

Supplied Accessories and Options

Supplied Accessories

- Rechargeable Li-Ion Battery Pack (7.4V, 1,750mAh) **SBR-28LI**
- Battery Charger **SAD-20B**
- Rapid Charger **SBH-22**
- Antenna **SRA-15**
- Belt Clip **SHB-18**
- Operating Manual (this manual)
- SBR-28LI Manual
- Warranty Card



- Ensure that the name of the dealer from which the transceiver was purchased, and the date of purchase are indicated on the warranty card.
- If any item is missing, contact the dealer from which the transceiver was purchased.

Available Options

- Rechargeable Li-Ion Battery Pack (7.4V, 1,750mAh) **SBR-28LI**
- Battery Charger **SAD-20B**
- Rapid Charger **SBH-22**
- VOX Earpiece Microphone **SSM-512B**
- Antenna **SRA-15**
- Speaker Microphone **SSM-16B**
- Programming Cable **SCU-35**
- Clone Cable **SCU-36**
- Belt Clip **SHB-18**

Charging the Battery Pack

Charging the Battery Pack using the Rapid Charger (SBH-22)

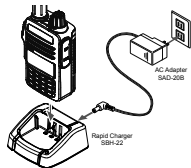
Using the supplied AC Adapter (SAD-20B) and the supplied Rapid Charger, it takes about 3.5 hours* to charge the SBR-28LI battery pack fully.

*: Depending on the battery status, the charging time might be increased.

1. Turn the transceiver OFF to install the battery pack.
2. Referring to the figure at the right, connect the battery charger plugs.

When the battery is being charged, rapid charger cradle indicator lights red.





3. When charging is completed, rapid charger cradle indicator will light green.



- The rapid charger indicator blinks red and the battery pack is not charged after a lapse of 10 or more hours, stop charging the battery pack immediately. The battery pack is presumed to be at the end of its service life, or defective. In this case, replace the battery pack with a new one.
- Charge the battery pack within the temperature range from +5 °C to +35 °C (+41 °F to +95 °F).

● Approximate Operating Time and Remaining Charge Level Indication

Approximate operating time for the transceiver with the fully charged lithium-ion battery pack (SBR-28LI), and the indication of the remaining charge level of the battery is shown in the below table:

Frequency band	Band in Use Charge	Level Indication (Icon)
144 MHz band	Approx. 9.0 hours	 : Full battery power  : Enough battery power
430 MHz band	Approx. 8.0 hours	 : Battery is depleted. Charge battery.
FM Broadcast Band	Approx. 12.0 hours	 : (When blinking) Charge battery immediately.

The battery charge level calculations are based on an operating cycle of: Transmitting 6 seconds (5 W); Receiving 6 seconds (VOL Level 16); Stand By 48 seconds (RX SAVE 1:5)

Operation

Changing between VFO mode and Memory mode

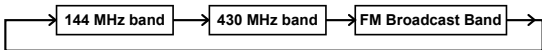
Press the [*V/M] key repeatedly to toggle the frequency control between the VFO-A mode, VFO-B mode and the Memory mode.

Selecting the Operating Band

1. Press the [#BAND] key to select the desired frequency band.



Frequency ranges for each frequency band are below:



FM broadcast band may be received signals in the VFO-B mode only.

Tuning to a Frequency(Two ways)


- Press the [▲] key or [▼] key to tune the frequency.
- 2. By pressing the function key and then press the [▲] key or the [▼] key, the frequency will change in 1 MHz steps.
- Press the numeric keys to enter the frequency digits in order, beginning with the 100 MHz digit.



When entering a frequency using the numeric keys, it may be canceled by pressing the **PTT** switch.

Changing the Frequency Step ("AUTO" for normal operation)

Pressing the [▲] key or [▼] key, the frequency step may be changed. Normally, the factory default setting will provide a good frequency step.

Pressing and holding the Function key (Entering the Set mode)	→	Pressing the  key (Selecting "37 STEP")	→	Pressing the Function key
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1. Press the [▲] key or the [▼] key to select the desired frequency step.
2. Press the **PTT** switch to save the setting and return to normal operation.



In the default setting, of the frequency step is set to "**AUTO**", which automatically provides a suitable frequency step according to the frequency band.

Adjusting the squelch setting

The squelch level may be adjusted to mute the background noise when no signal is present.

