IDENTITY AND SERVICE PROGRAMMING OF SAILOR RE2100

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GENERAL
Various service programmes have been created in order to help the operator and service engineer during installation or repair of the RE2100/T2130.
The service programmes 00 to 19 are used for RE2100 and is described in this document.
The service programmes 20 to 39 are used for the transmitters, please refer to the manual for the transmitter in question.
The service programmes 40-49 are used for R2120 and described in the manual for the R2120.

SELECTION OF SERVICE MODE
When the strap P03 in Processor module 5 is moved, the RE21 00 is set to service mode. In this mode the operator or technician is able to change any set-up.

SELECTION OF QUICK SERVICE MODE
When the number keys '0' and '1' are pressed simultaneously, the RE2100 is set to Quick Service mode. In this mode it is only possible to observe the various set-ups. It is not possible to make any corrections or calibrations.

DISPLAY READ-OUT
When RE2100 is set to service mode, the RX display shows 'SP-'. When one of the service programmes between 00 and 49 has been keyed, the display shows 'SP-YY-X'. YY indicates the number of the selected service programme. X indicates the present selected switch for the service programme in question.

SELECTION OF A NEW SERVICE PROGRAMME
A new service programme may be chosen after the button <ENT> has been pressed once.

TERMINATION OF SERVICE MODE
When service strap P03 has been reset the receiver will always return to normal operation when pressing the <TUNE/CLARIF.> button.

DESCRIPTION OF SERVICE PROGRAMMES 00-19:

SP-OO-O READ-OUT OF SOFTWARE VERSION NUMBER
In the TX display a 4 digit number will be read out, possibly followed by a letter. The number indicates S.P. Radio's internal software number and the letter indicates the software release.
Ex. 1085E => C-number C1085 and reI. E.

SP-OO-1 READS-OUT WHICH ITU FREQUENCY TABLE IS USED
When P-91 is read-out (previous to 1991) an earlier ITU table is used. When A-91 (after 1991) is readout, the ITU table in force from 1st June 1991 is used.
When keying-in the digit 0 or 1 the read-out will be changed from A-91 to P-91 or P-91 to A-91 respectively.

SP-OO-2 STARTS TEST OF THE DISPLAY
When pressing <ENT> during the test, the test procedure stops. When pressing <ENT> again the programme steps forward. When pressing <0>. the programme continues again automatically.

SP-00-3 TEST OF SP-BUS
The processor sends a byte to itself via the serial SCI communication port. Each time an error is received, the display reads-out an 'E'. If there is no error, a bar '-' runs through the TX-display.

SP-OO-8 TEST OF KEYBOARD
This test programme is used to test all the keyboard buttons. When the programme is selected, press the keyboard from the top of the right corner down to the left corner. E.g. 1,2,3,4,5,6,-FREQ DOWN, …….O,.,ENT. When the buttons are pressed, the display reads-out the number of the button (ref. chapter 5.6. KEYBOARD UNIT). If the button does not work, the display reads-out the number of the button with a letter "E", when the next button is pressed

SP-01-X LOUDSPEAKER ALARM OF RM2150 PUBLIC CALL
This service program is used to read out or change the status of the alarm tone sent to the RE2100 loudspeaker in a stand alone installation (not when installed in a H2192 console) from a RM2150 when a public call is received. A <0> indicates that signal is OFF and a <1> indicates that the signal is ON. Use the keyboard keys <0> or <1> to change and <ENT> to accept.

SP-02-X SET THE DUPLEX RECEIVER R2120 TO RECEIVE IN TELEX MODE
This service program is used to read out or change the status of the TELEX mode in the RE2100. A <0> indicate that there is no telex facilities in the duplex receiver R2120, and a <1> indicate that the duplex receiver R2120 is receiving in TELEX mode. Use the keyboard keys <0> or <1> to change and <ENT> to accept.

SP-03-X EARPIECE STATUS IN HOOK
This service program is used to read out or change the status of the EARPIECE settings. A <0> indicate that the EARPIECE always is switch off when the handset is IN HOOK, and a <1> indicate that the EARPIECE always is ON. This can be used if a crypto CRY2001 is connected the RE2100. Use the keyboard keys <0> or <1> to change and <ENT> to accept.

