- [F3] : [3TMS] – transmit current time.
- [F4] : [4F.send] – transmit an edited file at edit mode. (refer to '14-5-5 transmitting file)
- [F5] : [5Macro] – use sentence number created at Macro Command.(refer to '14-5-6 transmitting Macro Command)
- [F8] : [8Stop] – communication stop.
- [F9] : [9VOL-] – reducing speaker volume.
- [F10] : [0VOL+] – increasing speaker volume.

11-5-4 RECEIVING FEC MODE

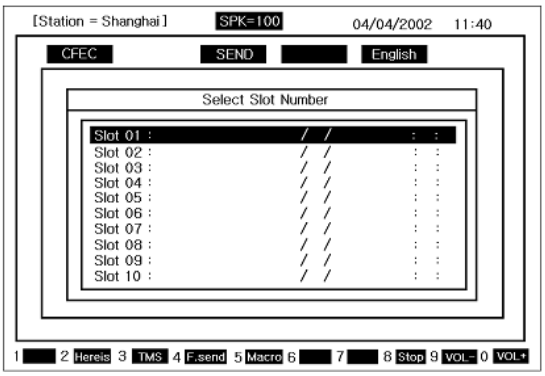
① When received data at [FEC] mode, automatically printed and after receiving the data will be saved.

② In order to open the file press [F10] ➜ [5. Editor]mode choose ➜ [Enter] ➜ [F1](1 Lord) ➜ RECV 01 ~ choose file among RECV 20 ➜ press [Enter].

11-5-5 RECEIVING FILE

※ Carry out above 14-5-1 or 14-5-2 then follow below steps.

① Below screen will be displayed by pressing [F4]



② Press [ENT] key by selecting transmittable file via up and down arrow key.

③ Transmitting a file during displaying file information.

[Ref.] ☞ in order to stop transmitting, press [F8].

11-5-6 TRANSMITTING MACRO COMMAND

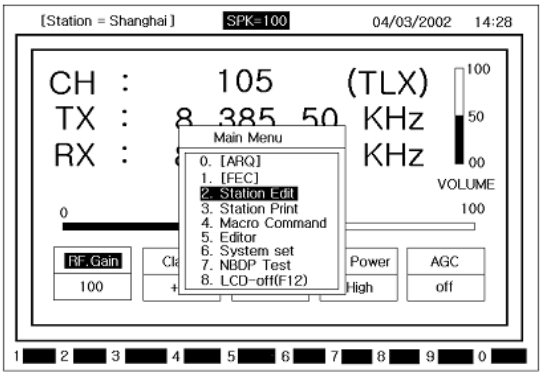
※ Carry out above 14-5-1 or 14-5-2 then follow next below step.

① press [F5] ➜ choose sentence number by [up/down arrow key] ➜ transmit a file during displaying Command information by pressing [Enter].

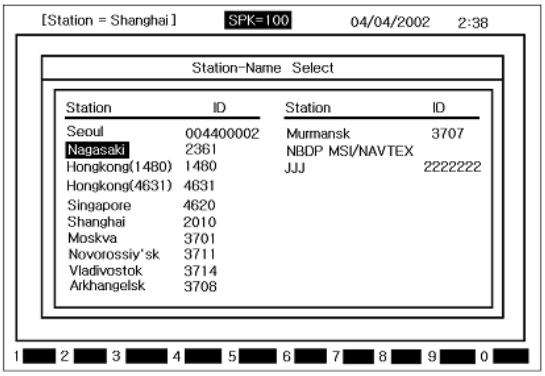
[Ref.] ☞ in order to stop transmitting press [F8].

11-6 COMMUNICATION OPPOSITE SIDE COUNTRY (COASTAL COUNTRY OR VESSEL COUNTRY) STATION EDIT AND FREQUENCY REGISTRATION

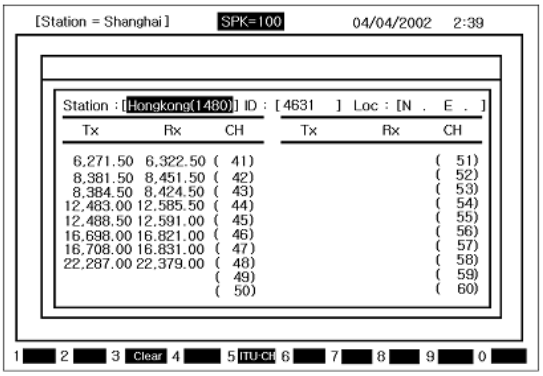
① Maine menu will be displayed by press [F10] as below.