1. Press the function key and then press the **MONI/T-CALL** switch.
"LVL □"(0-15) appear on the display.
2. Press the [▲] key or [▼] key to a level at which the background noise is muted.
3. Press the **PTT** switch to save the setting.



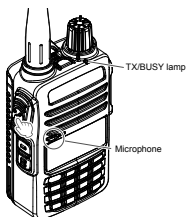
- The default setting is "LVL 2".
- When the squelch level is increased, the noise is more likely to be silenced, but it may become more difficult to receive weak signals.

Transmission

1. While pressing and holding the **PTT** switch, speak into the microphone.
TX/BUSY indicator lights red during the transmission.



If the **PTT** switch is pressed when a frequency other than the amateur ham radio band is selected, an alarm tone (beep) will be emitted and "ERROR" appears on the LCD, disabling transmission.



2. Release the **PTT** switch to return to receive mode.
When receiving a signal, the TX/BUSY Indicator lights red.

Changing the Transmission Power Level

Pressing and holding the Function key (Entering the Set mode) → Pressing the \blacklozenge key (Selecting "40 TX PWR") → Pressing the Function key

1. Press the [▲] or [▼] to select one of the following transmission power levels.

TX PO Level	Icon	PO meter
HIGH (5W) [*]	(off)	1 2 3 4 5 6 7 8 9
MID (2.5W)	LOW	1 2 3 4 5
LOW (0.5W)	LOW	1 2 3




*:The default setting.

2. Press the **PTT** switch to save the setting and return to the normal operation.



The transmission power level may be set separately for each frequency band.

Locking Keys and PTT switch

1. Press and hold the [6] key, “**LOCK**” is displayed on the LCD for one second, the “” icon appears on the LCD, and then the keys and **PTT** switch are locked.



- The keys and the **PTT** switch may be selected to be locked using Set Mode [18 **LOCK**](□□20). The default setting is the [LK KEY] (the keys are locked).
- The [MONI/T-CALL] switch and the **PWR/VOL** knob cannot be locked.

2. Press the [6] (LOCK) switch again, “**UNLOCK**” will be displayed on the LCD, the keys and the **PTT** switch are unlocked.

Tone Calling (1750 Hz)

If your transceiver is FT-4X (European version), press and hold in the MONI/T-CALL switch to generate the 1750 Hz burst tone to access the European repeater.

The transmitter will automatically be activated, and the 1750 Hz audio tone will be superimposed on the carrier. Once the repeater has been accessed, release the MONI/T-CALL switch, and use the **PTT** switch to activate the transmitter thereafter.

If needed, the FT-4XR (USA/Asian version), may be set to access repeaters which require a 1750 Hz burst tone by setting the MONI/T-CALL switch to serve as a “Tone Call” switch instead. To change the configuration of the MONI/T-CALL switch, use Set Mode [19 M/T-CL] (□□20).

Using the Memory

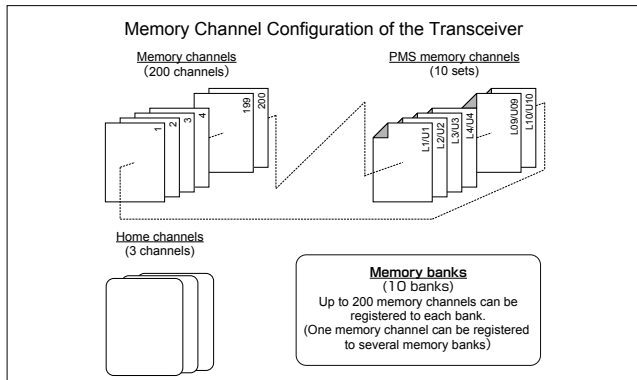
The **FT-4XR/XE** transceiver incorporates Large-capacity memory channels that can register the operating frequency, communication mode, and other operational information.

- 200 Memory Channels
- 3 Home Channels
- 10 pairs PMS Memory channel

Each memory channel can store the following information.

- Operating frequency
- Frequency steps
- TX output power
- Memory tag
- Repeater information
- Tone information
- DCS information
- Skip memory information

10 Memory Banks, labeled "BANK 1" through "BANK10" Each Memory Bank can be assigned up to 200 channels from the "standard" and "PMS" memory channels.



For additional details on the Skip Search Memory, PMS memory channel and Memory Bank, refer to the Advanced Manual which may be downloaded from the Yaesu website.

