Tips

- On A-band, you can transmit and receive using the 144 MHz and 430 MHz Amateur radio bands.
- On B-band, you can transmit and receive using the 144 MHz and 430 MHz Amateur radio bands. In addition, the frequencies on the chart below can be received on A-band and B-band.

Chart of A-band and B-band reception frequencies

A-band	B-band
0.5MHz - 1.8MHz (AM BC Band)	— —
76MHz - 108MHz (FM BC Band)	— —
1.8MHz - 30MHz (SW band)	— —
30MHz - 76MHz (50 MHz band)	— —
108MHz - 137MHz (AIR band)	108MHz - 137MHz (AIR band)
137MHz - 174MHz (144 MHz band)	137MHz - 174MHz (144 MHz band)
174MHz - 222MHz	174MHz - 222MHz
222MHz - 420MHz (INFO band (1))	222MHz - 420MHz (INFO band (1))
420MHz - 470MHz (430 MHz band)	420MHz - 470MHz (430 MHz band)
470MHz - 770MHz	470MHz - 580MHz
770MHz - 999MHz (INFO band (2))	— —

- A-band and B-band can be received at the same time.
  You can receive Amateur radio frequency while listening to the AIR band, or receive two Amateur radio frequencies on the same frequency band at the same time (V+V/U+U: Dual frequency reception on the same band).

Selecting a Frequency Band

You can select a frequency band to use for the A-band and B-band separately. The frequency band can be selected by following the steps below.

1 Press A/B to select A-band.

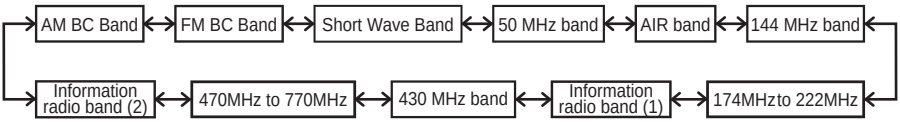
T.B.D.

2 Touch BAND to select your desired frequency band.

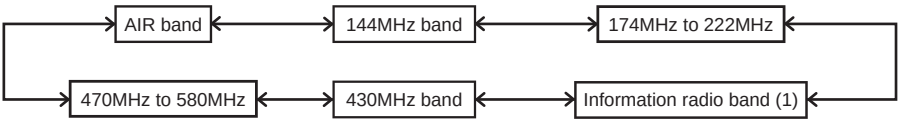
T.B.D.

Available frequency bands differ depending on the band. The following frequency bands can be used for A-band and B-band.

- **Frequency band on A-band**



- **Frequency band on B-band**



Caution

Digital communication can be performed only on the A-band.
Digital communication cannot be performed on the B-band.

Tips

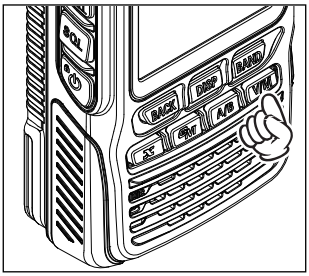
- The frequency settings from the factory are:
  A-band: 145.000 MHz B-band: 433.000 MHz
- In the default, Auto mode is set so that the transceiver can be automatically switched to the optimal reception mode for the frequency bands.
  Press and hold DISP for over 1 second to switch the transceiver to Set mode, then touch, **[TX/RX]** → **[1 MODE]** → **[3 RX MODE]** to change mode (☞ see page xx).
- For the relations between frequency bands and reception frequencies, see the table on page xx.
- You can also recall the home channel of each frequency band by touching **[F MW]** followed by **[HOME]** (☞ see page xx).

Tuning in to a Frequency

Tune in to your desired frequency using either of the following methods:

- **Rotating the DIAL to tune in to your desired frequency**

1 Press the V/M key to switch the transceiver to VFO mode.

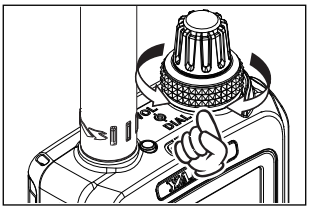


2 Rotate the DIAL to tune in to your desired frequency.

Rotate clockwise: The frequency increases.

Rotate counterclockwise: The frequency decreases.