② Move cursor by [up/down arrow key], then choose 2. Station Edit ➔ below screen will be displayed by pressing [Enter].



③ Choose desired nation using [arrow button] ➔ below screen will be displayed by pressing [Enter].



④ Move cursor [Station input] ➜ press [Enter].

⑤ Input [Station name] ➜ saved by pressing [Enter].

⑥ Move cursor [ID input] ➜ press [Enter].

⑦ Input [ID input] ➜ saved by pressing [Enter].

⑧ Move cursor to desired Channel [Tx] ➜ press [Enter].

⑨ Input [transmit frequency] ➜ saved by press [Enter].

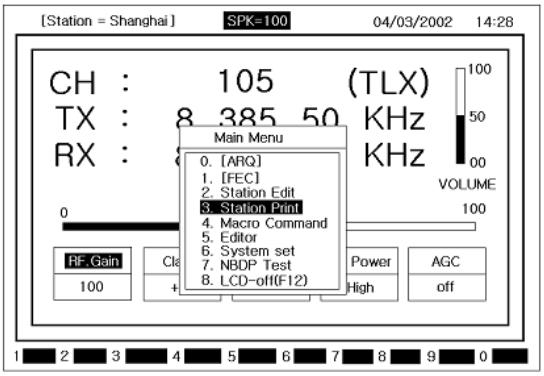
⑩ Move cursor to desired Channel [Rx] ➜ press [Enter].

⑪ Input [receive frequency] ➜ saved by pressing [Enter].

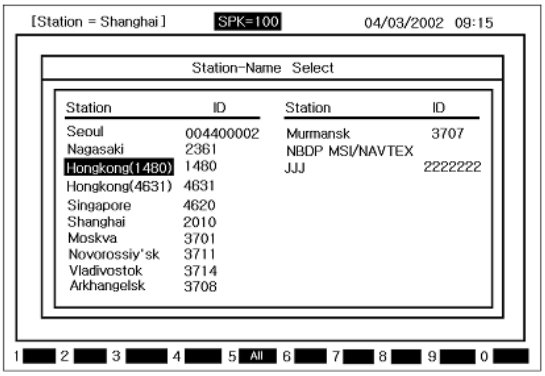
⑫ Return to initial screen by pressing [ESC] key,

11-7 STATION PRINT (OPPOSITE SIDE COUNTRY AND FREQUENCY PRINT OUTPUT)

① Below Main Menu will be displayed by pressing [F10].



② Move cursor by [up/down arrow button] 3. Station Print ➜ below screen will be displayed by pressing [Enter].

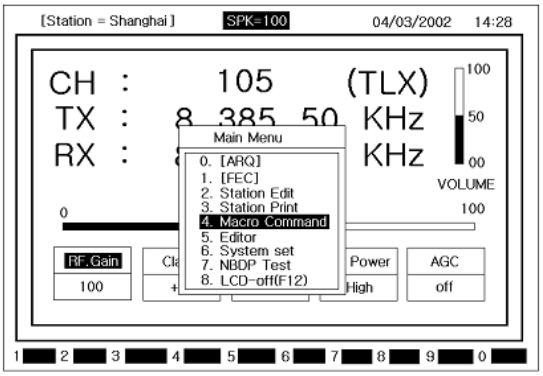


③ Move cursor to desire opposite side country by [arrow button] ➜ opposite side country frequency registration information will be printed out, then return to Main Menu.