CAUTIONS!

The information registered to memory channels can be corrupted by incorrect operation, static electricity, or electrical noise. Also, it can be erased in the event of a failure or repair. Be sure to keep a record of the settings on paper.

Registering to Memory Channels

1. Set the frequency and the communication mode to be registered to a memory channel.



2. Press and hold the [*V/M] key.
A blank memory channel will be displayed automatically.

3. Press the [▲] key or [▼] key to select the desired channel number.

The channel numbers that do not contain memory data will blink on the LCD.



4. Input the memory tag

Use the numeric keys to input the characters.

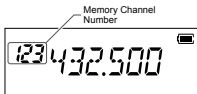
If not inputting a "Tag" (label), proceed to step 5.

Input Character

Example: Press the [2] key repeatedly to toggle among the following available characters.

2 → A → B → C → a → b → c → 2 → ...

Press the function key to move the cursor.



5. Press and hold the [*V/M].
The beep sounds and the memory is saved.

Memory Recall

1. While operating in the VFO mode, press the [*V/M] key to enter the Memory mode.

The memory channel most recently used appears on the LCD.

2. Press the [▲] or [▼] key to select the desired memory channel.

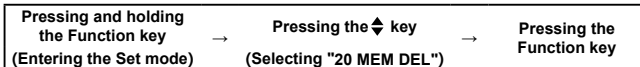
When the transceiver is already set to the Memory mode, an easy way to recall a memory channel is to enter the memory channel number using the numeric keypad.

3. Press the [*V/M] key to exit the memory mode, and return to the normal operation.

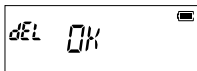


Press and hold the **MONI/T.CALL** key and the **PTT** switch simultaneously, while turning the radio **ON** to enter the preferred operating mode. In the preferred operating mode, press the [**▲**] key or [**▼**] key to select the [**F5 M-ONLY**], then press the function key to enter the Memory Channel Only mode. To cancel the Memory Channel Only mode, press the [**▲**] key or [**▼**] key to select the [**F5 M-ONLY**], then press the function key again.

Clearing Memories



1. Press the [**▲**] key or [**▼**] key to select the memory channel from which the data is to be cleared.
2. Press the function key.
"del OK" appears on the LCD and the memory channel is cleared.
3. Press the **PTT** switch to save the setting and return to the normal operation.



Data on memory channel One, and the Home channel may not be cleared.

Recalling the Home Channels

1. Press the Function key, and then press the [**P1**] key.
"H" and the home channel frequency of the currently selected band appears on the LCD.
2. Press the Function key, and then press the [**P1**] key to return to the previous frequency.



While recalling the home channel, press the [**BAND**] key repeatedly to toggle the home channel between 430MHz band, FM broadcast band and 144MHz band.

Changing the Home Channel Frequency

1. Set the frequency and the operating mode you want to store as a home channel.
2. Press and hold the [***V/M**] key.
A blank memory channel will be displayed automatically.
3. Press the [**P1**] key.
"HOM-IN" is displayed, desired Home channel frequency is changed and returned to normal operation.

Memory Channel Scanning

The receiver may be set to scan memory channels:

1. While operating in the VFO mode, press the [***V/M**] key to enter the Memory mode.
2. Press and hold the [**▲**] key or [**▼**] key.
Scanning starts toward higher memory channel numbers.
If the scanner halts on an incoming signal, the back light will turn ON and the decimal point between the "MHz" and "kHz" digits of the frequency display will blink. Scanning will resume in about five seconds.
3. Press the **PTT** switch to cancel the scanning.



If the scan has paused on a signal, rotating the DIAL knob will cause scanning to resume next memory channel.

Setting the Receive Operation When Scanning Stops

Pressing and holding the Function key (Entering the Set mode)	→	Pressing the ◆ key (Selecting "34 SCN.RSM")	→	Pressing the Function key
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1. Press the [**▲**] key or [**▼**] key to select the operation performed after the scan stops:

Display	Description
BUSY(Default setting)	In BUSY mode, the scanner will halt on a signal it encounters. Scanning will resume one second after the other station signal ceases transmitting. In the case of constant-carrier signals like Weather Station broadcasts, the scanner will likely remain on this frequency indefinitely.
HOLD	In HOLD mode, the scanner will halt on a signal it encounters. Scanning will only resume when it is manually re-initiated.
TIME	In TIME mode, the scanner will halt on a signal it encounters, scanning will resume after five seconds even if a signal is still on the frequency. To cancel scanning, press the the PTT switch, [▲] or [▼] key.