Tip By touching **[F MW]** and rotating the DIAL, you can tune in to the desired frequency in steps of 1 MHz.

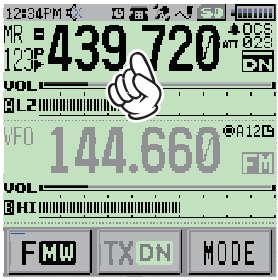


- **Entering your desired frequency directly using the numeric keys**

1 Press the V/M key to switch the transceiver to VFO mode.

2 Touch the frequency displayed on the LCD.

The numeric keypad appears.



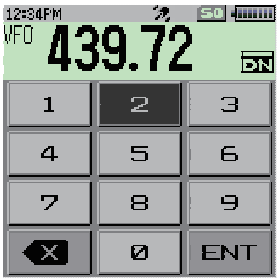
3 Enter the frequency using the numeric keys.

Example: To input 145.520 MHz

[1] → [4] → [5] → [5] → [2] → [ENT]

Example: To input 430.000 MHz

[4] → [3] → [ENT]



Tips

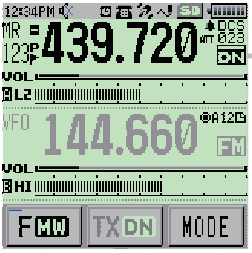
- In factory settings, Auto Step mode is set such that the transceiver is automatically switched to the optimal frequency steps for the reception frequency.
  You can also change frequency steps manually rotating the DIAL (☞ see page xx).
- If you enter a wrong digit when entering a frequency using numeric keys, you can cancel it by pressing ⊗.
- In factory settings, turning the DIAL further beyond the selected frequency band causes the transceiver to switch to another frequency band.
  To prevent this from happening, press and hold DISP for over 1 second to switch to Set mode, then touch **[CONFIG]** → **[21 VFO MODE]**, and select "BAND" for repeatedly showing frequencies on the same frequency band.

Selecting Communication Mode

• Using AMS

This transceiver is equipped with AMS (Automatic Mode Select) which automatically selects between 4 modes of transmission to fit the signal being received. Because the transmission is automatically adjusted to that of the other station, not only C4FM digital signals, but analog signals are also recognized automatically.

To utilize the AMS function, repeatedly touch **[MODE]** on the LCD until "DN" appears. After receiving the signal, "DN" of "DN" will be changed according to the received signal.



Example of when AMS is displayed

• Fixing the Communication Mode

To fix the communication mode for operation, touch **[MODE]** on the LCD to switch the communication mode.

Touching **[MODE]** on the LCD each time toggles the communication mode as follows.

[DN (AMS)] → [DN (V/D mode)] → [VW (FR mode)] → [FM (analog)]

Operation mode	Icon	Description of Modes
AMS (Automatic Mode Select)	DN	Transmission mode is automatically selected from 4 types according to the signal received. (“DN” part differs depending on the received signal.) The AMS function operation can be changed with the Set mode setting (☞ see page xx).
V/D Mode (Voice/Data simultaneous transmission mode)	DN	Calls are less prone to interruptions due to detection and correction of voice signals during digital voice signal transmission. This is the standard mode for C4FM FDMA Digital.
Voice FR Mode (Voice Full Rate Mode)	VW	High speed data communication using entire 12.5 kHz band. Enables high-quality voice communication.
Data FR Mode (High Speed Data Communication Mode)	DW	Digital voice data transmission using the entire 12.5 kHz band. The transceiver automatically switches to this mode during image transmission.
Analog FM Mode	FM	Analog communication using FM mode. Effective when the signal is weak and audio is susceptible to interruption in digital mode.

Cautions

- Digital communication can be performed only on the A-band.
- Digital communication cannot be performed on the B-band.
- In V/D mode (“DN” on the LCD), position information is included in the radio wave during voice communication, however, it is not include in the Voice FR mode (“VW” on the LCD).

Transmitting/Receiving Signals

1 While pressing and holding ⊗, speak into the microphone.
Keep your mouth about 5 cm away from the microphone when you speak.