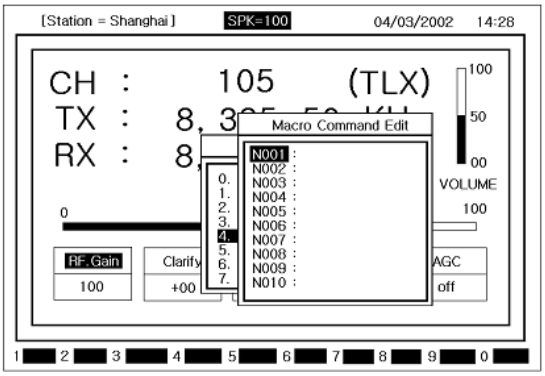
11-8 REGISTRATION OF MACRO COMMAND

※ Registered frequent use TXL number or abbreviation code within 20 characters.

① Below Main Menu will be displayed by pressing [F10].



② Move cursor by [up/down arrow] to 4. Macro Command ➜ below screen will be displayed by pressing [Enter].

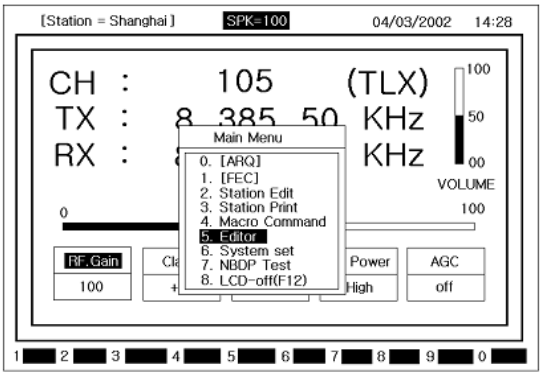


③ Choose Command by [arrow button] ➜ [Enter] ➜ input Command by keyboard ➜ save by pressing [Enter].

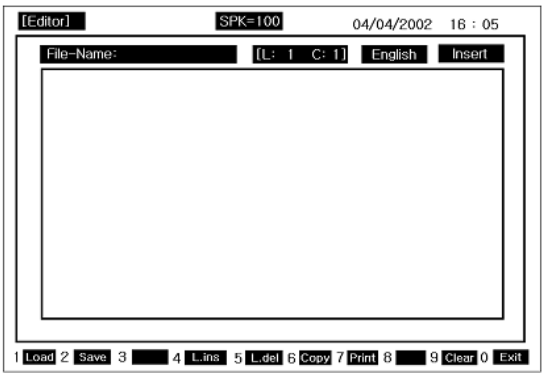
④ Return to Main Menu by pressing [ESC].

11-9 EDITOR MODE

① Below Main Menu will be displayed by pressing [F10].



② Move cursor by [up/down arrow] to 5. Editor ➜ below screen will be displayed by pressing [Enter].



③ Write and edit a message and FEC, NAVTEX receive Data automatically saved.

[Ref.] ☞ write and edit by using [function] key under the Edit message screen.

④ Press [F2] ➜ input File-Name ➜ [Enter] ➜ choose Slot number at Select Slot Number screen ➜ return and save Edit message screen by pressing [Enter].

⑤ open and see saved sentence, FEC, received NAVTEX data by pressing [F1].

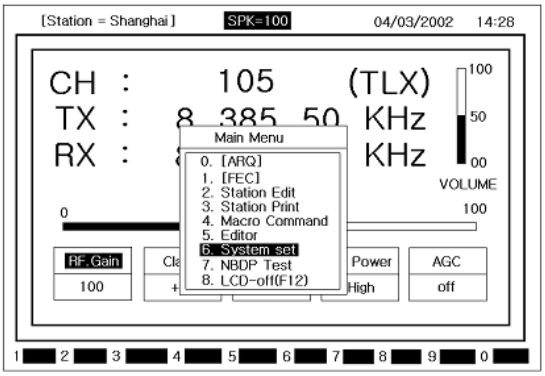
[Ref.] ☞ user can save file from Slot 01 to Slot 20, from RECV 01 to RECV 20 for FEC Received Data, and NAVTEX Received Data is automatically saved.

[Ref.] ☞ return to Edit message screen by pressing [ESC].

