ICOM

Icom Inc.

ADVANCED MANUAL

HF/50 MHz TRANSCEIVER
IC-7610

Instructions for advanced operations and additional details are described in this manual.
See the Basic manual for the basic operations, especially for new users.

Icom Inc.

Table of contents

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Functions and features of Adobe® Acrobat® Reader®

The following functions and features can be used with Adobe® Acrobat® Reader®.

• Keyword search

Click "Find" (Ctrl+F)
or "Advanced Search"
(Shift+Ctrl+F) in the Edit menu to
open the search screen.
This is convenient when
searching for a particular word or
phrase in this manual.
*The menu screen may differ,
depending on the Adobe® Acrobat®
Reader® version.
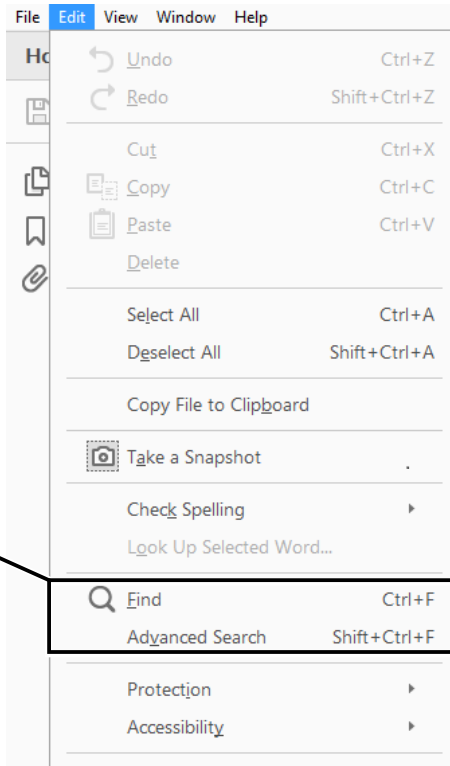
Click to open the find or search
screen or advanced search screen.

| File | Edit | View | Window | Help |

	↶	Undo		Ctrl+Z
	↷	Redo		Shift+Ctrl+Z
		Cut		Ctrl+X
		Copy		Ctrl+C
		Paste		Ctrl+V
		Delete		
		Select All		Ctrl+A
		Deselect All		Shift+Ctrl+A
		Copy File to Clipboard		
	🄾	Take a Snapshot		.
		Check Spelling		▸
		Look Up Selected Word...		
	🔍	Find		Ctrl+F
		Advanced Search		Shift+Ctrl+F
		Protection		▸
		Accessibility		▸

• Find screen

Find   ✕

[▾]

| Previous | Next |

• Advanced search screen

Search   — ☐ ✕

[Arrange Windows]

Where would you like to search?
◉ In the current document
◯ All PDF Documents in
   📁 My Documents   ▾

What word or phrase would you like to search for?
[   ]

☐ Whole words only
☐ Case-Sensitive
☐ Include Bookmarks
☐ Include Comments

[Search]

• Printing out the desired pages.

Click "Print" in File menu, and then select the paper
size and page numbers you want to print.
*The printing setup may differ, depending on the
printer. Refer to your printer's instruction manual
for details.
*Select "A4" size to print out the page in the
equalized size.

| File | Edit | View | Window | Help |

📂	Open...	Ctrl+O
	Create PDF Online...	
🖫	Save	Ctrl+S
	Save As...	Shift+Ctrl+S
	Save as Other	▸
	Send File	▸
	Revert	
	Close	Ctrl+W
	Properties...	Ctrl+D
🖨	Print...	Ctrl+P
	1	
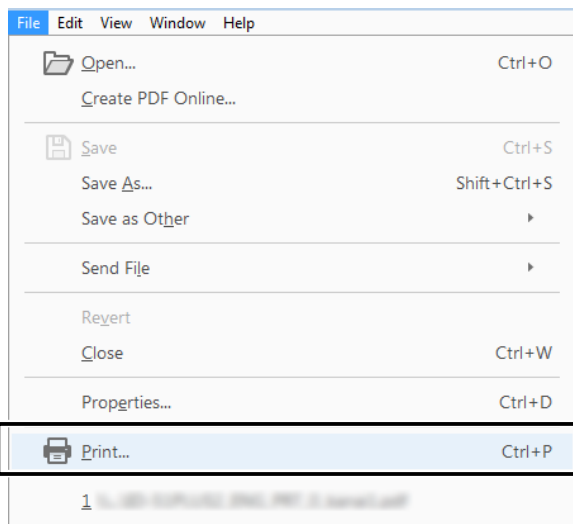
• Read Out Loud feature.

The Read Out Loud feature reads aloud the text in
this Instruction Manual.
Refer to the Adobe® Acrobat® Reader® Help for the
details.
(This feature may not be usable, depending on your
PC environment including the operating system.)

Rotate View	▸
Page Navigation	▸
Page Display	▸
Zoom	▸
Tools	▸
Show/Hide	▸
Display Theme	▸
🔳 Read Mode	Ctrl+H
🖥 Full Screen Mode	Ctrl+L
🗎 Tracker...	
Read Out Loud	▸
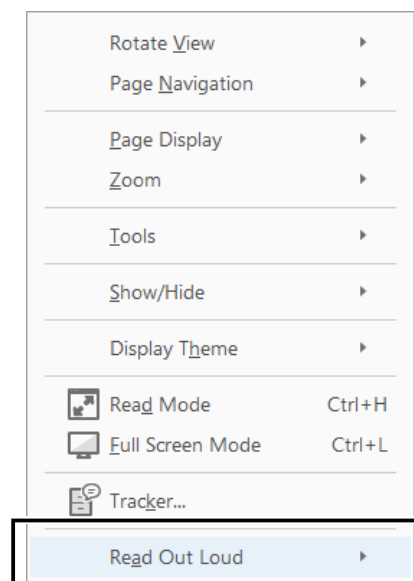
*The screen may differ, depending on the Adobe® Acrobat®
Reader® version.

1. ADVANCED CONNECTIONS

137 kHz band operation (European version only)

You can also operate between 135.7 kHz to 137.8 kHz in the CW mode.
The RF signal from [X-VERTER] is used for this operation.

ⓘThe output of [X-VERTER] is –20 dBm so an up to 1 W linear amplifier may be required.
ⓘSee the connection illustration to the right.

• Be sure to turn OFF the transceiver and the amplifier when connecting them.
• To enable the [X-VERTER] connector, set the "Transverter Function" item to ON, or connect a DC voltage to [ACC 2 (6: TRV)] (★1).

MENU » SET > Function > **Transverter Function**

• Set the offset frequency in the "Transverter Offset" item to "0.000 MHz" to match the transceiver's operating frequency with the transmitting frequency.

MENU » SET > Function > **Transverter Offset**

• The antenna cannot be selected, and the internal antenna tuner cannot be used while the Transverter function is turned ON.
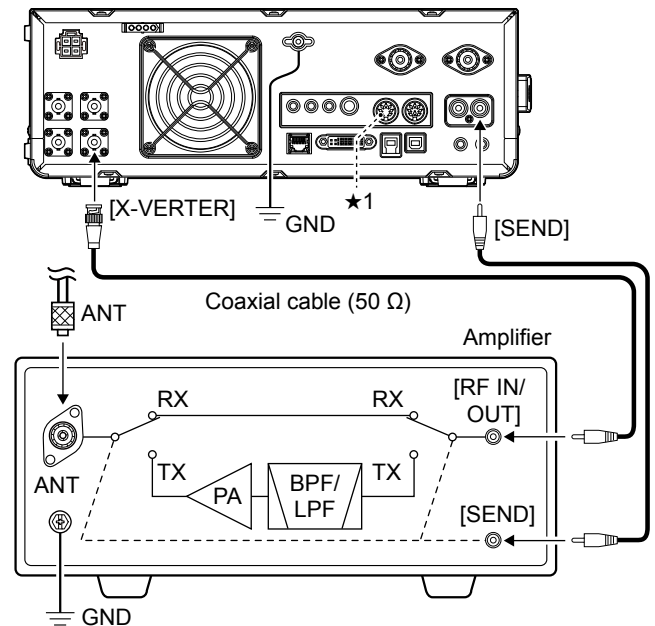
Connecting the RC-28

The optional RC-28 REMOTE ENCODER can be used as a sub dial.

NOTE:
• See the RC-28's manual to use the RC-28 with the RS-BA1 IP REMOTE CONTROL SOFTWARE.
• Using the RC-28 with other than the USB cable supplied with the RC-28, or connecting it through a USB hub, is not guaranteed by Icom.

To a USB port   RC-28

USB cable
(supplied with the RC-28)

◇ Using the RC-28

[TRANSMIT] LED
Lights while transmitting.

[LINK] LED
Lights while the RC-28 is connected to the transceiver.

Main dial
Changes the Sub band's operating frequency (default).

[F-1]/[F-2] LEDs*
[F1] lights when operating the Main band, and [F-2] lights when operating the Sub band.

[F-1]/[F-2] buttons*
Selects the Main band or Sub band to operate with the Main dial.

[TRANSMIT] button
Push to switch between transmit and receive.

* The [F-1] and [F-2] buttons or keys are disabled when "USB Dial Select" is set to "SUB Only."

ⓘSetting the "USB Dial Select" to "MAIN/SUB" enables you to operate both the Main band and the Sub band, using the RC-28.

MENU » SET > Connectors > USB DIAL >
USB DIAL SELECT

FSK, AFSK, PSK connections

You can use a PC and an application software to operate SSTV, RTTY, AFSK, PSK31, JT65, or FT8 using a USB cable. However, if you want to operate AFSK or other digital modes, you can use the ACC socket on the rear panel through an interface unit. See the interface circuit diagram below for details.
Refer to the software application's instruction manual for setup details.
ⓘThe transceiver has a mode keys for RTTY and PSK.
ⓘIcom does not guarantee performance of the application software, PC, network device or network settings.

When using the USB port

To a USB port

PC

Type A

A/B USB cable (user supplied)

To the [USB 1] port

Type B
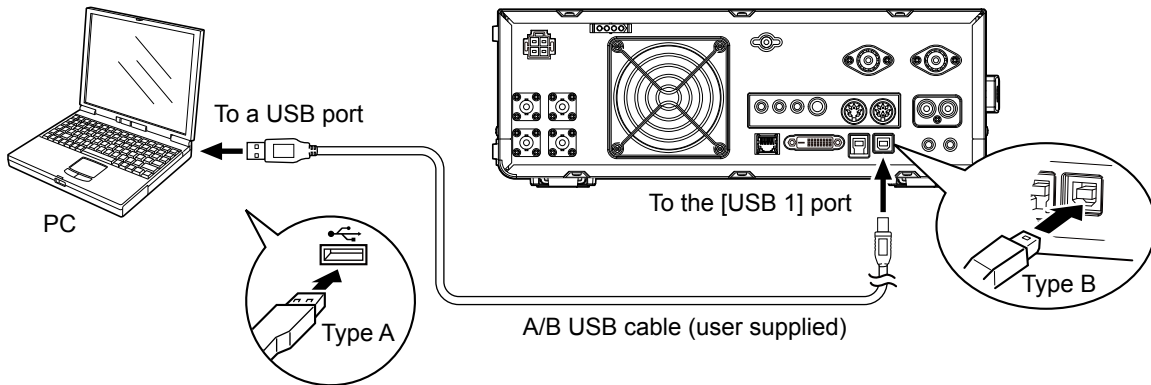
TIP:
• When operating RTTY, set a USB condition on the "USB keying (RTTY)" setting.
  [MENU] » SET > Connectors > USB SEND/Keying > **USB Keying (RTTY)**

• Download the USB driver and the installation guide from the Icom website.
  https://www.icomjapan.com/support/

When using the ACC socket or the microphone connector

Interface circuit example for digital modes (User supplied)

• Connecting to [ACC 1]

(Rear panel)

• Connecting to [MIC]