2 Release ⊗.
The transceiver returns to Reception mode.

Cautions

- Use the transceiver at the minimum required transmission power level. Doing so prevents the transceiver from overheating and saves battery power, increasing the operating time.
- Do not continue transmitting for a prolonged period. The transceiver can overheat, resulting in malfunction or burn.
- If transmission is continued for a long period, the transceiver overheats and the overheat protection function is activated. As a result, the transmitting power level is automatically set to Low Power. If you continue transmitting while the overheat protection function is active, the transceiver will be forcibly returned to the Reception mode.
- If you touch the transceiver immediately after the overheat protection function has become active, you can get burned. Wait for the temperature inside the transceiver to drop sufficiently before resuming transmission.
- Do not perform transmission without attaching the antenna. The transmitter circuit can be damaged.

Performing Communication

Tips

- In FM mode, you can transmit on the 144 MHz and 430 MHz ham radio bands.
- Even while you are receiving in AM mode, you can transmit in NFM mode by pressing ⊗.
- You can change the transmit power level by touching **[F MW]** followed by **[TXPWR]** (☞ see page xx).
  Transmit power level is different when using the battery pack or the alkaline battery case.
  For more details, see “Changing the Transmission Power Level” on page xx.
- If ⊗ 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.
- You can select whether or not to prohibit transmission while receiving a signal. Press and hold DISP for over 1 second to switch the transceiver to Set mode, then with the setting from **[CONFIG]** → **[2 BCLO]**, select **[ON]**.

Miscellaneous Settings

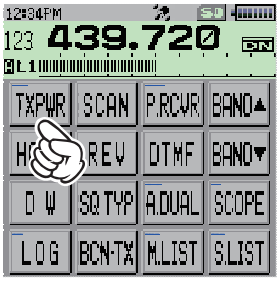
Changing the Transmission Power Level

The maximum transmission power level of this transceiver is 5 W. When communicating with a friend in the immediate area or when you want to reduce the battery power consumption, you can lower the transmit power level. For power supply types and transmit power levels, see the table shown below.

Battery type	HI (High Power)	L3	L2	L1
Battery pack	5W	2.5W	1W	0.1W
External power supply (DC13.8V)				
Battery Case (alkaline battery)			Approx. 0.8W	0.1W

1 Touch **[F MW]**.

2 Touch **[TXPWR]**.



3 Rotate the DIAL to select one of the following transmission power levels.
"Hi", "L1", "L2", "L3"

T.B.D.

4 Press ⊛.
The transmission power level will be set.

Tips

- You can set the transmitter power level separately for the A-band and B-band.
- Use the transceiver at the minimum required transmit power level to reduce battery power consumption.
- By default, "HI (High power)" is selected.

Adjusting the Squelch Level

You can mute the raspy noise heard when no signal is being received. The squelch level can be adjusted separately for two broadcasts (FM and AM) received on the A-band and B-band.
When the squelch level is increased, the noise is more liable to disappear, but it becomes difficult to receive weak signals. Adjust the squelch level as required.

1 Press [A/B] to set the band for which you want to adjust the squelch, to the operating band.

2 While pressing [SQL], rotate the DIAL to adjust the squelch level.

Remarks
- The squelch level can be adjusted within the range from 0 to 15.
- Default: LEVEL 1

3 Release [SQL].
The squelch level adjustment mode will be canceled.

T.B.D.

Tip
While [SQL] is held pressed, the squelch function will be deactivated for both the A-band and B-band.

Setting the Frequency Step

By default, “AUTO (Step)” is selected so that the optimum frequency step is automatically selected according to the received frequency. You can set the frequency step to a fixed value.

1 Press and hold [DISP] for over 1 second.
The transceiver enters Set mode.

2 Touch **[CONFIG]**.

3 Touch **[18 STEP]**.

T.B.D.

4 Rotate the DIAL to select your desired frequency step.

Remark Selectable frequency steps are as follows:

- AUTO
- 5.0KHz
- 6.25KHz
- (8.33KHz)
- (9.0KHz)
- 10KHz
- 12.5KHz
- 15KHz
- 20.0KHz
- 25.0KHz
- 50.0KHz
- 100.0KHz

It is recommended that AUTO be selected normally.
Default: AUTO

T.B.D.