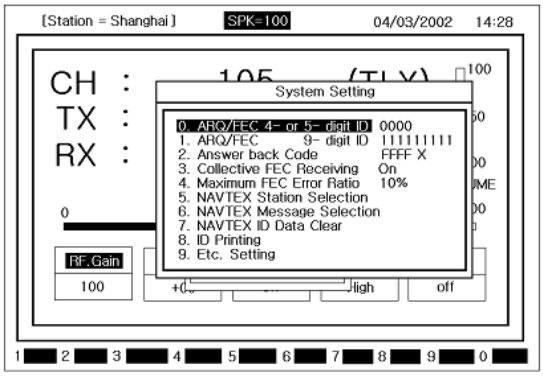
⑥ Exit screen will be appeared by pressing [F10] ➜ choose Yes ➜ return to Main Menu by pressing [Enter].

11-10 INITIAL SETTING OF SYSTEM SET

① Below Main Menu will be appeared by pressing [F10].



② Move cursor [up/down arrow] to 6. System Set➔below screen will be displayed by pressing [Enter].



③ Description of System Setting Menu

ⓐ setting [0. ARQ/FEC 4- or 5-digit ID]

After '② ➔ choose [0. ARQ/FEC 4- or 5-digit ID] ➔ [Enter] ➔ input [number key] ➔ [Enter] ➔ return and saved to Main Menu by pressing [ESC].

[Ref.] ☞ user cannot change, saved at installation stage.

ⓑ setting [1. ARQ/FEC 9-digit ID]

After '②' ➔ choose [1. ARQ/FEC 9-digit ID] ➔ [Enter] ➔ input [number key] ➔ [Enter] ➔ return and saved to Main Menu by pressing [ESC].

[Ref.] ☞ user cannot change, saved at installation stage.

ⓒ setting [2. Answer Back Code]

After '②' ➔ choose [2. Answer Back Code] ➔ [Enter] ➔ input [number and alphabetic button] ➔ [Enter] ➔ return and saved to Main Menu by pressing [ESC].

Ex) MMSI NO 9자리 ANS/Back code 1 ⇨ 123456789 _ ABCD _ X

[Ref.] ☞ user cannot chang, saved at installation stage.

ⓓ setting [3. Collective FEC Receiving]

After '②' ➜ choose [3. Collective FEC Receiving] ➜ choose [On] or [Off] by [Enter] ➜ return and saved to Main Menu by pressing [ESC].

ⓔ setting [4. Maximum FEC Error Ratio]

- If error rate is higher than setting value, when FEC Mode receiving, receiving will be stopped.
  (example, if error rate is set to 30% and receiving error rate is more than 30%, then receiving will be stopped.)
- setting
  after '②' ➜ choose [4. Maximum FEC Error Ratio] ➜ [Enter] ➜ input [number] ➜ [Enter] ➜ return and saved to Main Menu by pressing [ESC].

[Ref.] ☞ input value range is 1~100.

ⓕ Setting [5. NAVTEX Station Selection]

- Allow receiving NAVTEX signal and by the initial character of the broadcast name from A ~ Z by [right, left button].
- The way of setting
  After '②' ➜ choose 5. NAVTEX Station Selection] ➜ [Enter] ➜ NAVTEX Station Selection will appear. ➜ Choose initial character of the broadcast station by [left/right arrow button] and [Enter] ➜ save and return to System setting Menu by pressing [ESC]
  • O : NAVTEX recognized as receivable broadcast station name.
  • X : NAVTEX recognized as non-receivable broadcast station.

ⓖ setting [6. NAVTEX Message Selection]

- Allow receiving NAVTEX message from C, E ~ Z by choosing initial character by [left / right arrow button].
- The way of setting
  After '②' ➜ choose [6. NAVTEX Message Selection] ➜ [Enter] ➜ NAVTEX Message Selection will appear ➜ choose initial message character by [left/right arrow button] and [Enter] ➜ save and return to System setting Menu by pressing [ESC]
  • O : recognized as NAVTEX beginning message.
  • X : not recognized as NAVTEX beginning message.
  [Ref.] ☞ A, B, D are always set receivable.