(Front panel)
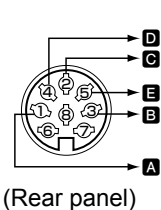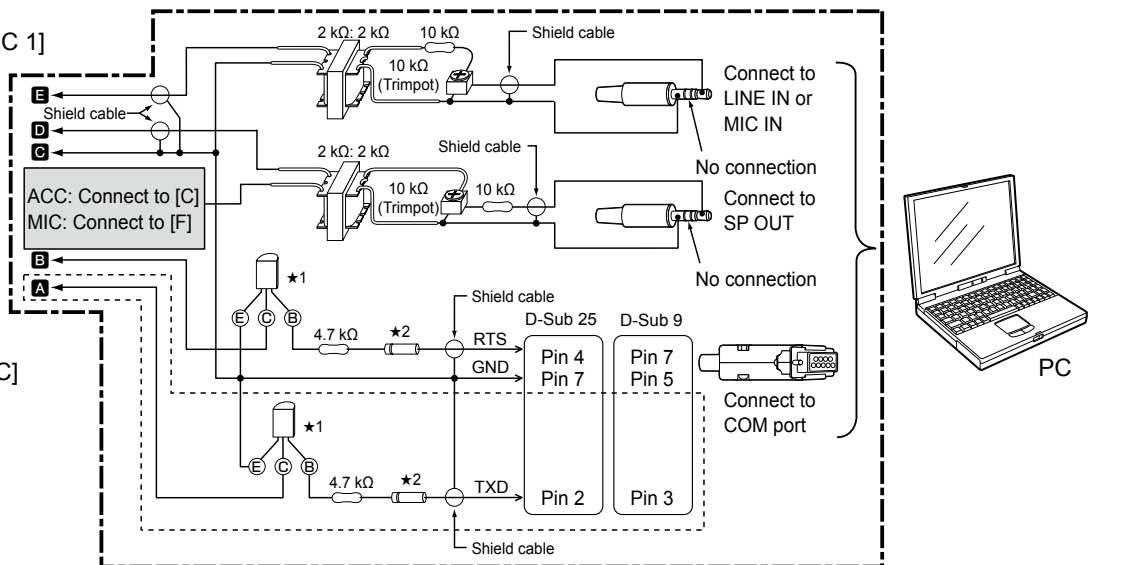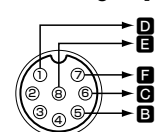
NOTE: You cannot operate FSK RTTY when you connect the circuit to the microphone connector.

★1: NPN transistor (2SC1815) ★2: Switching diode (1S1588)

The sections shown in short dashes are required only when Baudot RTTY is used in the FSK (RTTY) mode.
(Not required for other digital modes such as SSTV or PSK)

ⓘSee pages 13-2 to 13-3 in the *Basic Manual* for details on the ACC 1 socket and MIC connectors.

Connecting the AH-740

The optional AH-740 covers the 2.5 to 30 MHz range with a supplied whip antenna. Or when using with the optional NVIS kit, it covers the 2.2 to 30 MHz range.
ⓘSee the AH-740 instruction manual for installation and connection details.

[TUNER]

GND

[ANT 1]
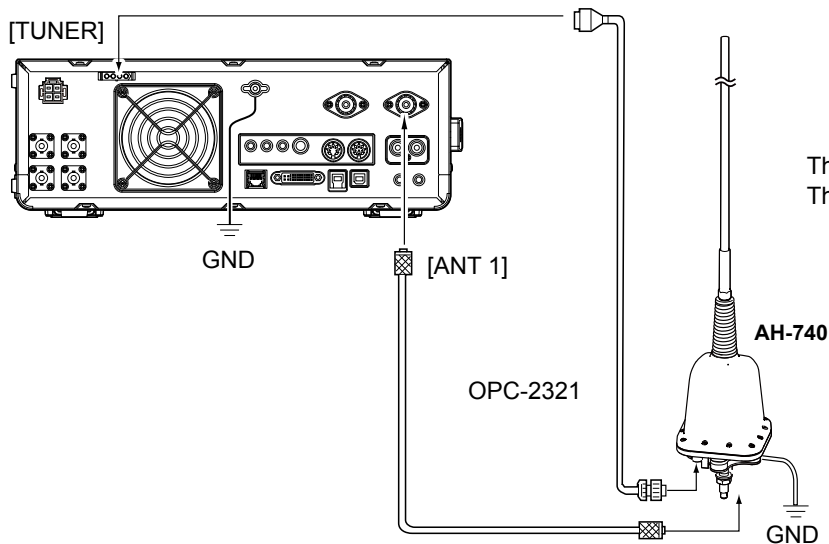
OPC-2321

AH-740

The coaxial cable is supplied with the AH-740.
The OPC-2321 Control cable is an option.

GND

Coaxial cable and control cable connections

OPC-2321

Rubber vulcanizing tape, then electrical tape.

Coaxial cable
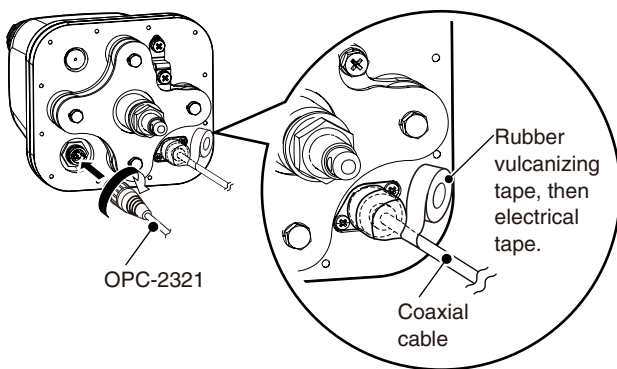
About the ground strap connection

Ground strap

Vehicle chassis or body

4
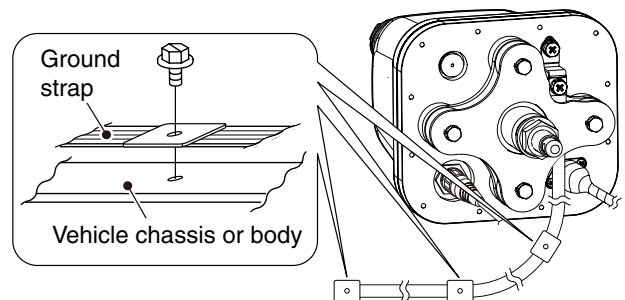
2. ADVANCED OPERATIONS

Band Edge Beep

You will hear a Band Edge Beep and **TX** ("TX" with a border of short dashes) will be displayed when you tune into or out of an amateur band's frequency range.

◇ **Entering Band Beep Edges**

When the "Band Edge Beep" item is set to "ON (User)" or "ON (User) & TX Limit," you can enter a total of 30 band beep edge frequencies.

NOTE:
• Initially, all band edges are entered. Therefore, you must first edit or delete them to enter a new band edge.
• You cannot enter an overlapped frequency or a frequency that is out of the preset transmit frequency band.

1. Open the "Band Edge Beep" screen.
   MENU » SET > Function > **Band Edge Beep**

2. Select "ON (User)" or "ON (User) & TX Limit."
   ⓘ If you select "ON (User) & TX Limit," you can limit transmission to within the entered frequency range.

Band Edge Beep	1/1
OFF	▲
ON (Default)	
ON (User)	▼
ON (User) & TX Limit	↩
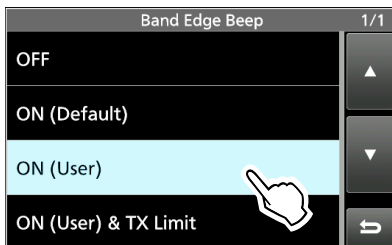
3. Select "User Band Edge."
   • The "User Band Edge" screen is displayed.

FUNCTION	1/7
Beep Level	50%
Beep Level Limit	ON
Beep (Confirmation)	ON
Band Edge Beep	ON (User)
User Band Edge	
Beep Sound (MAIN)	
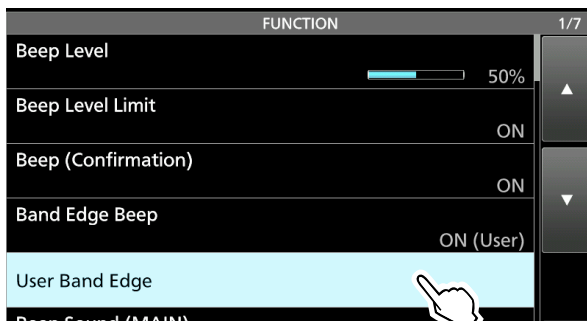
ⓘ You can change the Band Edge Beep settings in the following menu.

   MENU » SET > Function > **Band Edge Beep**

Editing a Band Edge

You can edit a band edge that is entered as a default, or when entering a new band edge.

1. On the FUNCTION set screen, select "User Band Edge."
2. Touch the band edge you want to edit.
   (Example: 7: 14.000.000 – 14.350.000 MHz)

User Band Edge	2/5
7: 14.000.000 - 14.350.000 MHz	▲
8: 18.068.000 - 19.000.000 MHz	
9: 21.000.000 - 21.450.000 MHz	▼
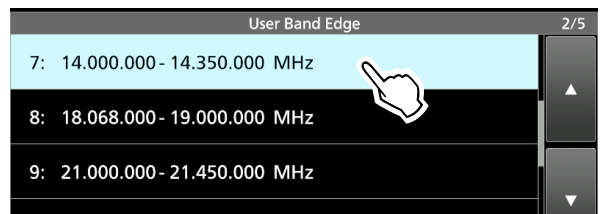
3. Edit the lower band edge frequency.
   (Example: 14.1)

User Band Edge
14.000.000 - 14.350.000 MHz
1	2	3	◀▶
4	5	6
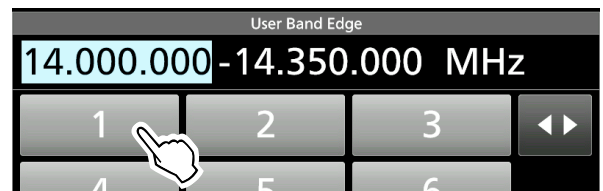
   Entry examples
   • 14.025 MHz: [1], [4], [•], [0], [2], [5], [ENT]
   • 18.0725 MHz: [1], [8], [•], [0], [7], [2], [5], [ENT]
   • 730 kHz: [0], [•], [7], [3], [ENT]
   • 5.100 MHz: [5], [•], [1], [ENT]
   • 7.000 MHz: [7], [ENT]
   • Changing from 21.280 MHz to 21.245 MHz:
                            [•], [2], [4], [5], [ENT]

4. Touch [ENT] to save the edited lower band edge frequency.

User Band Edge
14.   .   1 - 14.350.000 MHz
1	2	3	◀▶
4	5	6	
7	8	9	ENT

(Continued on the next page)

Band Edge Beep (continued)

Editing a Band Edge (Continued)

5. Edit the upper band edge frequency.
   (Example: 14.25)

   ```
   User Band Edge
   14.100.000 - 14.350.000  MHz
     1        2        3     ◄►
   ```
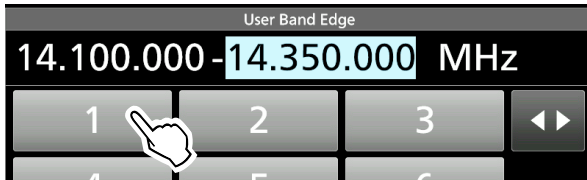
6. Touch [ENT] to save the edited upper band edge frequency.
   ⓘThe edited band edge is saved and returns to the previous screen.

   ```
   User Band Edge
   14.100.000 - 14.   . 25  MHz
     1        2        3     ◄►
     4        5        6
     7        8        9    ENT
   ```

TIP:
- You can also edit the frequency by rotating (MAIN DIAL) or (⊙MULTI).
- Each band edge must be higher in frequency than the ones above it. If you try to enter a lower frequency than the edge above, the lower frequency edge will be cleared when you push [ENT].

Inserting a Band Edge

After you edit the preset band edges, follow the steps below to insert a band edge.

1. Display the "User Band Edge" screen.
2. Touch the band edge you want to insert a new band edge above for 1 second.
   (Example: 1: 3.500.000–3.999.999 MHz)
   ⓘThe new band edge will be inserted above the selected band edge.