SP-04-X TEST FRONTEND AND SYNTHESIS MODULE
When 04 has been keyed-in, the RX-display shows 'SP-04-', and the programmes 0-9 may be selected. The programmes are described more detailed in the Performance Check of the frontend and synthesis modules. One press on <ENT> ends the service programme and the display reads-out 'SP-'.

The set-up of RE2100 in the following 10 programmes is as follows:

SP-04-0 ADJUSTMENT OF 70 MHz RECEIVER FILTER
The receiver frequency to synthesis 1 and the fraction index number = 10kHz. Reference and VCO index numbers to synthesis 2 are set to '524 and 5789 respectively. Selection of Filter 1, H3E-USB mode, VC04, Squelch off, DET. mute, and AGC off.

SP-04-1 ADJUSTMENT OF 70 MHz RECEIVER FILTER
The receiver frequency to synthesis 1 and the fraction index number = 2.5 kHz. Reference and VCO index numbers to synthesis 2 are set to 131 and 1447 =USB respectively. Selection of Filter 1, H3E-USB mode, VC04, Squelch off, DET. mute, and AGC off.

SP-04-2 ADJUSTMENT OF SSB/AM RECEIVER FILTER
The receiver frequency to synthesis 1 and the fraction index number = 1.65 kHz. Reference and VCO index numbers to synethesis 2 are set to 131 and 1971 respectively. Selection of Filter 1, J3E-LSB mode, VC04, Squelch off, DET. mute, and AGC off.

SP-04-3 ADJUSTMENT OF EARPIECE LEVEL
The receiver frequency to synthesis 1 and the fraction index number = 1.0 kHz. Reference and veo index numbers to synthesis 2 are set to 131 and 1971 respectively. Selection of Filter 1, J3E-LSB mode, VC04, Squelch off, DET. mute, and AGC off.

SP-04-4 ADJUSTMENT OF API-VOLTAGE
The receiver frequency to synthesis 1 and the fraction index number = 1.0 kHz. Reference and VCO index numbers to synthesis 2 are set to 131 and 1447=USB respectively. Selection of Filter 1, J3E-USB mode, VC04, Squelch off, DET. not mute, and AGC on.

SP-04-5 TEST OF L01 AND L02 SIGNALS FOR EXCITER
The receiver frequency to synthesis 1 and the fraction index number = 26250.0 kHz. Reference and VCO index numbers to synthesis 2 are set to 131 and 1447=USB respectively. Selection of Filter 6, J3E-USB mode, VC01, Squelch off, DET. not mute, and AGC on.

SP-04-6 TEST OF ATTACK/DECAY TIME FOR AGC IN SSB MODE
The receiver frequency to synthesis 1 and the fraction index number = 1990.0 kHz. Reference and VCO index numbers to synthesis 2 are set to 131 and 1447=USB respectively. Selection of Filter 3, J3E-USB mode, VC01, Squelch off, DET. not mute, and AGC on. A positive pulse of 50 mS is sent to FROBUF bit 6 every 2nd second.
In the output of the SP-BUS, a trigger pulse can be found.

SP-04-7 TEST OF ATTACK/DECAY TIME FOR AGC IN AM MODE
The receiver frequency to synthesis 1 and the fraction index number = 1991.0 kHz. Reference and VCO index numbers to synthesis 2 are set to 131 and 1447=USB. Selection of Filter 3, H3E-USB mode, VC01, Squelch off, DET. not mute, and AGC on. Hang AGC is set off. A positive pulse of 200 mS is sent to FROBUF bit 6 every 400 mS. In the output of the SP-BUS, a trigger pulse can be found.

SP-05-X TEST OF EXCITER MODULE
When 05 has been keyed-in, the RX-display shows 'SP-05-', and it is possible to select programme 0-6. The programmes are described more detailed in Performance check of the exciter module. One press on <ENT> ends the service programme and the display shows 'SP-'.