ⓗ setting [7. NAVTEX ID Data Clear]

- Delete received NAVTEX broadcast ID.
- The way of setting

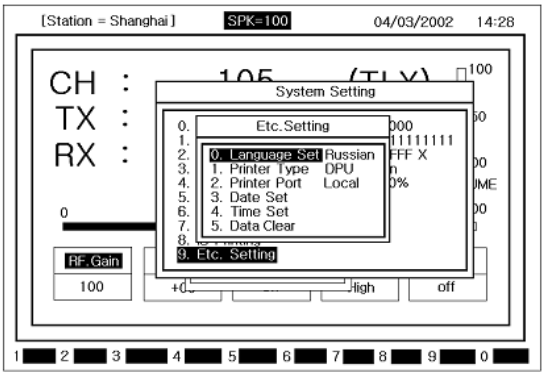
After '②' ➜ choose [7. NAVTEX ID Data Clear] ➜ [Enter] ➜ NAVTEX ID Data Clear ? will appear ➜ choose Yes ➜ deleted NAVTEX broadcast ID and return to System Setting Menu by pressing [Enter].

ⓘ Setting [8. ID Printing]

After '②' ➜ choose [8. ID Printing] ➜ your ID will be printed by pressing [Enter].

ⓙ Setting [9. Etc. Setting]

After '(②)' ➜ choose [9. Etc Setting] ➜ below screen will be appear by pressing [Enter].



Items can be reset with **[▲]/[▼]** button & **[Enter]** button.

- 0. Language Set : Set up Language.
  - Korean
  - Russian
  - English
- 1. Printer Type : Set up Printer type.
  - JP-3750
  - HP-083
- 2. Printer Port :
  - Local(Main unit printer)
  - Remote(SN-100 printer) can be set up.
  - [Ref.] ☞ Regarding the above '0, 1, 2 article', select the item and press [Enter] to shift the function and select the function you want.
- 3. Date Set : Set up date
- 4. Time Set : Set up time
  - [Ref.] ☞ to set up the above **'3, 4',** select the item and press **[Enter]** ➜ input **[Number button]** ➜ Press **[Enter]** and it will be saved and input window will disappear.
- 5. Data Clear : There are sub menu like below.

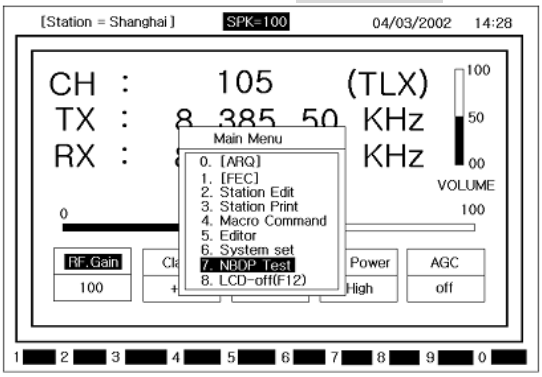
0. Memory-data Clear : Delete the Station Name

1. Edit-File Clear : Delete the Macro Command File & Editor File

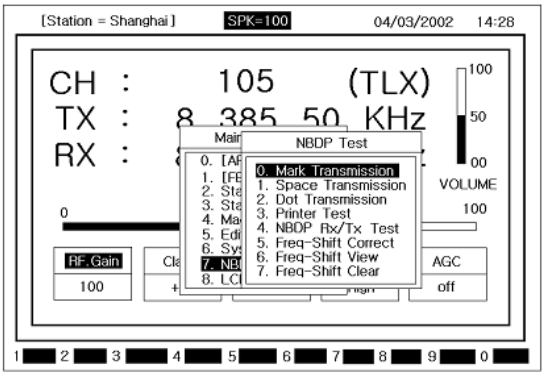
2. FEC-Recv-File Clear : Delete the received FEC-Recv-File

11-11 NBDP TEST

① Press **[F10]** button on the keyboard and **Main Menu** screen shows.



② Move the cursor to **7. NBDP** with **[▲]/[▼]** button→Press **[Enter]** and the following screen shows.



③ How to operate NBDP Test function : Select cursor with **[▲]/[▼]** button → Press **[Enter]** and each function operates

1) Mark Transmission - 1.7 kHz~85 Hz signal is transmitted for 40 seconds

2) Space Transmission - 1.7 kHz + 85 Hz signal is transmitted for 40 seconds

3) Dot Transmission - 1.7 kHz - 85 Hz signal is transmitted for 40 seconds

4) Printer Test - Check the printer status by printing the test print

5) NBDP Rx/Tx Test - Test NBDP terminal by TX/RX signal.