   ```
   User Band Edge                    1/5
   1:  3.500.000 - 3.999.999  MHz     ▲
   2:  5.255.000 - 5.405.000  MHz
   3:  7.000.000 - 7.300.000  MHz
   ```

3. Touch "Insert."
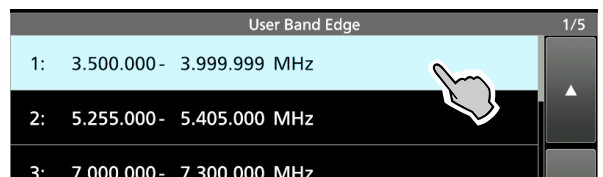
   ```
   QUICK MENU          1/1
   Insert              ▲
   Delete              ▼
   Default             ↩
   ```
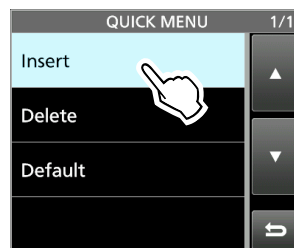
4. Enter the lower and upper band edge frequency.
   (Example: 18.000.000 – 19.999.999 MHz)
   ⓘSee *Editing a Band Edge* on the previous page for details on entering the band edge frequencies.

5. Touch [ENT] to save the entered band edge frequencies.
   - The entered band edge is saved and returns to the previous screen.

   ```
   User Band Edge
   1.850.000 - 1.   . 95  MHz
     1        2        3     ◄►
     4        5        6
     7        8        9    ENT
     ·        0       CE     ↩
   ```

Band Edge Beep (continued)

Entering a new Band Edge

After you edit (or delete) the preset band edges, you can enter a new band edge.

1. Open the "User Band Edge" screen.
2. Select a blank band. (Example: 9)

User Band Edge	2/5
7: 18.068.000 - 19.000.000 MHz	
8: 21.000.000 - 21.450.000 MHz	
9: –	
10: –	
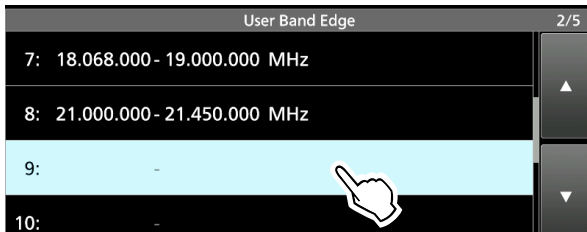
3. Enter the lower and upper band edge frequency. (Example: 51.150.000 – 51.750.000 MHz)

    ⓘ See **Editing a Band Edge** on page 5 for details on entering the band edge frequencies.

4. Touch [ENT] to save the entered band edge frequencies.
    • The entered band edge is saved and returns to the previous screen.

User Band Edge
51.150.000 - 51.   . 75 MHz

1	2	3	◀▶
4	5	6	
7	8	9	ENT
•	0	CE	↩

Deleting a Band Edge

You can delete band edges doing the following steps.

1. On the FUNCTION set screen, select "User Band Edge."
2. Touch the band edge you want to delete for 1 second.
    (Example: 1: 1.800.000 – 1.999.999 MHz)

User Band Edge	1/5
1: 1.800.000 - 1.999.999 MHz	
2: 3.500.000 - 3.999.999 MHz	
3: 5.255.000 - 5.405.000 MHz	
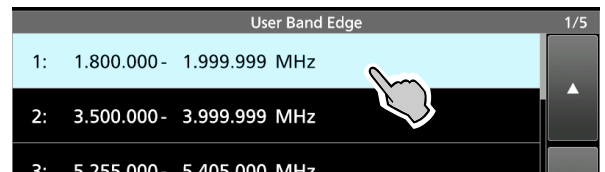
3. Touch "Delete."
    • The selected band edge is deleted and returns to the previous screen.

QUICK MENU	1/1
Insert	▲
Delete	
Default	▼
	↩

▼

User Band Edge	1/5
1: 3.500.000 - 3.999.999 MHz	
2: 5.255.000 - 5.405.000 MHz	
3: 7.000.000 - 7.300.000 MHz	
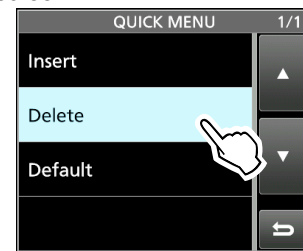
1.800.000 – 1.999.999 MHz is deleted.

Band Edge Beep (continued)

Resetting all band edges to presets

The steps below will reset all the band edges to their initial settings. All entered settings will be deleted.

1. Display the "User Band Edge" screen.
2. Touch any band edge for 1 second.
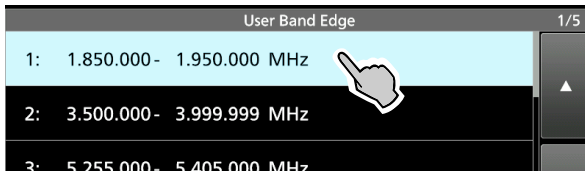
3. Touch "Default."
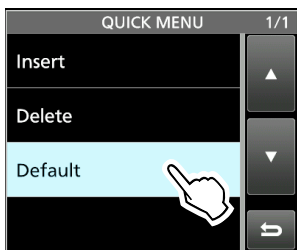
    • Displays "Reset All Edges?"
4. Touch [YES].
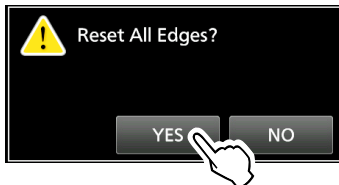
    • All the band edges will be reset to the initial settings.

Adjusting the Drive Gain level

Adjust the transmitter level at the driver stage.
This reduces distortion in the transmitting signal.

ⓘThis function can be used in all modes, except in the SSB with the Speech Compressor OFF.

1. Touch the meter to display the ALC meter.

ALC meter

2. Push **QUICK**.
3. Touch "Drive Gain."
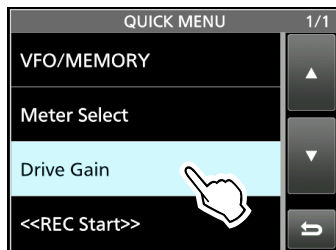
4. Hold down [PTT] (or push **TRANSMIT**).
    • The TX/RX indicator lights red and **TX** is displayed.
5. Rotate **⊙MULTI** to adjust the Drive Gain level.

ⓘAdjust until the meter reading swings between 30 to 50% of the ALC scale, when speaking into the microphone at your normal voice level or keying a CW key.

6. Release [PTT] (or push **TRANSMIT**).
    • Returns to receive.

IP Plus function

The IP Plus function improves the Intermodulation Distortion (IMD) quality by optimizing the direct sampling system performance.

This function optimizes the Analog/Digital Converter (ADC) against distortion when you receive a strong input signal. It also improves the Third-order Intercept Point (IP3) while minimizing the reduction of the receiver sensitivity.

Touch [IP+] on the side menu to turn the IP Plus function ON or OFF.

ON: Prioritizes the IP quality.
OFF: Prioritizes the receive sensitivity.

Tracking function

While in the Dualwatch operation, and when different antennas are set to the Main and Sub bands, using this function enables you to hear which antenna has better reception.

1. Push [MENU] to display the MENU screen.
2. Touch [TRACKING] for 1 second to turn ON the Tracking function.
   • The MAIN/SUB indicator blinks in blue.
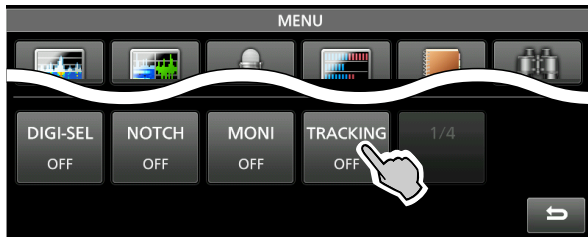
3. Push [MAIN/SUB] to select the operating band (Example: Main band).
   • The MENU screen is closed.
   ⓘThe Sub band's operating frequency and mode are synchronized with the Main band's.
   ⓘWhen using the RC-28, if the offset frequency is set between the Main band and the Sub band, the frequency changes with the offset amount when rotating [MAIN DIAL].

4. Hold down [MAIN/SUB] for 1 second to turn OFF the Tracking function.

The Tracking function will be canceled when:
• Starting a scan.
• Changing the operating band, or directly entering the operating frequency on the Sub band.
• Changing from the Memory mode and the VFO mode, vice versa, and so on.

TIP: Setting the "MAIN/SUB Tacking [MAIN/SUB] Switch" item to ON enables you to turn ON the Tracking function by holding down [MAIN/SUB] for 1 second.

[MENU] » | SET > Function >
        MAIN/SUB Tracking [MAIN/SUB] Switch

VOX function

Mode: SSB, AM and FM

The VOX (Voice-Operated Transmission) function switches between transmit and receive with your voice. This function enables hands-free operation.

◇ Adjusting the VOX function
Before using the VOX function, adjust the following items.
• VOX GAIN
• ANTI VOX
• DELAY
• VOICE DELAY

1. Touch [VOX] for 1 second.
   • Opens the VOX menu.

2. Touch the adjusting item.
   (Example: ANTI VOX)
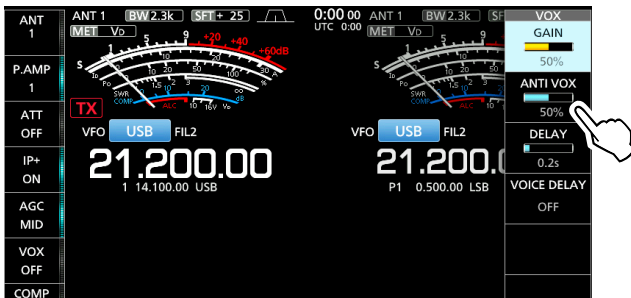
3. Rotate (●MULTI) to adjust the selected item.
   ⓘAdjust to the point where the transceiver does not switch to transmit due to the sound from the speaker or other devices.
   ⓘTouching VOICE DELAY selects "SHORT," "MID," "LONG" or "OFF."

VOX GAIN (Default: 50%)

Adjust the transmit/receive switching threshold level to between 0% and 100% for VOX operation. Higher values make the VOX function more sensitive to your voice.

ANTI VOX (Default: 50%)

Adjust the ANTI VOX level to between 0% and 100% to prevent unwanted VOX activation from the speaker or other sounds. Higher values make the VOX function less sensitive.

DELAY (Default: 0.2s)

Adjust the DELAY to between 0 and 2.0 seconds, for a convenient interval for normal pauses in speech before returning to receive.

VOICE DELAY (Default: OFF)

Set the VOICE DELAY to prevent picking up your voice when switching to transmit.
Select "SHORT," "MID," "LONG" or OFF.

◇ Turning ON the VOX function
1. Set the operating mode to SSB, AM or FM.
2. Touch [VOX] to turn ON the VOX function.
   • "VOX" is displayed while the VOX function is ON.

Displayed
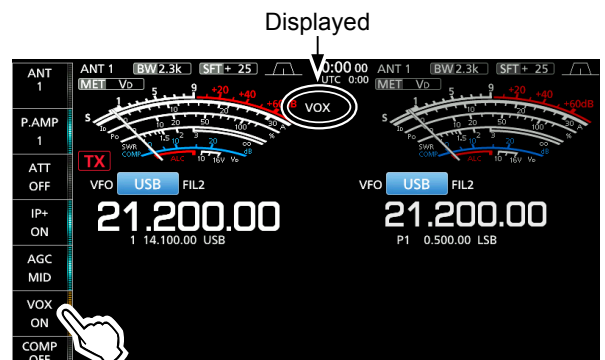
ⓘTouching [VOX] again turns OFF the VOX function.

⊿TX function

The ⊿TX function shifts the transmit frequency up to ±9.99 kHz without shifting the receive frequency.