The set-up of RE2100 in the 7 programmes is as follows:

SP-05-0 EXCITER ACTIVATED IN TUNE MODE
The transmitter frequency to synthesis 1 and the fraction index number = 22000 kHz. The exciter is turned on, handkey is valid and sets carrier on/off. Mode J3E, tune tone on, mute.

SP-05-1 EXCITER ACTIVATED IN TELEPHONY MODE
The transmitter frequency to synthesis 1 and the fraction index number = 22000 kHz. The exciter is turned on, handkey is valid and sets carrier on/off. Mode shift is valid, Mic. input must be on in J3E and R3E mode, and off in H3E mode. In Telex mode is shifted to telex input. Attenuator is set to step 00.

SP-05-2 TEST OF STEP A TTENUA TOR IN EXCITER
The transmitter frequency to synthesis 1 and the fraction index number = 22000 kHz. The exciter is turned on, carrier is set to on. Mode is set to H3E. All AF inputs are set off. Attenuator is incremented with 1 in every 700 uS until step 63 is reached. Then the sequence is started from the beginning with step 00.

SP-05-3 TEST OF 70 MHz FILTER
The transmitter frequency to synthesis 1 and the fraction index number = 22000 kkHz. Reference and N_A index number to synthesis 2 are set to 524 and 5789 respectively. The exiter is turned on, handkey is valid and sets carrier on/off. Mode shift is valid, Mic. Input must be on in J3E, and off in R3E and H3E mode. In telex mode is shifted to telex input. Attenuator is set to step 00.

SP-05-4 EXCITER ACTIVATED IN TELEPHONY MODE
The transmitter frequency to synthesis 1 and the fraction index number = 28000 kHz. The exciter is turned on, handkey is valid and sets carrier on/off. Mode shift is valid, Mic. input must be on in J3E and R3E mode, and off in H3E mode. In Telex mode is shifted to telex input. Attenuator is set to step 00.

SP-05-5 EXCITER ACTIVATED IN TELEPHONY MODE
The transmitter frequency to synthesis 1 and the fraction index number = 14900 kHz. The exciter is turned on, handkey is valid and sets carrier on/off. Mode shift is valid, Mic. input must be on in J3E and R3E mode, and off in H3E mode. In Telex mode is shifted to telex input. Attenuator is set to step 00.

SP-05-6 EXCITER ACTIVATED IN TELEPHONY MODE
The transmitter frequency to synthesis 1 and the fraction index number = 1600 kHz. The exciter is turned on, handkey is valid and sets carrier on/off. Mode shift is valid, Mic. input must be on in J3E, R3E and H3E mode. In Telex mode is shifted to telex input. Attenuator is set to step 00.

SP-06-X DUPLEX RECEIVER ADDRESS
When SP-06 has been selected it is possible to select the address of the Duplex Receiver R2120. Address 4 and 6 is available. If the system is without duplex the address must be 0.

SP-07-X SETTING OF TYPE FOR REMOTE TERMINALS AND TEST FOR SYNCHRONIC
When SP-07 has been selected it is possible to select the address number of the remote terminal, which has to be tested or changed. The priority of the remote terminals follows the address. When the required priority/address has been selected, 2 codes are read out in the TX-display. The codes indicate the present set-up as follows:

The first digit (0 to 3) indicates the type of remote terminal for the selected priority/address:

"0" => The address will not be supported. (Default from factory)
"1" => Watchkeeping receiver RM2150
"2" => GMDSS Telex/DSC modem RM2151
"3" => Control unit C2140/R2120

The second digit (0-1) indicates whether the concerned remote control has been in synchronization with RE2100.

"0" => not connected
"1" => connected

If the set-up in question is accepted, the key-in can be completed by pressing <ENT>, and an "A" will appear in the display before the selection of service mode.

If the set-up in question is not accepted, key-in the code for the type of remote terminal, then press <ENT> and the display shows an "A".

The synchronization function cannot be programmed, it is only a visual indication of whether the remote terminal in question has been in synchronization with RE2100 before the selection of service mode.

If a Duplex Receiver R2120 is connected to the system, service programme SP-06-x Duplex Receiver Address must be programmed.