6) Freq-Shift Correct - Function to compensate 1st Local frequency. Transmitter send 14MHz +1400Hz signal and exclusive receiver receives the signal and compensate the 1st local frequency

7) Freq-Shift View - After Freq-Shift Correct, this shows how well the frequency compensation is done

8) Freq-Shift Clear - Function to clear the frequency compensation.

[Ref.] ☞ **Freq-Shift Correct precaution**

① Operate main unit and terminal after full warm-up

② Perform NBDP RX/TX Test and check it is ok.

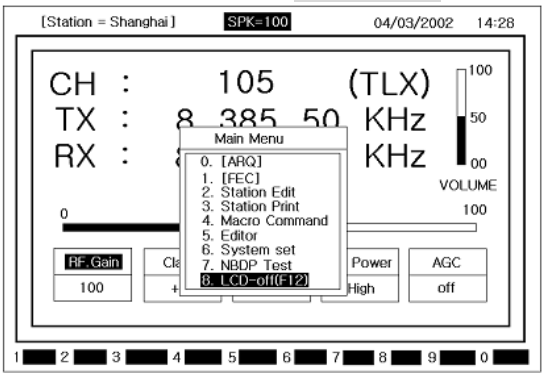
③ Check the Freq-Shift View

④ Perform NBDP RX/TX Test and check the test result is ok

11-12 LCD OFF

1) Operation on MENU

① Press **[F10]** button on the keyboard and **Main Menu** screen shows.



② Move the cursor to **8. LCD-Off (F12)** with **[▲]/[▼]** button ➔ press **[Enter]** button and LCD screen will be **off.**

③ Other function is working except LCD off. If any button is pressed or reception is made, LCD will be on.

2) How to use this function with function key

① Press **[F12]** and LCD will be off.

② Other functions are on except LCD. If any button is pressed or RX is done, LCD screen will be on

CHAPTER 12. NBDP TERMINAL CIRCUIT

12-1 OVERVIEW

SN-100 consists of NBDP Receiver, CONNECTION BOARD, CPU BOARD, PLL BOARD, and POWER SUPPLY.

There is power input, SRG-3150DN connector, W/K receiving connector, TX AND RX cable connector, EARTH Plate, keyboard connector, EMC LIGHT connector in the down part of rear side.

12-2 CONNECTION BOARD (T-130)

As T-130 is PCB which is connecting CPU BOARD and other PCBs, when receiving, the signals that come from NBDP receiver pass active filter consisted of IC5, IC6, IC7, IC8 and then, as it is made square wave as clipping through U5, DOT/PATTERN signal is generated. When receiving, 1.7kHz±85Hz signals are generated through DM1 and then it is delivered to SRG-3150DN

12-3 NBDP RECEIVING UNIT (T-132)

T-132 PCB is NBDP receiving unit which consists of frequency filter and amplifier, MIXER, ATT, AGC, B.K control circuit. After the signals received through MF/HF Antenna amplify with wide amplifier, it is divided into two parts through SPLITTER (SP1)

① Among them, one of RF signal goes through the selected bandpass filter and mixes with the local signal on (IC2, I). And it passes by (XL1,2,3) and is converted to IF signal. Finally the IF signal and BFO will create the demodulated signal on (IC3) and transfer it to T-130 board.

② The other RF signal goes through Impedance matching circuit and it is transferred to the antenna connector of (SRG-150DN/250DN) W/K.

12-4 LOCAL SYNTHESIZE BOARD (T-133)