2. Press the **PTT** switch to save the setting and exit to normal operation.



The above setting (Set Mode [34 **SCN.RSM**]) is common for all scanning operation.



For additional details on the following functions, refer to the Advanced Manual which may be downloaded from the Yaesu website.

Using Memory Tag

Memory name tags may be assigned to the memory channels and home channels.

Using Memory Bank

The transceiver allows using up to 10 memory banks to allow sorting and registering the channels in convenient groups.

Scanning Function

The transceiver supports the following four scanning functions:

- VFO Scan
- Program Scan
- Memory Channel Scan
- Programmable Memory Scan (PMS)
- Memory Bank Scan



For additional details on the Programmable Memory Scan (PMS) and Memory Bank Scan, refer to the Advanced Manual which may be downloaded from the Yaesu website.

VFO Scan

VFO scan function scans the frequencies, and detects signals.

1. Press the [***V/M**] key to enter the VFO mode.
2. Press and hold the [**▲**] key or the [**▼**] to start scanning.
3. Press the **PTT** switch, [**▲**] or [**▼**] key to cancel scanning.



- If the scan has paused on a signal, Turning the transceiver ON will cause scanning to resume instantly.
- To set the transceiver action when scanning stops, see “Setting the Receive Operation When Scanning Stops” on page] (20).

Using Set Mode

The Set Mode permits configuring the various functions according to individual operating needs and preferences.

1. Press and hold the Function key.
The previously selected Set Mode item is displayed.
2. Press the [▲] key or [▼] key to select the desired Set Mode item.
3. Press the function key, then press the [▲] key or [▼] key to change the setting.
4. Press the **PTT** switch to save the settings and return to normal operation.



- In step 4 above, press the Function key to save the new setting and return to Set Mode item to set the other Set Mode.
- On some setting screens, key operation is different than described in the above steps (For example, inputting the characters, etc.). Refer to the Advance manual.



For additional details, refer to the Advanced Manual which may be downloaded from the Yaesu website

Tables of Set Mode Operations

No.	Set Mode item	Description	Selectable options (Options in bold are the default settings)
1	APO	Sets the length of time until the transceiver turns off automatically.	OFF / 0.5 Hours ~ 12Hours
2	AR BEP	Sets the beep option during ARTS operation.	OFF / INRANG / ALWAYS
3	AR INT	Sets the polling interval during ARTS operation.	25 SEC / 15 SEC
4	BCLO	Turns the busy channel lockout function ON/OFF.	BCL.OFF / BCL.ON
5	BEEP	Sets the beep function on pressing the keypad, or stopping the receiver scanning.	KEY+SC / KEY / OFF
6	BELL	Selects the number of CTCSS/DCS/PAGER/ARTS Bell ringer repetitions.	OFF / 1 T / 3 T / 5 T / 8 T / CONT

No.	Set Mode item	Description	Selectable options (Options in bold are the default settings)
7	CWID	Turns the CW Identifier ON/OFF during ARTS operation.	TX OFF / TX ON
8	CW WRT	Sets the CW ID during ARTS operation.	ID= _____ (6 characters) default: blank
9	DC VLT	Displays the voltage.	(Voltage)
10	DCS.COD	Sets the DCS CODE RX and TX.	104 DCS CODEs / OFF default: 023 R / 023 T
11	DT DLY	Sets the DTMF code transmission delay time.	50MS / 250MS / 450MS / 750MS / 1000MS
12	DT SET	Selects the DTMF auto dialer memory channel and edits the DTMF code (Maximum 16 digits)	d1 ~ d9
13	DT SPD	Sets the DTMF code transmission speed.	50MS / 100MS
14	EDG.BEP	Turns the the Band-edge beeper on/off, while selecting the frequency via the [▲] or [▼] key.	BEP.OFF / BEP. ON
15	LAMP	Selects the LCD/Keypad Lamp mode.	5 SEC / 10 SEC / 30 SEC / CONT / OFF
16	LED.BSY	Turns the TX/BUSY lamp ON/OFF while receiving signals.	BSY ON / BSYOFF
17	LED.TX	Turns the TX/BUSY lamp ON/OFF while transmitting signals.	TX ON / TXOFF
18	LOCK	Configures the lock mode setting.	LK KEY / LK PTT / LK P+K
19	M/T-CL	Selects the function of the [MONI/T-CALL] switch.	MONI / TC1750* / TC2100 / TC1000 / TC1450 (*: European / Asian Version)
20	MEM.DEL	Deletes the memory channel	—
21	MEM. TAG	Edits the memory channel tag.	—
22	PAG.ABK	Turns the pager answer back Function ON/OFF	ABK.OFF / ABK. ON
23	PAG.CDR	Specifies a personal code (receive).	01 ~ 05 ~ 50, 01 ~ 47 ~ 50