1. Push ⊿TX.
   • The ⊿TX function turns ON.
   ⓘPushing ⊿TX turns the ⊿TX function ON or OFF.
   ⓘWhile using the Fine Tuning function (See Basic manual section 3), the ⊿TX frequency is displayed in 4 digits, instead of 3.
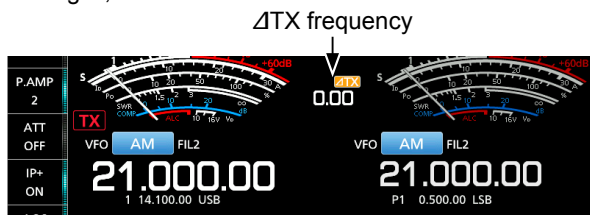
⊿TX frequency

2. Rotate (RIT/⊿TX) to set the ⊿TX frequency to match the receiving station's frequency.
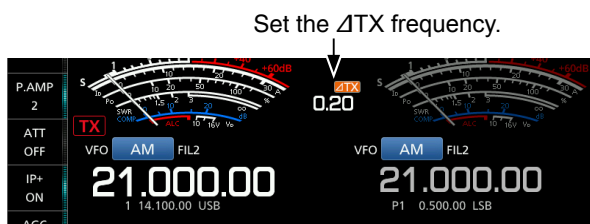
Set the ⊿TX frequency.

   ⓘTo reset the ⊿TX frequency to "0.00," hold down CLEAR for 1 second.
   ⓘYou can add the frequency shift to the operating frequency by holding down ⊿TX for 1 second.
3. To turn OFF the ⊿TX function, push ⊿TX.

◇ ⊿TX monitor function
When the ⊿TX function is ON, you can directly monitor the operating frequency by holding down XFC.
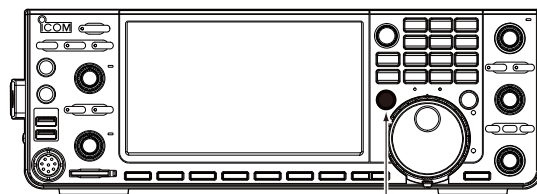
While holding down XFC.

ⓘWhile monitoring, the TX/RX indicator lights green and the Noise Reduction, Notch Filter and Twin PBT settings are cleared.

Operating CW (ADVANCED)

◇ About the CW Reverse mode

The CW-R (CW Reverse) mode reverses the receive Beat Frequency Oscillator (BFO) to receive CW signals.

Use this when interfering signals are near the desired signal and you want to use the CW-R to reduce interference.

CW mode (LSB side)　　CW-R mode (USB side)

| Interference | Desired signal | | Interference | Desired signal |
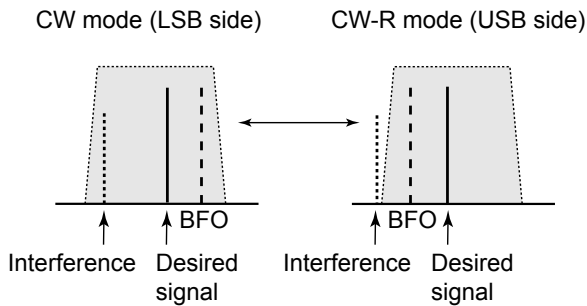
TIP: Reversing the carrier point
The carrier point of the CW mode is LSB by default. You can change it to USB on the FUNCTION screen.

MENU » SET > Function > **CW Normal Side**

ⓘWhen this setting is set to "USB," the CW and CW-R modes are reversed.

◇ Using the Memory Keyer function (KEYER)

You can send preset characters using the Memory Keyer function.

Sending

1. Display the KEYER SEND screen.

   MENU » **KEYER**

   ⓘThe [KEYER] key is displayed only in the CW mode.

2. Push TRANSMIT.
   • The TX/RX indicator lights red.
   ⓘIf you want to automatically switch between transmit and receive, turn ON the Break-in function (See Basic manual section 4).

3. Touch a Memory Keyer key between [M1] and [M8]. (Example: [M1])
   • The touched Memory Keyer is sent.

   Sending contents

   The KEYER SEND screen while sending. (Example: sending M1)

4. To stop sending, touch the Memory Keyer key again.
   ⓘThe Memory contents will be repeatedly sent, according to the setting in "Keyer Repeat Time."

   Repeat icon

   The KEYER SEND screen while repeatedly sending. (Example: sending M1)

Key		Action
M1 ~ M8	Touch	Sends the Memory keyer contents
	Touch for 1 second	🔁 is displayed and repeatedly sends the Memory keyer contents. ⓘYou can change the repeat interval setting in "Keyer Repeat Time" in the CW-KEY SET menu. (See Basic manual section 4)
–1 001		Reduces the contest number counter by 1 (001). ⓘYou can change or reset the number in "Present Number" in the KEYER 001 menu. (See Basic manual section 4)
EDIT/SET		Touch to display the EDIT/SET screen.

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Operating CW (ADVANCED) (Continued)

Count up trigger

The count up trigger enables the serial number to be automatically increased after each complete serial number exchange is sent. (Default: M2)

Count up trigger icon

Present number counter
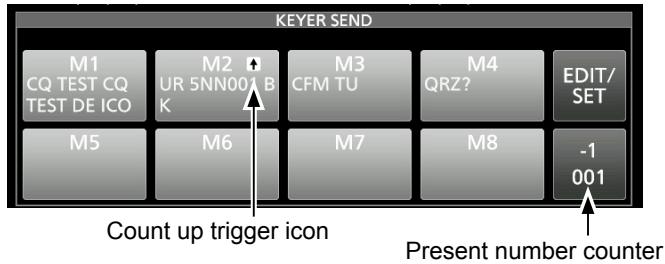
ⓘ 🔼 is displayed on the Memory keyer set to the count up trigger.
ⓘ You can change the count up trigger setting in the KEYER 001 menu. (See Basic manual section 4)

Preset Memory keyer contents

Memory keyer	Contents
M1	CQ TEST CQ TEST DE ICOM ICOM TEST
M2	UR 5NN *001* BK
M3	CFM TU
M4	QRZ?

ⓘ "001" is the CW contest number.
If you want to set the Count up trigger to different keyer, select other keyer in "Keyer memory edit menu (EDIT)" (See Basic manual section 4).

Using a USB keyboard or external keypad
You can send the preset contents without opening the KEYER screen. See Basic manual section 13).

◇ Keyer memory edit menu (EDIT)

Edit the Memory keyer contents in the EDIT menu.
ⓘ You can use up to a total of 8 Memory keyers (M1 to M8), and you can enter up to 70 characters in each memory.

Editing

(Example: Entering "QSL TU DE JA3YUA TEST" to M3)

1. Display the KEYER MEMORY screen in the CW mode.

   MENU » KEYER > EDIT/SET > **EDIT**

2. Touch "CFM TU" for 1 second.

3. Touch "Edit."

4. Touch [CLR] on the Keyer Memory keyboard until the preset contents are cleared.

Operating CW (ADVANCED) (Continued)

◇ Keyer memory edit menu (EDIT) (Continued)

5. Enter "QSL TU DE JA3YUA TEST," and then touch [ENT] to save.
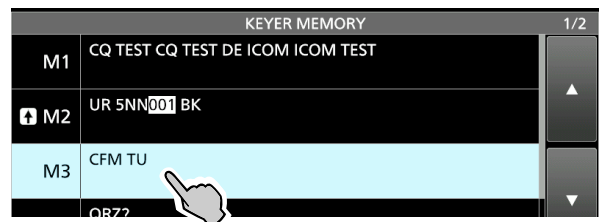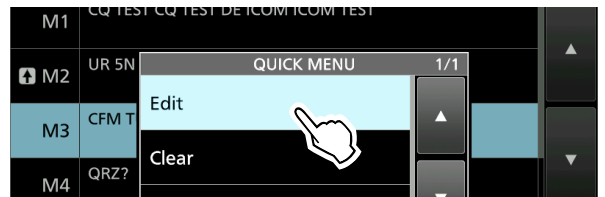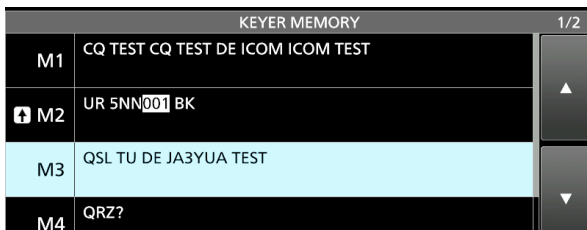

6. To close the KEYER MEMORY screen, push **EXIT** several times.

Selectable characters	
Alphabets	ABCDEFGHIJKLMNOPQRSTUVWXYZ
Symbols	/ ? ^ . , @ *
Numbers	1234567890

About the symbols
• Enter "^" to send a string of characters with no intercharacter space. Put "^" before a text string such as ^AR, and the string "ar" is sent with no space.
• Enter "*" (asterisk) to insert the CW contest number. The number automatically advances by 1. You can use this for only 1 Memory keyer at a time. "*" is used in Memory keyer M2 by default.

◇ Contest number menu (001 SET)

You can set the number style, count up trigger and preset number.

Setting
1. Display the KEYER 001 menu in the CW mode.
   MENU » KEYER > EDIT/SET > **001 SET**

2. Select the setting item.
   (Example: Number Style)
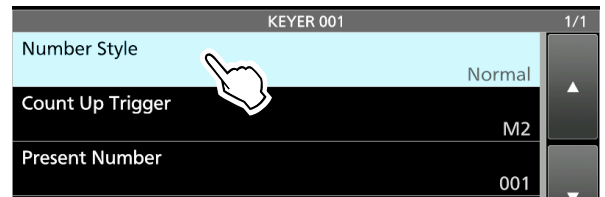
3. Select the setting option.

   • Returns to the KEYER 001 menu.

4. To close the "Number Style" screen, push **EXIT** several times.

Number Style   (Default: Normal)

Set the numbering system used for contest (serial) numbers— normal or short morse numbers.
• Select Normal, 190→ANO, 190→ANT, 90→NO or 90→NT.

Count Up Trigger   (Default: M2)

Select which of the 8 memories will contain the contest serial number exchange.
• Select between M1 ~ M8.

Present Number   (Default: 001)

Set the current number for the Count Up Trigger.
• Set to between 001 ~ 9999.

TIP: How to reset to the default setting
Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

2. ADVANCED OPERATIONS

Operating CW (ADVANCED) (Continued)

◇ Keyer set menu (CW-KEY SET)

In this menu, you can set the memory keyer repeat time, dash weight, paddle specifications, key type, and so on.

Setting example

1. Display the CW-KEY SET menu in the CW mode.

   MENU » KEYER > EDIT/SET > **CW-KEY SET**

2. Select the setting item.
   (Example: Side Tone Level)

3. Adjust the Side Tone Level.
   (Example: 80%)
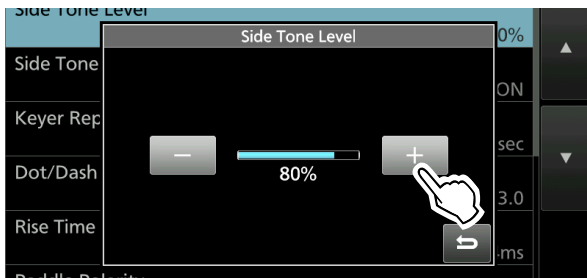
4. To close the CW-KEY SET screen, push EXIT several times.

Side Tone Level (Default: 50%)

Adjust the CW side tone output level.

• Adjust to between 0 ~ 100%.

Side Tone Level Limit (Default: ON)

Turn the CW side tone level limit ON or OFF.
This disables the CW side tone when you rotate AF•RF/SQL (inner) above the side tone level.

Keyer Repeat time (Default: 2sec)

Set the time between Memory keyer transmissions.

• Set to between 1 ~ 60 seconds.

ⓘAfter transmitting a Memory keyer, the transmission is repeated after the set time period.

ⓘ 🔁 is displayed even between transmissions.

Dot/Dash Ratio (Default: 1:1:3.0)

Set the dot/dash ratio.

• Set to between 1:1:2.8 ~ 1:1:4.5 in 0.1 steps.