5 Press ⚙.
The frequency step setting mode will be canceled.

Tips

- For the AIR band (108 MHz to 136.991 MHz), the frequency step “8.33 kHz” can also be selected.
- For bands covering 250 MHz to 300 MHz, and bands covering 580 MHz or higher, the frequency steps “5 kHz”, “6.25 kHz”, and “15 kHz” cannot be selected.

Changing the Mode

You can change the selected band mode.
By default, “AUTO (Auto Mode)” is set so that the optimal mode (radio wave type) is automatically selected according to the band (frequency band).

1 Press and hold DISP for over 1 second.
The transceiver enters Set mode.

2 Touch **[TX/RX]**.

3 Touch **[1 MODE]**.

4 Touch **[3 RX MODE]**.
The current setting will be displayed.

T.B.D.

Miscellaneous Settings

5 Rotate the DIAL to select your desired mode.

It is recommended that AUTO be selected normally.

Display	Operation
AUTO	The optimal mode is automatically selected according to the frequency band.
NFM	Only the selected band is switched to the NFM (FM mode).
AM	Only the selected band is switched to the AM mode.

T.B.D.

6 Press .

Set mode will be canceled.

Tip

Even if AM mode is selected on a ham radio band, 144 MHz band or 430 MHz band, transmission takes place in the FM mode.

Caution

You cannot change the mode of A-band AM/FM broadcast radio bands.

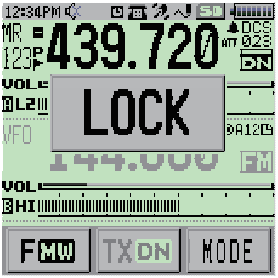
Locking Keys and Switches

To prevent accidental frequency change during operation, keys, switches and the DIAL except , , and can be locked.

1 Press .

[LOCK] appears on the LCD.

Remark To unlock a key or switch, press again.
[UNLOCK] is displayed on the LCD for few seconds.



Tip

You can also lock the DIAL and by selecting the Set mode option **[CONFIG]** → **[9 LOCK]**.

Restoring to Defaults (All Reset)

You can restore all transceiver settings and memory content to the defaults.

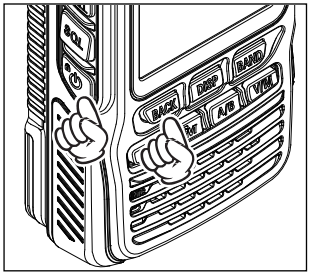
1 Press and hold ⊛ for over 1 second, then turn off the transceiver.

2 While pressing BACK press ⊛.

The transceiver turns on and you hear the beep.

3 When you hear the beep, release the key.

"ALL RESET?" appears on the LCD.



4 Touch **[OK]**.

A beep sounds and the call sign input screen appears on the LCD.

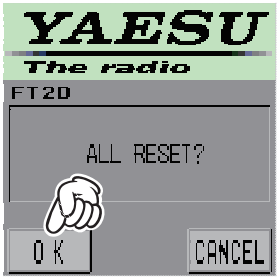
5 Input the call sign.

Input the call sign using the numeric key pad.

6 Press ⊛.

The call sign is set and the frequency screen appears.

Remark To cancel resetting, touch **[CANCEL]**.



Caution

When the All Reset function is performed, all data registered in the memory will be deleted. Be sure to write it down on paper or back up the data on a microSD memory card (☞ pages xx to xx).

Tip

To restore only the Set Mode settings to default, while pressing DISP, press ⊛ to turn on the transceiver.

Application for FCC / IC
FCC ID: K6620605X20
IC: 511B-20605X20

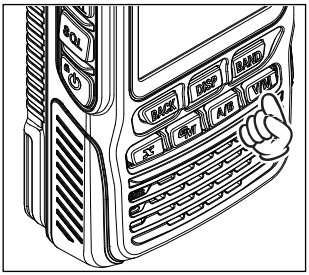
Registering to Memory Channel

Caution

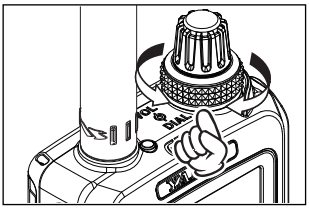
The information registered to memory channels can be corrupted due to wrong operation, static electricity, or electrical noise. Also, it can be erased in the case of a failure or repair. Be sure to write it down on paper or back up the data on a microSD memory car (☞ see pages xx to xx).