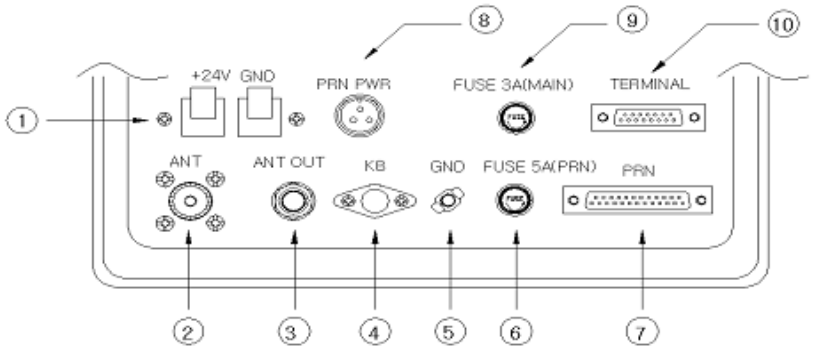
T-133 board creates 1'st (F_R+49.456.7MHz) through 14MHz OCXO(Oven-Controlled Crystal Oscillator), PLL(Phase Lock Loop) circuit and (DM2, IC9, U1, VCO1). And it creates 2'nd 49MHz using (T4,T5,T2,T3, Q5,7) and creates BFO(456.7KHz) through DDS IC(DM1).

12-5 POWER CIRCUIT (T-025)

Power circuit consists of constant voltage circuit. And while power on, it makes ON main power DC 24V, convert constant voltage +12V, +8V, +5V.

If it is overpowered +32V, then power off. Prevention to reversing voltage circuit is built-in.

12-6 FUNCTION DIAGRAM OF REAR SIDE



① EMC : Supply power +24 to EMC light

② ANT IN : Impedance 50Ω MF / HF RX antenna jack.

③ ANT OUT : Connect which send W/K signal Received from 'RX /ant in' to main unit

④ KEY-BOARD : Connect between keyboard and SN-100. Supply +5V. Data, CLK, etc.

⑤ GND : Receiver System ground

⑥ FUSE : 5A FUSE(Printer +24V FUSE)

⑦ Printer : Connect to printer

⑧ Printer power : Connector which supplies +24V, +8V, GND to printer

⑨ FUSE : 3A FUSE (POWER FUSE)

⑩ CONNECT TO MAIN UNIT: When connected to SRG-3150DN, transceiver PTT IN, PTT OUT, READY, Data AF+, AF

CHAPTER 13. TROUBLE SHOOTING

13-1 OVERVIEW

Cause of TROUBLE in equipment, similar to mechanic cause and electronic cause appeared in external and inner of Equipment. These can be block by periodic check. This function has various protecting circuit for trouble of external or inner and blocking damage of circuit and part. However, in case of having trouble and damage, users have to find out problem. i.e., user should recognize first whether badness of equipment-self or external problem. To hold the performance of the initial equipment and the life, it needs regular checking and wrong checking and wrong repair can reduce the performance and life. Therefore, users should know following contents for right checking and repair.

13-2 MEASUREING INTRUMENT

These equipment products for international radio telephone rule. Maintenance & adjustment of this equipment have to control from correcting test center by rated testers must have testers for maintenance & adjustment daily as follow.

1. Multi-tester for check that don't need to be deliciated ohm, Voltage, current.
2. TEST PROBE that can be change from high-frequency signal to direct current.
3. High-frequency transit power supply that can be check of traveling wave of until 1.605MHz ~ 27.499MHz band max 150W ~ 500W
4. 100MHz band max 150W, dummy load of 50Ω
5. Frequency counter that can be check 100MHz band
6. OSCILLOSCOPE that can be check 100MHz band
7. Other testers

13-3 MAINTENANCE OF SRG-150DN/250DN

1. Antenna

When error of communication happens in installation and usage in terms of receiving sensitivity and noise, you need to check if there is a faulty of Antenna

a) Check that antenna control to vertical bearings (WHIP ANTENNA) correctly?

b) Check if metal objects are near the antenna?

c) Is it O.K connect condition & insulation of antenna and connecting parts between transmitter receiver.

d) After connecting the high-frequency wattmeter between this equipment and ATU, measure the progress wave and the reflected wave. If the VSWR(Voltage Standing Wave Ratio) is less than 2:1, the connection of the antenna, connectors and coaxial cable is stable and the parts have no defect. If the VSWR is more than 2:1, the connection of the antenna, connectors and coaxial cable is bad or the parts have defect.