Keying weight example: Morse code "K"
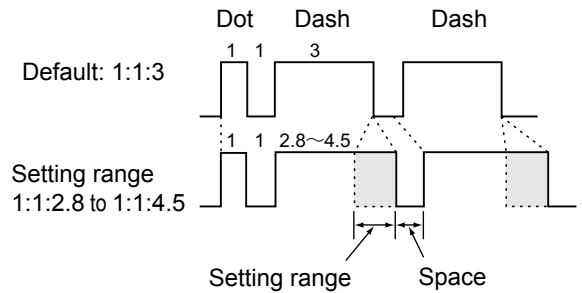
Rise Time (Default: 4ms)

Set the rise time of the transmitted CW envelope.

• Set to 2, 4, 6 or 8 milliseconds.
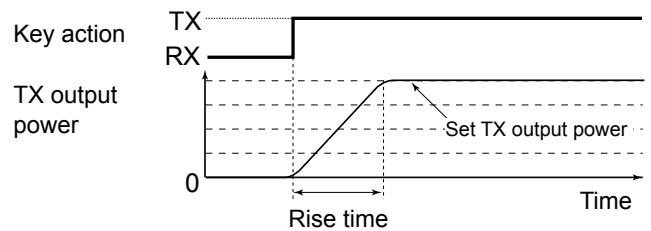
Paddle Polarity (Default: Normal)

Set the paddle dot-dash polarity to Normal or Reverse.

• Normal: Right = dash, Left = dot
• Reverse: Right = dot, Left = dash

Key Type (Default: ELEC-KEY)

Set the key type for the [KEY] connector on the front panel.

• Set to Straight, Bug or Paddle.

MIC Up/Down Keyer (Default: OFF)

Set the microphone [UP]/[DN] keys to use as a CW key.

• ON: Use the [UP]/[DN] keys as a CW key.
• OFF: Do not use the [UP]/[DN] keys as a CW key.

ⓘThe [UP]/[DN] keys do not work as a "squeeze key."
ⓘWhen "ON" is selected, you cannot change the frequency and the Memory channels using the [UP]/[DN] keys.

TIP: How to reset to the default setting
Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

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Operating RTTY (FSK)

The IC-7610 has a built-in RTTY decoder and encoder. Using a USB keyboard and the contents set in the RTTY TX memory, you can do basic RTTY operations without using an external device or software.

ⓘIf you are using PSK software, refer to the software manual.
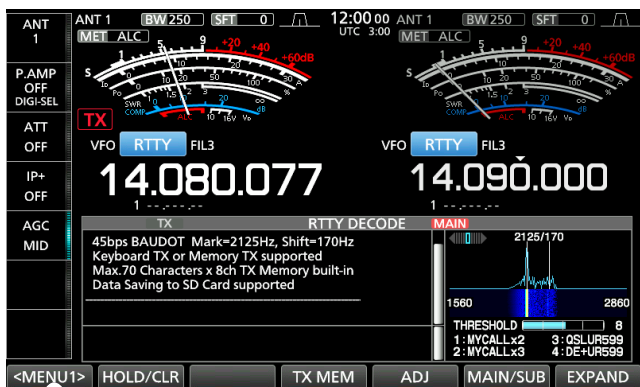
RTTY DECODE screen <MENU1>

RTTY DECODE screen <MENU2>

Key	Action	
<MENU1> <MENU2>	Selects the Function menus.	
HOLD/ CLR	Touch	Turns the Hold function ON or OFF. • "HOLD" is displayed, and the RTTY DECODE screen stops.
	Touch 1 sec.	Clears the displayed characters. • While the Hold function is ON, this clears the characters and cancels the Hold function.
TX MEM	Opens the RTTY MEMORY screen.	
ADJ	Opens the THRESHOLD screen. You can adjust the threshold level. • Checking the RTTY DECODE, rotate (MAIN DIAL) to adjust the threshold level to where the characters are not displayed by noise.	
DEF	Touch 1 sec.	Resets the Threshold level to the default. ⓘThe [DEF] key is displayed when after touching [ADJ].
MAIN/SUB	Changes between the Main or Sub band RTTY DECODE screen.	
EXPAND	Selects the Expanded or Normal screen.	
LOG	Displays the RTTY DECODE LOG screen. • Starts/Stops logging, selects the file type or the time stamp.	
LOG VIEW	Displays the RTTY DECODE LOG VIEW screen. • You can check the saved RTTY log files.	
SET	Displays the RTTY DECODE SET screen.	

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◇ **Displaying the RTTY DECODE screen**

With the built-in demodulator and decoder, received RTTY signals are displayed on the RTTY DECODE screen.

ⓘThe decode screen for the PSK mode differs slightly from that of the RTTY mode.

MENU » **DECODE**

RTTY DECODE screen

Decoded characters

Transmitting

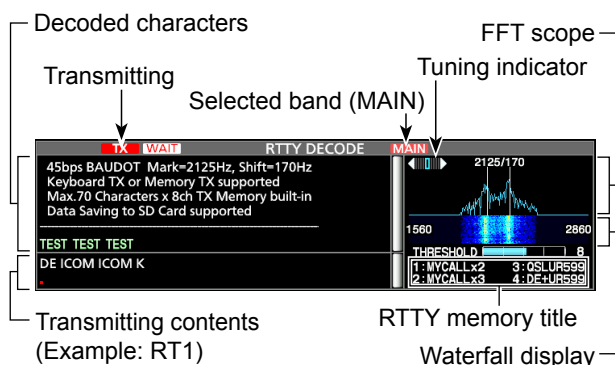Selected band (MAIN)

FFT scope

Tuning indicator

TX WAIT   RTTY DECODE   MAIN
45bps BAUDOT Mark=2125Hz, Shift=170Hz
Keyboard TX or Memory TX supported
Max.70 Characters x 8ch TX Memory built-in
Data Saving to SD Card supported

TEST TEST TEST
DE ICOM ICOM K

2125/170

1560   2860

THRESHOLD   8
1:MYCALLx2   3:QSLUR599
2:MYCALLx3   4:DE+UR599

Transmitting contents
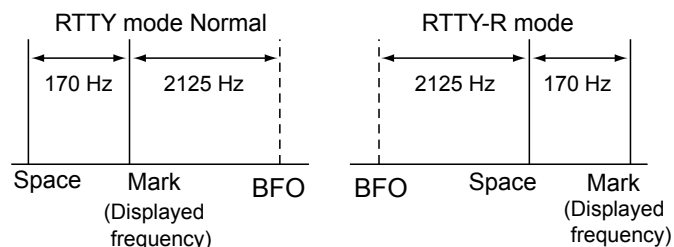(Example: RT1)

RTTY memory title

Waterfall display

NOTE: "WAIT" appears next to the transmitting status indicator on the RTTY DECODE screen while buffering. If this appears, stop typing for a while and try transmitting again.

◇ **RTTY decoding**

Rotate (MAIN DIAL) to tune a signal.

ⓘ**Information**
- Aim for a symmetrical wave form, and be sure the peak points align with the mark (2125 Hz) and shift (170 Hz) frequency lines in the FFT scope.
- Tune to where both "◄" and "►" are displayed in the tuning indicator.
- The S-meter displays the received signal strength, when a signal is received.
- If you are receiving an RTTY signal but cannot decode correctly, try in the RTTY-R (reverse) mode.

RTTY mode Normal   RTTY-R mode

170 Hz | 2125 Hz   2125 Hz | 170 Hz

Space   Mark   BFO   BFO   Space   Mark
       (Displayed   (Displayed
       frequency)   frequency)

TIP: If you cannot receive, change the settings for "RTTY Mark Frequency" and "RTTY Shift Width."

MENU » SET > Function > **RTTY Mark Frequency**

MENU » SET > Function > **RTTY Shift Width**

◇ **Twin Peak Filter (TPF)**

The Twin Peak Filter (TPF) changes the audio frequency response by boosting the mark and space frequencies for better reception of RTTY signals, or for decoding the AF output signal on a PC.

In the RTTY mode, push **APF/TPF**.
- The TPF function is turned ON, and the indicator on the key lights.

ⓘPushing **APF/TPF** turns the Twin Peak Filter function ON or OFF.

APF/TPF
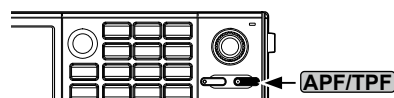
NOTE: When you are using the Twin Peak Filter, the received audio output may increase. This is not a malfunction.

Operating RTTY (FSK) (Continued)

◇ Transmitting an RTTY memory content

You can transmit the preset characters on the RTTY MEMORY screen.

ⓘYou can edit the characters by touching [EDIT] on the RTTY MEMORY screen.

1. Display the RTTY DECODE screen in the RTTY mode.

    MENU » DECODE

    ⓘThe PSK mode screen differs slightly from the RTTY mode.
2. Touch [TX MEM].

3. Touch an RTTY memory between [RT1] and [RT8] to transmit.
   (Example: RT1)

Lights red

▼

Transmitting contents are displayed.

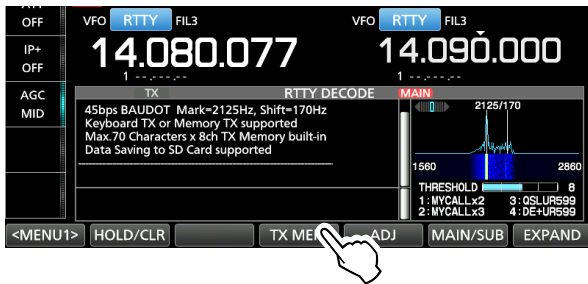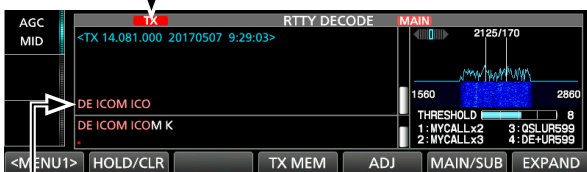- The TX status indicator lights red and the Po meter swings.
ⓘTo cancel the transmission and to return to the RTTY DECODE screen, push EXIT.
ⓘAfter transmitting, automatically returns to receive.

Memory	Title	Preset characters by default
RT1	MYCALLx2	↵ DE ICOM ICOM K ↵
RT2	MYCALLx3	↵ DE ICOM ICOM ICOM K ↵
RT3	QSLUR599	↵ QSL UR 599–599 BK ↵
RT4	DE+UR599	↵ QSL DE ICOM ICOM UR 599-599 BK ↵
RT5	73 GL SK	↵ 73 GL SK ↵
RT6	CQ CQ CQ	↵ CQ CQ CQ DE ICOM ICOM ICOM K ↵
RT7	RIG&ANT	↵ MY TRANSCEIVER IS IC-7610 & ANTENNA IS A 3–ELEMENT TRIBAND YAGI. ↵
RT8	EQUIP.	↵ MY RTTY EQUIPMENT IS INTERNAL FSK UNIT & DEMODULATOR OF THE IC-7610. ↵

When a keyboard is connected:

- You can transmit the preset contents in the RTTY memory (RT1 ~ RT8) by pushing [F1] ~ [F8] on the USB keyboard.
  After transmitting the contents, you can directly enter an RTTY message on the keyboard, and then push [F12] to transmit.
  To return to receive, push [F12] again.

- If the Auto TX/RX function is set to "OFF" or "AUTO RX" (p. 20), you can display the preset contents on the RTTY DECODE screen, and then transmit it by pushing [F12] on the keyboard.

- You can transmit the preset contents in the RTTY memory (RT1 ~ RT8) from an external device by setting the "External Keypad," and then connecting an external keypad to [MIC] or [EXT KEYPAD] on the IC-7610.