SP-08-X SETTING OF POWER REDUCE FACTOR
When selecting SP-08 the factor controlling the power reduce for each step of the POWER key can be changed. 3 possibilities of selection have been added:

1.8 dB/step when selecting SP-08-1
3.6 dB/step when selecting SP-08-2
4.5 dB/step when selecting SP-08-3

3.6 dB/step is standard when using the transmitter T2130.

Changes cannot be made in the quick service mode.

SP-09-X SQUELCH ON OR OFF AS DEFAULT
When 09 has been keyed, the RX display shows 'SP-09-X', with X indicating the present switch. Now 0 or 1 may be keyed followed by <ENT>. In the TX display an 'A' or 'E' appears, indicating accept or error, respectively.
Selection of:

SP-09-0 => squelch off as default
SP-09-1 => squelch on as default

SP-10-X TEST OR PROGRAMMING OF EEPROM
When 10 has been keyed, the RX display shows 'SP-10-_'. Now 1 or 0 may be keyed followed by <ENT>. In the TX display a counting will begin, starting from 0 to 512. The counting ends up with 'A 512' or 'E' followed by a number between 0 and 512.

If it ends up with 'A 512' it means that the test or programming has been completed and accepted. If it ends up with 'E' it indicates that there has been an error in the test or programming and the following number is the decimal value of the 16 byte page in which the error has occurred.

CAUTION! The programming will clear all the channels, frequencies and scan programmes in RE2100.

SP-10-0 =>	Tests all bits in EEPROM by turning them twice so that the contents will only be changed if there is an error in the EEPROM.
SP-10-1 =>	Clears EEPROM.

SP-11 SELECTION OF TRANSMITTER TYPE
The programme is capable of selection between continuously, maritime bands, or skipper operated transmitter.

When 11 has been keyed, the RX display shows 'SP-11-X', with X indicating the present switch. Then 1, 2, or 3 followed by <ENT>. may be keyed. In the TX display an 'A' or an 'E' appears, indicating accept or error respectively.
Selection of:

SP-11-1 =>	Continuous transmitter. (1600.0 - 29999.9 kHz)
SP-11-2=>	Opening of maritime bands. The band limits may be read and changed in SP-18.
SP-11-3=>	Opening of skipper operated channels. Keying-in and read-out of skipper operated frequencies are carried out in SP19.

SP-12 SELECTION OF H3E IN TX MODE

When 12 has been keyed, the RX display shows 'SP-12-X', with X indicating the present switch. Then 1,2, or 3 may be keyed followed by <ENT>. In the TX display an 'A' or an 'E' appears, indicating accept or error respectively.
Selection of:

SP-12-1 =>	H3E is pre-selected by quick selection of 2182 kHz, otherwise the transmitter will be blocked in H3E.
SP-12-2 =>	Transmitter will be blocked in H3E for frequencies above 4.0 MHz.
SP-12-3 =>	Selection of H3E is possible for all TX frequencies.

SP-13 SELECTION OF LSB FOR RX AND TX MODE

When 13 has been keyed, the RX display shows 'SP-13-X', with X indicating the present switch. Then 0 or 1 may be keyed followed by <ENT>. In the TX display an 'A' or an 'E' appears, indicating accept or error respectively.
Selection of:

SP-13-0 =>	LSB mode is off. LSB cannot be selected from keyboard.
SP-13-1 =>	LSB mode is on. LSB can be selected from keyboard

SP-14 SELECTION OF TELEX AND ASSIGNED FREQUENCY

When 14 has been keyed, the RX display shows 'SP-14-X', with X indicating the present switch. Then 0 or 1 may be keyed followed by <ENT>. In the TX display an 'A' or an 'E' appears, indicating accept or error respectively. If 2 is keyed, the present assigned frequency is read-out. If the present assigned frequency is not to be changed, press <ENT>. If the assigned frequency is to be changed, the new frequency is keyed-in in steps of 100 Hz followed by <ENT>.
Selection of:

SP-14-0 =>	TLX mode is off. SP-14-1 => TLX mode is on.
SP-14-2 =>	Shows/changes present assigned frequency