The transceiver allows you to use 900 memory channels (memory channel numbers 1 to 900).

1 Press the V/M key to enter VFO mode.

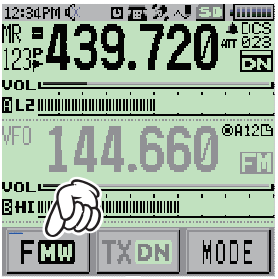


2 Rotate the DIAL to select the frequency you want to register to a memory channel.



3 Touch **[F MW]** for over 1 second.

The transceiver enters Memory Channel Registration mode, and the number of the memory channel next to the most recently registered memory will flash.



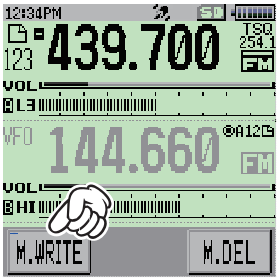
Remarks
- To cancel the memory channel registration, press .
- To specify a memory channel to which you want to register the frequency, select the memory channel by rotating the DIAL.
  The icon indicating [The specified memory channel is unregistered] lights up, and the memory channel flashes.
  The icon indicating [The specified memory channel is registered] lights up.
- Pressing DISP each time skips memory channels quickly in steps of 100 memory channels.

4 Touch **[M.WRITE]**.

The frequency registration will initiate.

If you attempt to register a frequency to a memory channel on which another frequency has already been registered, “Overwrite OK?” will appear on the LCD.

Once the registration is completed, the frequency will be displayed on the LCD.



Tips

- By default, 145.000 MHz is registered to the memory channel 1. It can be changed to another frequency, but not be deleted.
  The frequency which has been registered to a memory channel can be overwritten with a new frequency.
  When you attempt to register a new frequency to a memory channel, an unregistered memory channel appears.
- To display the lowest unregistered memory number when you register a frequency to a memory channel, press and hold DISP for over 1 second to enter Set mode, and then select **[MEMORY]** → **[6 MEMORY WRITE]**.
- To inhibit registration to all memory channels, press and hold DISP for over 1 second to enter Set mode, and then select **[MEMORY]** → **[4 MEMORY PROTECT]**.

Split Memory

Two different frequencies, one for reception and other for transmission, can be registered to a memory channel.

1 Register a reception frequency to a memory channel.

Remark See “Registering to Memory Channel” above.

2 Select a transmission frequency in VFO mode.

3 Touch **[F MW]** for over 1 second.

4 Rotate the DIAL to select the channel number to which you have registered the reception frequency.

5 While pressing ⊗, touch **[M.WRITE]**.

When you recall the memory channel to which you registered two different frequencies (one for receive and the other for transmit), ⊞ appears on the LCD.

T.B.D.

Recalling a Memory Channel

Recall a registered memory channel following the steps below.

1 Press the V/M key to enter Memory mode.

The memory channel most recently used appears on the LCD.

2 Rotate the DIAL to select the desired memory channel.

Remark Touching **[F MW]** and rotating the DIAL allows you to skip memory channels quickly in steps of 10 memory channels.

3 Press V/M.

Memory mode will be canceled and the frequency selected in VFO mode will be displayed.

Tips

- Unregistered memory channels are skipped.
- By default, a priority memory channel, which is used as dual receive priority memory channel, is set to the memory channel number 1. “P” appears on the upper right corner of the priority memory channel number (☞ see page xx).
- The information registered to a memory channel can be transferred to the VFO operating band by following procedure below.
  Touch **[F MW]** for over 1 second. → Press the V/M key. → “OVERWRITE OK?” appears. → Press the V/M key.
- Placing the transceiver in the Memory Channel Only mode by following the procedure below restricts use to memory channels.
  while pressing V/M, press ⏻ to turn on the transceiver.
  To cancel the Memory Channel Only mode, while pressing V/M, press ⏻ again.