    MENU » SET > Connectors > **External Keypad**

Operating RTTY (FSK) (Continued)

◇ Setting the RTTY Automatic TX/RX

You can set to automatically transmit the RTTY memory contents, or to automatically return to receive after transmitting each memory (RT1 ~ RT8).

| Selection	Action
OFF	The selected memory contents are displayed on the RTTY DECODE screen. Push [F12] on the keyboard to transmit the selected memory, and push [F12] again to return to receive.
AUTO TX/RX	Automatically transmits the selected memory and returns to receive.
AUTO TX	Automatically transmits the selected memory, and then returns to receive by pushing [F12] on the keyboard.
AUTO RX	The selected memory contents are displayed on the RTTY DECODE screen. Push [F12] on the keyboard to transmit the selected memory, and then it automatically returns to receive after transmission.

1. Display the RTTY DECODE screen.

   MENU » **DECODE**

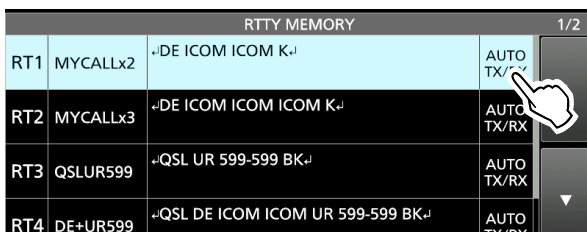   ⓘ The PSK mode screen slightly differs from the RTTY mode.
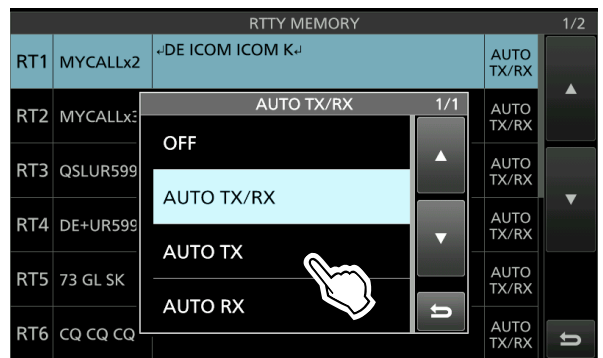
2. Touch [TX MEM].

3. Touch [EDIT].
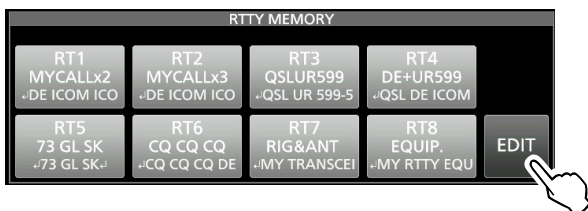
4. Touch the setting memory's option.
   (Example: RT1's AUTO TX/RX)

5. Touch to select an option.
   (Example: AUTO TX)

6. To exit the RTTY DECODE screen, push **EXIT** several times.

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Operating RTTY (FSK) (Continued)

◇ **Editing an RTTY memory**

You can edit the characters in the RTTY memories.
You can save and transmit 8 RTTY memories for
often-used RTTY messages.
Each RTTY memory can contain up to 70 characters.

1. Display the RTTY MEMORY editing screen.
   MENU » DECODE > TX MEM > **EDIT**

2. Touch the memory to edit the content.
   (Example: RT2)

   ⓘ You can also push **QUICK**, and then touch
   "Edit Memory Content."

3. To clear a character, touch [←] or [→] to move the
   cursor, then touch [CLR].

4. Enter the new characters, and then touch [ENT]
   to save.

5. To exit the RTTY DECODE screen, push **EXIT**
   several times.

Operating RTTY (FSK) (Continued)

◇ Turning ON the RTTY log

Turn ON the RTTY log to save your TX and RX RTTY operating record onto an SD card.

ⓘYou can select the data format type in the "Log Set" item on the RTTY DECODE LOG screen.

ⓘThe log is saved even while "HOLD" is ON.

1. Display the RTTY DECODE LOG screen.

   MENU » DECODE > <MENU1> > **LOG**

2. Touch "Decode Log."
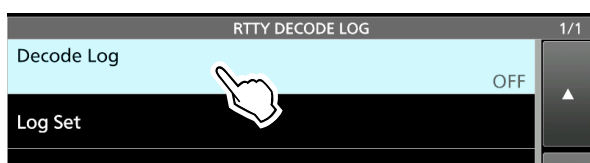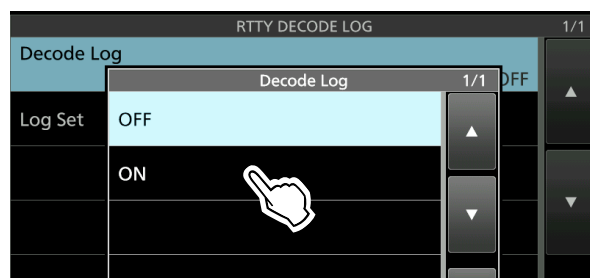
3. Select "ON."

4. Push **EXIT**.
   • "●" is displayed on the RTTY DECODE screen while the RTTY log is ON.

5. To turn OFF the RTTY log, select "OFF" in step 3.

Log Set > **File Type** (Default: Text)

Set the file type to save a log onto an SD card to "Text" or "HTML."

ⓘYou cannot change the file type while logging.

TIP: How to reset to the default setting
Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

Operating RTTY (FSK) (Continued)

◇ Viewing the RTTY log contents

You can view the saved RTTY log contents.

1. Insert the SD card that the RTTY log is saved.
2. Display the RTTY DECODE LOG VIEW screen.

   MENU » DECODE > <MENU1> > **LOG VIEW**

3. Touch the log file to view.
   ⓘThe file with "●" is logging. You cannot view this log's contents.

RTTY DECODE LOG VIEW	1/1
20170926_154427.txt	1KB
20170926_155407.txt	3KB
● 20170926_164124.txt	1KB

   ▼

RTTY DECODE LOG VIEWER	1/8
IC-7610 RTTY Decode	
<RX 14.100.000 2017 15:54:07>	

4. To exit the RTTY DECODE LOG VIEW screen, push **EXIT** several times.

Checking the file information and deleting a file

1. Touch the log file that you want to view or delete for 1 second.
2. Select an item from "File Information," "Delete" and "Delete All."
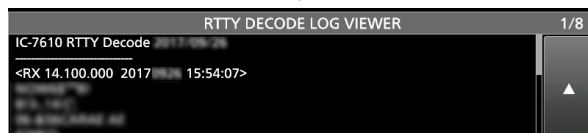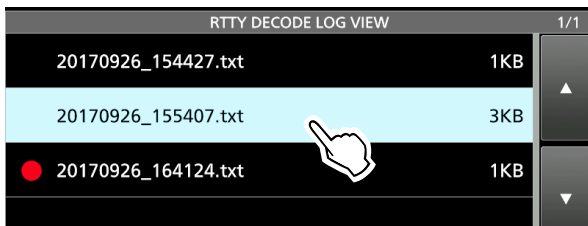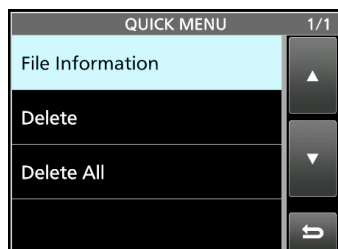   - File Information: Displays the file name, size and logged date.
   - Delete: Deletes the selected log file.
   - Delete All: Deletes all log files.

QUICK MENU	1/1
File Information	
Delete	
Delete All	

◇ RTTY Decode Log set

This mode is for the log file type, time stamp setting, and other RTTY settings.

1. Display the RTTY DECODE SET screen.

   MENU » DECODE > <MENU1> > **SET**

2. Select an item to set.
   (Example: FFT Scope Averaging)

RTTY DECODE SET	1/3
FFT Scope Averaging	OFF
FFT Scope Waveform Color	R: G:153 B:255
Decode USOS	ON
Decode New Line Code	CR,LF,CR+LF
Diddle	

3. Select a setting option.
   (Example: 2)
   ⓘSee the next page for details on the setting items and their options.
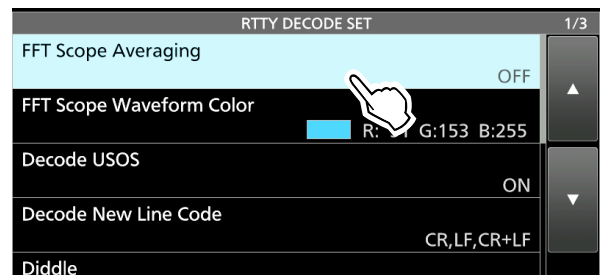
RTTY DECODE SET	1/3
FFT Scope Averaging	
RTTY FFT Scope Averaging	1/1
OFF	
2	
3	
4	
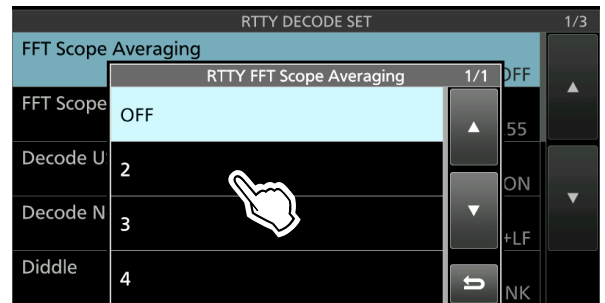
4. To exit the RTTY DECODE SET screen, push **EXIT** several times.

TIP: How to reset to the default setting
Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

Operating RTTY (FSK) (Continued)

◇ RTTY Decode log set (Continued)

FFT Scope Averaging   (Default: OFF)

Set the FFT scope waveform averaging function to
between 2 and 4, or to OFF.
ⓘUse the default or a smaller FFT scope waveform
   number for tuning.

FFT Scope Waveform Color
                          (Default: R: 51, G: 153, B: 255)

Set the color of the FFT scope waveform.
ⓘTouch and select the R (Red), G (Green) or B (Blue)
   scale, and then rotate (⊙MULTI) to adjust the ratio to
   between 0 and 255.
ⓘThe color is displayed in the box above the RGB scale.

Decode USOS   (Default: ON)

Turn the letter code decoding capability ON or OFF
after receiving a "space."
ⓘUSOS stands for UnShift On Space function.

• ON: Decodes as a letter code.
• OFF: Decodes as a character code.

Decode New Line Code   (Default: CR, LF, CR+LF)

Select the internal RTTY decoder new line code.
ⓘCR stands for Carriage Return, and LF stands for Line
   Feed.

• CR,LF,CR+LF: Makes a new line with any codes.
• CR+LF: Makes a new line with only CR+LF code.

Diddle   (Default: BLANK)

Select the diddle status code.
While transmitting in the RTTY mode, the selected
code is transmitted when there is no code to transmit.

• OFF: Turns OFF the Diddle function.
• BLANK: Transmits blank codes.
• LTRS: Transmits letter codes.

TX USOS   (Default: ON)

Explicitly inserts the FIGS character, even though it is
not required by the receiving station.

• ON: Inserts FIGS
• OFF: Does not insert FIGS

Auto CR+LF by TX   (Default: ON)

Selects whether or not to automatically send a new
line code (CR+LF) when transmitting.

• ON: Transmits a CR+LF code.
• OFF: Does not transmit the CR+LF code.

Time Stamp   (Default: ON)

Select whether or not display the time stamp (date,
transmission time and reception time) on the RTTY
DECODE screen and add it in the log.
• OFF: Does not display or add the time stamp.
• ON: Displays and adds the time stamp in the log.

Time Stamp (Time)   (Default: Local)

Select whether or not to display the log on the RTTY
DECODE screen and to save it, with the local time or
with the UTC time when "Time Stamp" is ON.
• Local: Displays and saves in the local time.
• UTC: Displays and saves in the UTC.

Time Stamp (Frequency)   (Default: ON)

Select whether or not to display the frequency
information on the RTTY DECODE screen and to
save it as a log when "Time Stamp" is ON.
• OFF: Does not display or save as a log.
• ON: Displays and saves as a log.

Font Color (Receive) (Default: R: 128, G: 255, B: 128)
Font Color (Transmit) (Default: R: 255, G: 106, B: 106)
Font Color (Time Stamp) (Default: R: 0, G: 155, B: 189)
Font Color (TX Buffer) (Default: R: 255, G: 255, B: 255)

Set the text font color for receive, transmit and time
stamp characters.
ⓘTouch and select the R (Red), G (Green) or B (Blue)
   scale, and then rotate (⊙MULTI) to adjust the ratio to
   between 0 and 255.
ⓘThe color is displayed in the box above the RGB scale.