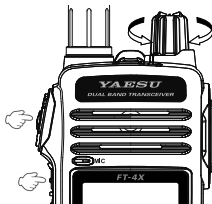
No.	Set Mode item	Description	Selectable options (Options in bold are the default settings)
24	PAG.CDT	Specifies a personal code (transmit).	01 ~ 05 ~ 50, 01 ~ 47 ~ 50
25	PRI.RVT	Turns the Priority Revert feature ON/OFF.	RVT OFF / RVT ON
26	PSWD	Turns the Password feature ON/OFF.	PWD .OFF / PWD. ON
27	PSWDWT	Inputs the password.	(4 digits)
28	RF SQL	Adjusts the RF Squelch threshold level.	OFF / S-1 / S-2 / S-3 / S-4 / S-5 / S-6 / S-8 / S-FULL
29	RPT.ARS	Turns the ARS function on/off.	ARS .ON / ARS.OFF
30	RPT.FRQ	Sets the repeater shift width.	OFF / 0.05MHz ~ 99.95MHz
31	RPT.SFT	Sets the repeater shift direction.	SIMPLX / +RPT / -RPT
32	RXSAVE	Selects the Receivemode Battery Saver interval ("sleep" ratio)	200 MS ~ 2 SEC / OFF
33	SCN.LMP	Turns the scan lamp ON/OFF while paused.	ON / OFF
34	SCN.RSM	Configures the scan stop mode settings.	BUSY / HOLD / TIME
35	SKIP	Turns the Memory Scan "Skip" channel selection mode ON/OFF.	OFF / SKIP
36	SQL.TYP	Selects the Tone Encoder and/or Decoder mode.	OFF / R-TONE / T-TONE / TSQ / REV TN / DCS / PAGER
37	STEP	Sets the frequency steps.	AUTO / 5.0 / 6.25 / 10.0 / 12.5 / 15.0 / 20.0 / 25.0 / 50.0 / 100.0 k
38	TN FRQ	Sets the TONE frequency.	OFF / 67.0 R ~ 100.0 R ~ 254.1 R OFF / 67.0 T ~ 100.0 T ~ 254.1 T
39	TOT	Sets the timeout timer.	OFF / 1MIN ~ 3MIN ~ 30MIN
40	TX PWR	Selects Transmitter Power	HIGH (5W) / MID (2.5W) / LOW (0.5W)
41	TX SAVE	Turns the Transmitter Battery Saver ON/OFF.	SAV OFF / SAV ON
42	VFO.SPL	Turns the "VFO Split" operation ON/OFF.	VSP .OFF / VSP. ON

No.	Set Mode item	Description	Selectable options (Options in bold are the default settings)
43	VOX	Turns the VOX function ON/OFF.	VOXOFF / VOX ON
44	W/N.DEV	Sets the Transmit Modulation Level in the FM mode.	WIDE / NARROW
45	WX ALT	Turns the Weather Alert Scan ON/OFF.	ALT.OFF / ALT. ON

Restoring to Defaults (Reset) / Setting the Preferred Operating Mode

The following reset or preferred operating modes may be selected.

1. Turn the transceiver **OFF**.
2. Press and hold the **MONI/T.CALL** key and the **PTT** switch simultaneously, while turning the transceiver ON.
3. When the LCD backlight comes on, release the **MONI/T.CALL** key and **PTT** switch.
4. Referring to the above table, press the [▲] or [▼] key to select the desired resets or desired operating modes.