2. Power Supply

Check power supply circuit even though volume & squelch control, not appear any sound and display at the front panel after connect power transmitter - receiver.

a) Check is cut the fuse after open fuse holder at the rear of transmitter receiver. (Fuse: 30A)

b) Is it correct connects condition power connecting at rear of the transmitter receiver. (Fuse be cut in case of power polarity supply opposite)

c) Check power supply voltage at the power supply connector.
If 24V ± 10% is (21.6 ~ 26.4V), it's correct. Have to maintenance if over or less, the badness of power supply equipment (POWER SUPPLY or BATTERY)

d) Change same goods if check power circuit P1003300 PCB (SRG-3150DN) is defective

3. Transmitter

Check follow as when hand set is correct. When transmitter switch hand set can't receiver at the operating, check the connecting condition.

a) Check antenna & power. Can't receiver when channel selecting is incorrect or selected ban channel.

b) Check P10-3300 PCB and P10-3380 PCB, if they are faulty, they should be replaced.

c) Not able to receive from unmatched channel and error sign is displayed

4. Receiver

Check if each switch selecting is correct for firstly and check as follow

a) Check connects of speaker after check air antenna or power.

b) Check P103300 PCB first and if it is defective, replace it.

c) Check if speaker is on “OFF MODE” and if selecting the external speaker is correctly conducted.

5. Switch and Display

First check if there is wrong usage or setting value. If everything is ok, do the follows.

a) Check P10-3340 PCB and if it is defective, it should be placed.

b) Check LCD and the connector and antenna connected between P10-3340 PCB and P10-3300 PC. If it is defective, it should be replaced.

13-4 NBDP SN-100

As SN-100 is NBDP terminal, error can happen on transceiver, power supply, CPU BOARD, LCD. When error happens, please check as follow.

1. POWER

① Power is not working.

- 24V is supplied only when power supply is connected to SRG-150DN/250DN. If there is something wrong, check the power supply switch, the connector cable to SRG-150DN/250DN, fuse (5A), power polarity.

② Power is not working.

- Firstly, check the +12V on U8 of T-025, +5V on DC-DC CONVERTER and then, check power supply cable that is connected power supply board and screen. If +12V is not supplied, LCD, CPU BOARD is not operated. If +5V is not supplied, CPU BOARD is not operated.

2. SCREEN DISPLAY

① Screen is not turned on.

- Check if power is correctly supplied to LCD.

② Screen is waved or there is white line on the screen.

- If the condition of the connect point of LCD connector or of LCD board are bad, connector and board should be cleaned with detergent material that is volatile.

3. NBDP DATE RECEIVING

① Can't receive the data

- Firstly check if Antenna is correctly connected.
- Check if 12V is generated on U1 of T-025.
- Check if SRG-150DN/250DN can receive the W/K signal.

If SRG-3150DN does not receive W/K signal, check the third pin (IC4 of T-132) is approximately 3.2V (+ 3.2V is normal). And, check 1^{ST}, 2^{ND}, BFO is supplied.

- Check that 1.7 kHz ±85Hz on CN8 of T-132 is generated.
- Check that DOT/PATTERN signal on 13th of U9 of T-130 is generated.
- Check that DOT/PATTERN signal on 18th of IC3 of T-130 is generated.

4. NBDP DATA TRANSMITTING

① Data is not transmitted

- Check if the connector is correctly connected between SRG-150DN/250DN and terminals.
- Check if 1.7kHz±85Hz can come out from DM1 11th pin of T-130 PCB.
- Check if the signal is supplied to SRG-150DN/250DN.

13-5 SIMPLE MODULATION OF MODULATOR

As this equipment is designed to have minimum parts to adjust setting, all modulator other than the modulator for power supply should be adjusted by manufacturer if required.

13-6 CAUTION

1. In case of checking transmitter unit, please get access to dummy load.
2. In case of separating PCB, please pay attention to static electronic.
3. In case of modulating, please use the exclusive tools for modulation.
4. In case of checking or modulating, when measuring instrument reach each circuit, user should get the signal of the circuit and PROBE of measuring matched
5. In case of maintenance, please be mindful of the difference of status of equipment between when measuring instrument is connected into each circuit and when not being connected.
6. All the maintenance for adjusting setting and improving quality should be conducted by SAMYUNG ENC by contacting our C/S center or headquarter office.