Operating PSK

A PSK encoder/decoder is built into the IC-7610. You can connect a USB keyboard to the transceiver and operate PSK without a PC.
If you would rather use your PSK software, refer to its manual.

PSK DECODE screen (MENU1)

▼ ▲

PSK DECODE screen (MENU2)

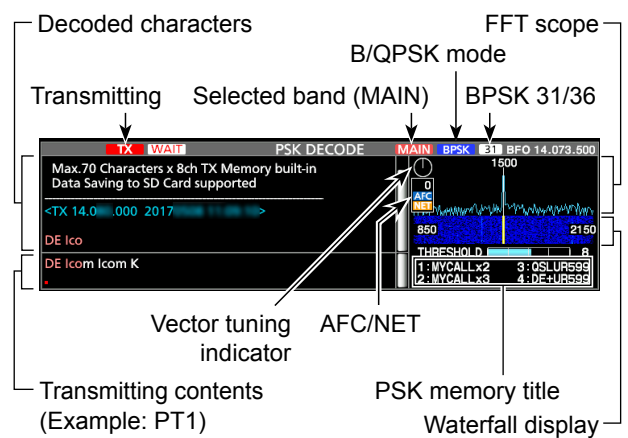| Function	Action	
<MENU1> <MENU2>	Selects the Function menus.	
HOLD/ CLR	Touch	Turns the Hold function ON or OFF. • "HOLD" is displayed and the current screen freezes..
	Touch 1 sec.	Clears the displayed characters.
AFC/NET	Touch	Toggles between AFC (AFC:ON), AFC NET (AFC/NET: ON) or OFF.
	Touch 1 sec.	Adds the offset frequency to the operating frequency.
TX MEM	Displays the PSK MEMORY screen.	
ADJ	Enters the threshold level adjustment mode.	
DEF	Touch 1 sec	Sets the threshold levels to their defaults. ⓘThis key is displayed after touching [ADJ].
MAIN/ SUB	Toggles between the Main and Sub bands.	
B/QPSK	Toggles between the BPSK and QPSK modes.	
31/63	Toggles between the BPSK31 and BPSK63 modes.	
LOG	Displays the PSK DECODE LOG set screen. • Starts/Stops saving a log file, or sets the file type.	
LOG VIEW	Displays the PSK DECODE LOG VIEW screen. • You can view the saved log contents.	
SET	Displays the PSK DECODE SET screen.	

◇ Displaying the PSK DECODE screen

With the built-in demodulator and decoder, received PSK signals are displayed on the PSK DECODE screen.
ⓘThe decode screen for the PSK mode slightly differs from that of the RTTY mode.

MENU » DECODE

PSK DECODE screen

Decoded characters — FFT scope
B/QPSK mode
Transmitting   Selected band (MAIN)   BPSK 31/36
Vector tuning indicator   AFC/NET
Transmitting contents (Example: PT1)   PSK memory title
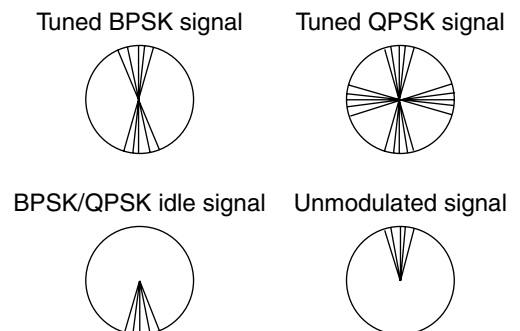Waterfall display

NOTE: "WAIT" appears next to the transmitting status indicator on the PSK DECODE screen while buffering. If this appears, stop typing for a while and try transmitting again.

Vector tuning indicator

The Vector tuning indicator is displayed when tuning PSK signals by rotating MAIN DIAL.

Indication example

Tuned BPSK signal   Tuned QPSK signal

BPSK/QPSK idle signal   Unmodulated signal

Operating PSK (Continued)

◇ PSK decoding

You can fine tune the PSK signal using the Vector tuning indicator and waterfall display.

• When a PSK signal is received, the vertical line appears on the waterfall display.
• Tune the vertical line to the center of the waterfall display.
• The signal is properly tuned when the radiated lines in the vector tuning indicator narrow, as shown on the previous page.

ⓘIf the two or more signals are in the band, slowly rotate (MAIN DIAL) to tune the displayed signal to the 1500 Hz tone.

ⓘYou can change the PSK tone frequency for receiving, in the following item.

MENU » SET > Function > **PSK Tone Frequency**

About the QPSK mode operation

The QPSK (Quadrature Phase Shift Keying) mode has error correction capability to provide better decoding than the BPSK mode in marginal conditions. However, more accurate tuning is required, due to the tight phase margin of QPSK.

ⓘIf the received signal is not properly demodulated, try selecting the PSK-R mode.

• In the QPSK mode, the phase shift direction must be the same on both the transmit and receive sides.
• To receive the reverse direction signal, select the PSK-R mode to match the phase shift direction to the transmit side.
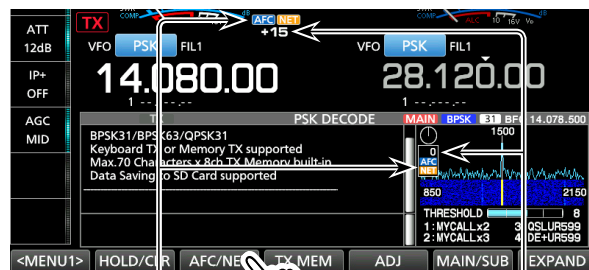
◇ AFC/NET function

The IC-7610 has an AFC (Auto Frequency Control) function which automatically tunes the PSK signal. It also has a NET function that transmits the PSK signal tuned using the AFC function.

1. Display the PSK DECODE screen.

   MENU » **DECODE**

2. Touch [AFC/NET].
   • Touching this key toggles between **AFC** (AFC:ON), **AFC** **NET** (AFC/NET: ON) or OFF (no icon).
   • While the offset between the operating frequency and the PSK signal is displayed, touching [AFC/NET] for 1 second adds the offset frequency to the operating frequency.

AFC, NET icons   Frequency offset
                        (Example: 15 Hz)

NOTE:
• The AFC function may not tune the signal properly when a weak PSK signal is received.
• The AFC tuning range is set to ±15 Hz by default. You can select set to ±8 Hz in the following item.

   MENU » DECODE > <MENU2> > SET >
   AFC Range

Operating PSK (Continued)

◇ Transmitting a PSK memory content

You can transmit the preset characters on the PSK MEMORY screen.

ⓘYou can edit the characters by touching [EDIT] on the PSK MEMORY screen.

1. Display the PSK DECODE screen in the PSK mode.

   MENU » **DECODE**

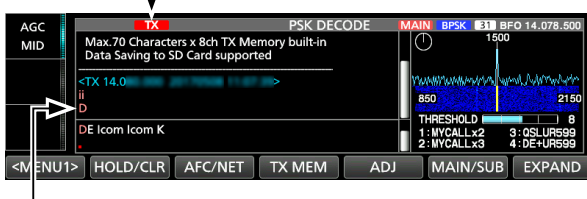   ⓘThe PSK mode screen slightly differs from the RTTY mode.

2. Touch [TX MEM].

3. Touch an PSK memory between [PT1] and [PT8] to transmit.
   (Example: PT1)

   Lights red

   Transmitting contents are displayed.

   • The TX status indicator lights red and the Po meter swings.
   ⓘTo cancel the transmission and to return to the PSK DECODE screen, push **EXIT**.
   ⓘAfter transmitting, automatically returns to receive.

Memory	Title	Preset characters by default
PT1	MYCALLx2	↵DE Icom Icom K↵
PT2	MYCALLx3	↵DE Icom Icom Icom K↵
PT3	QSLUR599	↵QSL UR 599 599 BK↵
PT4	DE+UR599	↵QSL DE Icom Icom UR 599 599 BK↵
PT5	73 GL SK	↵73 GL SK↵
PT6	CQ CQ CQ	↵CQ CQ CQ DE Icom Icom Icom K↵
PT7	RIG&ANT	↵My transceiver is IC-7610 & Antenna is a 3 element triband yagi..↵
PT8	EQUIP.	↵My PSK equipment is internal modulator & demodulator of the IC-7610..↵

When a keyboard is connected:

• You can transmit the preset contents in the PSK memory (PT1 ~ PT8) by pushing [F1] ~ [F8] on the USB keyboard.
After transmitting the preset contents, you can directly enter a PSK message on the keyboard, and then push [F12] to transmit.
To return to receive, push [F12] again.

• If the Auto TX/RX function is set to "OFF" or "AUTO RX" (p. 28), you can display the preset contents on the PSK DECODE screen, and then transmit it by pushing [F12] on the keyboard.

• You can transmit the preset contents in the PSK memory (PT1 ~ PT8) from an external device by setting the "External Keypad," and then connecting an external keypad to [MIC] or [EXT KEYPAD] on the IC-7610.

MENU » SET > Connectors > **External Keypad**

Operating PSK (Continued)

◇ Setting the PSK Automatic TX/RX

You can set to automatically transmit the PSK memory contents or to automatically return to receive after transmitting for each memory (PT1 ~ PT8).

Selection	Action
OFF	The selected memory contents are displayed on the PSK DECODE screen. Push [F12] on the keyboard to transmit the selected memory and push [F12] again to return to receive.
AUTO TX/RX	Automatically transmits the selected memory and returns to receive.
AUTO TX	Automatically transmits the selected memory, and then returns to receive by pushing [F12] on the keyboard.
AUTO RX	The selected memory contents are displayed on the PSK DECODE screen. Push [F12] on the keyboard to transmit the selected memory, and then it automatically returns to receive after transmitting.

1. Display the PSK DECODE screen.

   MENU » DECODE

   ⓘThe PSK mode screen slightly differs from the RTTY mode.
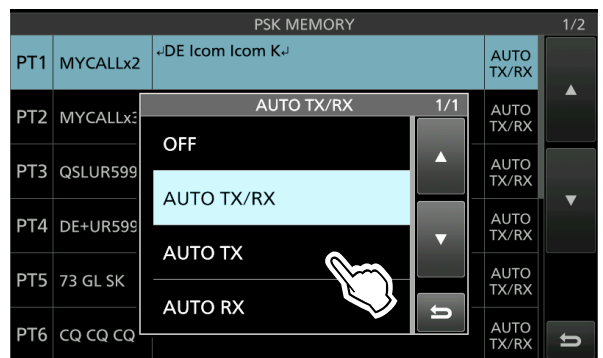
2. Touch [TX MEM].

3. Touch [EDIT].
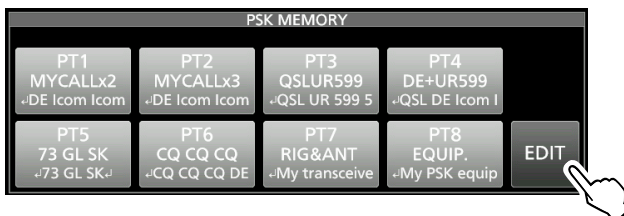
4. Touch the setting memory's option.
   (Example: PT1's AUTO TX/RX)

5. Touch to select an option.
   (Example: AUTO TX)

6. To exit the PSK DECODE screen, push EXIT several times.

Operating PSK (Continued)

◇ Editing a PSK memory

You can edit the characters in the PSK memories. You can save and transmit 8 PSK memories for often-used RTTY messages.
Each PSK memory contains up to 70 characters.
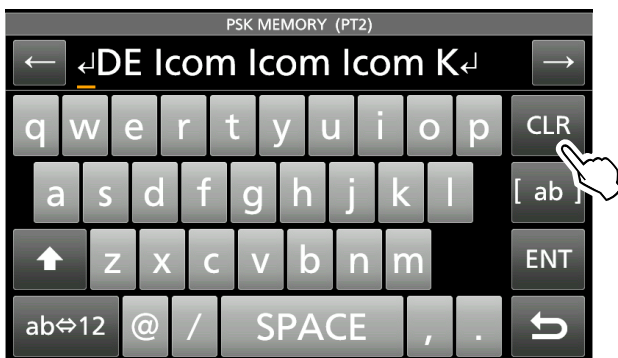
1. Display the PSK MEMORY editing screen.
    MENU » DECODE > TX MEM > **EDIT**

2. Touch the editing memory content.
    (Example: PT2)

PSK MEMORY			1/2
PT1	MYCALLx2	↵DE Icom Icom K↵	AUTO TX/RX
PT2	MYCALLx3	↵DE Icom Icom Icom K↵	AUTO TX/RX
PT3	QSLUR599	↵QSL UR 599 599 BK↵	AUTO TX/RX

    ⓘYou can also push **QUICK**, and then touch "Edit Memory Content."