SP-15 SELECTION OF SEND-/TEST ALARMS REPEAT

When 15 has been keyed, the RX display shows 'SP-15-X', with X indicating the present switch. Then 0 or 1 may be keyed followed by <ENT>. In the TX display an 'A' or an 'E' appears, indicating accept or error respectively.
Selection of

SP-15-0 =>	Repeat off. Alarm tones will be sent for 45 seconds.
SP-15-1 =>	Repeat on. Alarm tones will be sent for 45 seconds followed by an interval for 120 seconds

SP-16 SELECTION OF POWER AND MODE AT DISTRESS

When 16 has been keyed, the RX display shows 'SP-16-X', with X indicating the present switch. Then 1, 2, 3, or 4 may be keyed followed by <ENT>. In the TX display an 'A' or an 'E' appears, indicating accept or error respectively.
Selection of

SP-16-1 =>	Power reduction is possible and H3E is pre-selected. It is possible to change mode from the keyboard.
SP-16-2 =>	Fixed max. power and H3E is pre-selected. It is possible to change mode from the keyboard.
SP-16-3 =>	Power reduction is possible and H3E is pre-selected. It is <u>not</u> possible to change mode from the keyboard.
SP-16-4 =>	Fixed max. power and H3E is pre-selected. It is <u>not</u> possible to change mode from the keyboard.

SP·17 SELECTION OF R3E/A1A FOR TX MODE.
When 17 is keyed, the RX display shows 'SP-17-X', with X indicating the present switch. Then 0 or 1 may be keyed followed by <ENT>. In the TX display an 'A' or an 'E' appears, indicating accept or error respectively.
Selection of:

SP-17-0 =>	R3E mode is off. R3E cannot be chosen from the keyboard.
SP-17-1 =>	R3E mode is on. R3E may be selected from the keyboard.
SP-17-2 =>	Telegraphy mode is available and R3E mode is off

SP-18 KEYING-IN OF BAND LIMITS FOR BAND SELECTED TRANSMITTER
When 18 is keyed, the RX display shows 'SP-18- ' for a short moment after which it changes to 'b-01Lo' (band 01 low limit). The TX display shows the actual limit frequency. If there is only a full stop in the TX display it indicates that a limit frequency has not been entered into the memory.

Now it is possible to:

1. press the arrow keys => steps between the various band limits.
2. key-in a TX frequency followed by ADD => read-in of new band limit for the band indicated by the RX display.
3. press the <DEL> button => the indicated band limit will be deleted.
4. press the <ENT> button => return to new service programme.

SP-19 READ-IN OF SKIPPER OPERATED FREQUENCIES
When 19 is keyed, the RX display shows 'SP-19- ' for a short moment after which it changes to 'no0000' (permitted TX frequency in table position 0000). The TX display shows the actual TX frequency. If there is only a full stop in the TX display it indicates that a permitted TX frequency has not been entered into the table position 0000.

Now it is possible to:

1. press the arrow keys stepping through the permitted TX frequency table.
2. key-in a TX frequency followed by <ADD> => read-in of a permitted TX frequency in the table. The frequency will be entered into the first free table position found by the programme. If there is no free positions the RX display shows 'no-Full'. Max. 1024 frequencies may be entered.
3. press the <DEL> button => the shown frequency is deleted and the next frequency in the table is shown in the display.
4. press the <ENT> button => return to new service programme.

For information about service programmes 20 to 39 and 40-49, please refer to general information on page 1 of this document.

Standard programming of RE2100 GMDSS: Error! Bookmark not defined.

SP-07-2 TYPE 1 (RM2150)
SP-07-3 TYPE 2 (RM2151)

SP-08-2
SP-09-1
SP-11-2
SP-12-1
SP-13-0
SP-14-1
SP-15-0
SP-16-1
SP-17-1

SP-18 BAND LIMITS

01	LO	1600.0
01	HI	3999.9
02	LO	4000.0
02	HI	4210.0
03	LO	6200.0
03	HI	6314.0
04	LO	8195.0
04	HI	8417.0
05	LO	12230.0
05	HI	12579.0
06	LO	16360.0
06	HI	16807.0
07	LO	18780.0
07	HI	18900.0
08	LO	22000.0
08	HI	22376.0
09	LO	25000.0
09	HI	25211.0