Specifications

• General

Frequency Range (A):	**RX:**	0.5 - 1.8 MHz, 1.8 - 30 MHz, 30 - 76 MHz, 76 - 108 MHz, 108 - 137 MHz, 137 - 174 MHz, 174 - 222 MHz, 222 - 225 MHz, 222 - 420 MHz, 420 - 470 MHz, 470 - 800 MHz, 800 - 999 MHz (Cellular Blocked)
Frequency Range (B):	**RX:**	108 - 137 MHz, 137 - 174 MHz, 174 - 222 MHz, 222 - 225 MHz, 222 - 420 MHz, 420 - 470 MHz, 470 - 580 MHz
Frequency Range (A/B):	**TX:**	144 - 148 MHz, 430 - 450 MHz
Channel Steps:		5, 8.33, 9, 10, 12.5, 15, 20, 25, 50, 100 kHz
Mode of Emission:		F1D, F2D, F3E, F7W
Antenna Impedance:		50 Ω, unbalanced
Frequency Stability:		±2.5 ppm (−10 °C to +50 °C)
Operating Temperature Range:		−20 °C to +60 °C
Supply Voltage:		7.4 V DC (Rated), 4 - 9 V DC (Battery terminal Input), 10 - 16 V DC (EXT DC Input)
Current Consumption (Approx.):	**RX:**	250 mA (Analog / Mono Band) 300 mA (Digital / Mono Band)
	TX:	1.6 A (144 MHz / Analog) 1.7 A (144 MHz / Digital) 2.0 A (430 MHz / Analog) 2.1 A (430 MHz / Digital)
Case Size (W × H × D):		62 × 110 × 32.5 mm (w/o knobs & antenna)
Weight (Approx.):		310 g (with Battery & Antenna)

Specifications

• Transmitter

Output Power:	5 W (144 / 430 MHz), 2.5 W (144 / 430MHz) 1.0 W (144 / 430 MHz), 50 mW (144 / 430MHz)
Modulation Type:	Variable Reactance
Maximum Deviation:	±5 kHz
Spurious Radiation:	better than −60 dB
Microphone Impedance:	2 k ohm

• Receiver

Circuit Type:	Double-conversion super heterodyne (N-FM / AM)	
Intermediate Frequency:	1st: A- Band 47.25 MHz (N-FM / AM) 1st: B- Band 46.35 MHz (N-FM / AM) 2nd: 450 kHz (N-FM / AM)	
Sensitivity (for 12dB SINAD):	0.5 - 1.8 MHz: 3.00 μV	(S/N 10 dB)
	1.8 - 30 MHz: 3.00 μV	(S/N 10 dB)
	30 - 50 MHz: 0.50 μV	(12 dB SINAD)
	50 - 54 MHz: 0.18 μV	(12 dB SINAD)
	54 - 76 MHz: 1.00 μV	(12 dB SINAD)
	76 - 108 MHz: 1.00 μV	(12 dB SINAD)
	108 - 137 MHz: 1.50 μV	(S/N 10 dB)
	137 - 174 MHz: 0.18 μV	(12 dB SINAD)
	174 - 225 MHz: 1.00 μV	(12 dB SINAD)
	222 - 225 MHz: 0.50 μV	(12 dB SINAD)
	300 - 350 MHz: 0.50 μV	(12 dB SINAD)
	350 - 420 MHz: 0.20 μV	(12 dB SINAD)
	420 - 470 MHz: 0.18 μV	(12 dB SINAD)
	470 - 580 MHz: 0.35 μV	(12 dB SINAD)
	580 - 800 MHz: 3.00 μV	(12 dB SINAD)
	800 - 999 MHz: 1.00 μV	(12 dB SINAD)
		(USA Version Cellular Blocked)
Selectivity (−6dB/−60dB):	15 kHz / 35 kHz (N-FM/AM)	
Maximum AF Output:	200 mW @ 7.4V, 10% THD	
AF Output Impedance:	8 ohm	

Specifications are subject to change without notice, and are guaranteed within the 144/222 (USA version)/430 MHz amateur bands only.

1. Changes or modifications to this device 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.

Part 15.21: Changes or modifications to this device not expressly approved by YAESU MUSEN could void the user's authorization to operate this device.

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.

Application for FCC / IC
FCC ID: K6620605X20
IC: 511B-20605X20

YAESU
The radio

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YAESU MUSEN CO., LTD.
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.