Display	Description
F1:SET RST	Resets the Set Mode settings to factory defaults.
F2:MEM RST	Clears the Memory settings to factory defaults.
F3:MB. RST	Clears the Memory Bank assignments.
F4:ALL RST	Clears the All memories and other settings to factory defaults.
F5:M-ONLY	Operation on the Memory mode only.
F6:CLONE	Clone mode.

CAUTION!

Resetting the transceiver (F2 MEM RST / F4 ALL RST) will clear all memories.

Please make a note of the memories (memory channel settings, etc) before resetting.



- To cancel this operation, turn the transceiver OFF.
- Perform All Reset to restore all of the following Set Mode items to default.
10 DCS.COD 26 PSWD 27 PSWDWT 30 RPT.FRQ 31 RPT.SFT
35 SKIP 36 SQL.TYP 37 STEP 38 TN FRQ 40 TX PWR
44 W/N.DEV

Specifications

● General

Frequency Range	RX: 136 - 174MHz, 400-480MHz TX: 136 - 174 MHz (Asian version) 144 - 146 MHz (European version) 144 - 148 MHz (USA version) 400 - 480 MHz (Asian version) 430 - 440 MHz (European version) 430 - 450 MHz (USA version)
FM Broadcast:	65 - 108 MHz
Channel Steps	: 5/10/12.5/15/20/25/50/100kHz
Mode of Emission	: F2D, F3E, F2A
Frequency Stability	: ± 2.5 ppm (-20 °C to $+60$ °C [-4 °F to $+140$ °F])
Antenna Impedance	: 50 ohms
Supply Voltage Nominal:	7.4 V DC, Negative Ground SBR-28LI
Current Consumption (Approx.)	: 190 mA (Receive) 200 mW Output 95 mA (Standby, Saver Off) 23 mA (Standby, Saver On) 5 mA (Auto Power Off) 1.5 A (5 W Tx , 144 MHz) 7.4 V DC 1.7 A (5 W Tx , 430 MHz) 7.4 V DC
Operating Temperature	: -4 °F to $+140$ °F (-20 °C to $+60$ °C)
Case Size	: 2.0" (W) x 3.5" (H) x 1.2" (D) (52×90×30mm) (W/O knob and antenna)
Weight (Approx.)	: 9.17 oz (250g) with SBR-28LI and antenna

● Transmitter

RF Power Output	: 5.0 W (High) / 2.5 W (Middle) / 0.5 W (Low) (@ 7.4 V with SBR-28LI)
Modulation Type	: Variable Reactance
Maximum Deviation	: ± 5.0 kHz
Spurious Emission	: USA/Asian version At least 60 dB below (@TX Power High, Middle) At least 50 dB below (@TX Power Low) European version At least 60 dB below (@TX Power High, Middle) At least 55 dB below (@TX Power Low)
Microphone Impedance (Approx.)	: 2 k Ω

● Receiver

Circuit Type	: Double-conversion
Sensitivity	: 0.2 μ V for 12 dB SINAD (140 - 150 MHz, NFM) 0.2 μ V for 12 dB SINAD (420 - 470 MHz, NFM)
Selectivity (-65 dB/-60 dB)	: FM, NFM \pm 25 kHz / 12.5 kHz
AF Output	: 800 mW (16 Ω for THD 10 % 7.4 V DC) internal speaker 800 mW (16 Ω for THD 10 % 7.4 V DC) external speaker

Specifications are subject to change without notice, and are guaranteed within the 144 and 430 MHz amateur bands only. Frequency ranges will vary according to transceiver version; check with your dealer.

1. Changes or modifications to this device that are not expressly approved by YAESU MUSEN could void the user's authorization to operate this device.
2. This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference including received, interference that may cause undesired operation.
3. The scanning receiver in this equipment is incapable of tuning, or readily being altered, by the User to operate within the frequency bands allocated to the Domestic public Cellular Telecommunications Service in Part 22.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

DECLARATION BY MANUFACTURER

The Scanner receiver is not a digital scanner and is incapable of being converted or modified to a digital scanner receiver by any user.

WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

YAESU

The radio

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Tennozu Parkside Building
2-5-8 Higashi-Shinagawa, Shinagawa-ku, Tokyo
140-0002 Japan

YAESU USA

6125 Phyllis Drive, Cypress, CA 90630, U.S.A.

YAESU UK

Unit 12, Sun Valley Business Park, Winnall Close
Winchester, Hampshire, SO23 0LB, U.K.

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