3. To clear a character, touch [←] or [→] to move the cursor, then touch [CLR].

    ```
    PSK MEMORY  (PT2)
    ←  ↵DE Icom Icom Icom K↵  →
    q w e r t y u i o p   CLR
     a s d f g h j k l    [ ab ]
     ⇧ z x c v b n m      ENT
    ab⇔12 @ /  SPACE  , .  ↩
    ```

4. Enter the new characters, and then touch [ENT] to save.

    ```
    PSK MEMORY  (PT2)
    ←  ↵DE JA3YUA↵  →
    q w e r t y u i o p   CLR
     a s d f g h j k l    [ ab ]
     ⇧ z x c v b n m      ENT
    ab⇔12 @ /  SPACE  , .  ↩
    ```

    ▼

PSK MEMORY			1/2
PT1	MYCALLx2	↵DE Icom Icom K↵	AUTO TX/RX
PT2	MYCALLx3	↵DE JA3YUA↵	AUTO TX/RX
PT3	QSLUR599	↵QSL UR 599 599 BK↵	AUTO TX/RX
PT4	DE+UR599	↵QSL DE Icom Icom UR 599 599 BK↵	AUTO TX/RX
PT5	73 GL SK	↵73 GL SK↵	AUTO TX/RX
PT6	CQ CQ CQ	↵CQ CQ CQ DE Icom Icom Icom K↵	AUTO TX/RX

5. To exit the PSK DECODE screen, push **EXIT** several times.

Operating PSK (Continued)

◊ Turning ON the PSK log

Turn ON the PSK decode log to save your TX and RX PSK operating record onto an SD card.

ⓘYou can select the data format type in the "Log Set" item on the PSK DECODE LOG screen.

ⓘThe log is saved even while "HOLD" is ON.

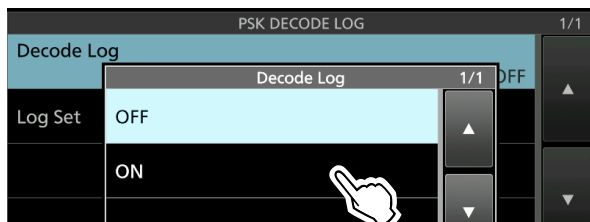1. Display the PSK DECODE LOG screen.

   MENU » DECODE > <MENU2> > **LOG**
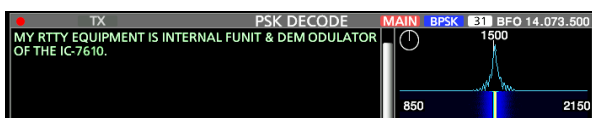
2. Touch "Decode Log."

3. Select "ON."

4. Push **EXIT**.
   • "●" is displayed on the PSK DECODE screen while the PSK log is ON.

5. To turn OFF the PSK log, select "OFF" in step 3.

Log Set > **File Type**   (Default: Text)

Set the file type to save a log onto an SD card to "Text" or "HTML."

ⓘYou cannot change the file type while logging.

> **TIP: How to reset to the default setting**
> Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

Operating PSK (Continued)

◇ Viewing the PSK log contents

You can view the saved PSK log contents.

1. Insert the SD card that the PSK log is saved.
2. Display the PSK DECODE LOG VIEW screen.

   MENU » DECODE > <MENU1> > **LOG VIEW**

3. Touch the log file to view.
   ⓘThe file with "●" is logging. You cannot view this log's contents.

PSK DECODE LOG VIEW	1/1
20170927_112135.txt	1KB
20170927_155810.txt	1KB
● 20170927_161858.txt	1KB

   ▼

PSK DECODE LOG VIEWER	1/1
IC-7610 PSK Decode 2017-05-08	
<RX 14.080.000 2017/05/01 12:02:35> DE Icom Icom K	
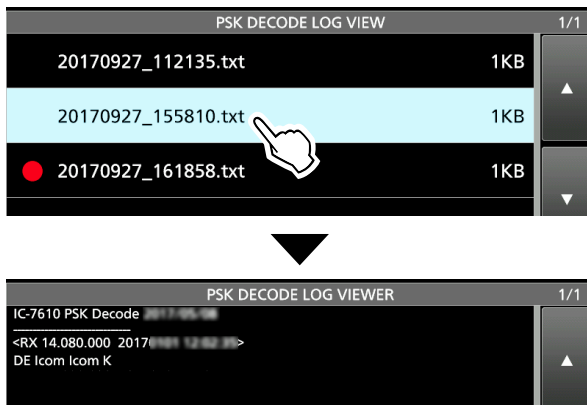
4. To exit the PSK DECODE LOG VIEW screen, push EXIT several times.

Checking the file information and deleting a file

1. Touch the log file that you want to check or delete for 1 second.
2. Select an item from "File Information," "Delete" and "Delete All."
   • File Information: Displays the file name, size and logged date.
   • Delete: Deletes the selected log file.
   • Delete All: Deletes all log files.

QUICK MENU	1/1
File Information	
Delete	
Delete All	
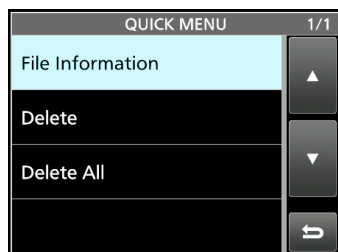
◇ PSK Decode Log set

This mode is for the log file type, time stamp setting, and other PSK settings.

1. Display the PSK DECODE SET screen.

   MENU » DECODE > <MENU1> > **SET**

2. Select an item to set.
   (Example: FFT Scope Averaging)

PSK DECODE SET	1/2
FFT Scope Averaging	OFF
FFT Scope Waveform Color	R: 51 G:153 B:255
AFC Range	±15Hz
Time Stamp	ON
Time Stamp (Time)	

3. Select a setting option.
   (Example: 2)
   ⓘSee the next page for details on the setting items and their options.

PSK DECODE SET	1/2
FFT Scope Averaging	OFF
PSK FFT Scope Averaging	1/1
OFF	
2	
3	
4	
Time Stamp (Frequency)	
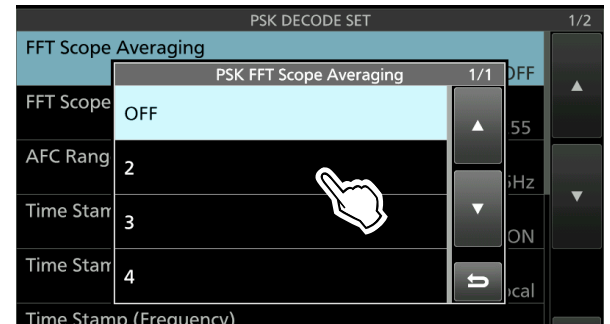
4. To exit the PSK DECODE SET screen, push EXIT several times.

TIP: How to reset to the default setting
Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

Operating PSK (Continued)

◇ PSK Decode log set (Continued)

FFT Scope Averaging   (Default: OFF)

Set the FFT scope waveform averaging function to between 2 and 4, or to OFF.
ⓘUse the default or smaller FFT scope waveform number for tuning.

FFT Scope Waveform Color
                    (Default: R: 51, G: 153, B: 255)

Set the color of the FFT scope waveform.
ⓘTouch and select the R (Red), G (Green) or B (Blue) scale, and then rotate ◉**MULTI** to adjust the ratio to between 0 and 255.
ⓘThe color is displayed in the box above the RGB scale.

AFC Range   (Default: ±15 Hz)

Selects the AFC (Automatic Frequency Control) function's operating range from ±15 Hz and ±8 Hz.
ⓘThe AFC function may not tune the signal properly when a weak PSK signal is received.

Time Stamp   (Default: ON)

Select whether or not display the time stamp (date, transmit and receive time) on the PSK DECODE screen, and add it in the log.
• OFF: Does not display or add the time stamp.
• ON: Displays and adds the time stamp in the log.

Time Stamp (Time)   (Default: Local)

Select whether or not to display the log on the PSK DECODE screen and to save it, with the local time or with the UTC time when "Time Stamp" is ON.
• Local: Displays and saves in the local time.
• UTC: Displays and saves in UTC time.

Time Stamp (Frequency)   (Default: ON)

Select whether or not to display the frequency information on the PSK DECODE screen and to save it as a log when "Time Stamp" is ON.
• OFF: Does not display or save as a log.
• ON: Displays and saves as a log.

Font Color (Receive) (Default: R: 128, G: 255, B: 128)
Font Color (Transmit) (Default: R: 255, G: 106, B: 106)
Font Color (Time Stamp) (Default: R: 0, G: 155, B: 189)
Font Color (TX Buffer) (Default: R: 255, G: 255, B: 255)

Set the text font color for received, transmitting, time stamp characters.
ⓘTouch and select the R (Red), G (Green) or B (Blue) scale, and then rotate ◉**MULTI** to adjust the ratio to between 0 and 255.
ⓘThe color is displayed in the box above the RGB scale.

FM repeater operation

A repeater receives your radio's signals and simultaneously retransmits them on a different frequency to provide a greater communication range. When using a repeater, the transmit frequency shifts from the receive frequency by an offset amount. You can access a repeater using the split function.

1. Set the operating frequency in the FM mode. (Example: 29.650.00 MHz)
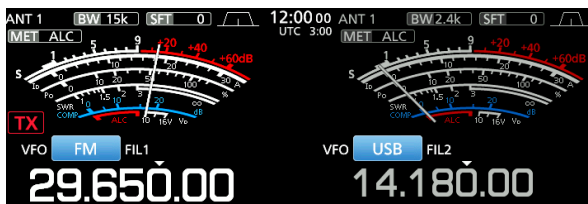
2. Hold down SPLIT for 1 second.
   • Turns ON the Quick Split function.
   • Turns the Tone function ON and "TONE" is displayed.
   • The TX indicator and the repeater's receive frequency are displayed on the Sub band .

Repeater Tone ON   Repeater Tone ON

Split function ON   Repeater's receive frequency
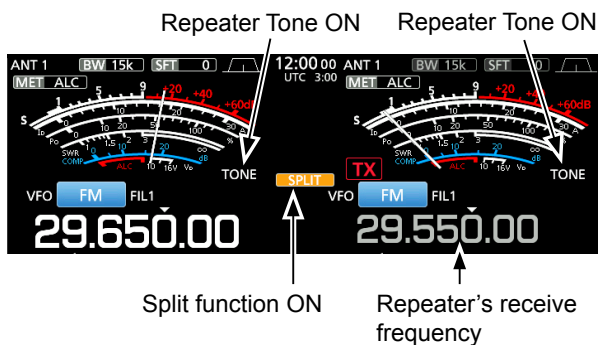
ⓘ You can set the frequency offset for the HF band.

| MENU » | SET > Function > SPLIT > **FM SPLIT Offset (HF)** |

ⓘ You can set the frequency offset for the 50 MHz.

| MENU » | SET > Function > SPLIT > **FM SPLIT Offset (50M)** |

◇ **Setting the repeater tone frequency**
Some repeaters require a subaudible tone in order to be accessed. Subaudible tones are superimposed on your signal, and must be set first.
Do the following steps to set the tone frequency.

1. Select the FM mode.
2. Touch [TONE] for 1 second.
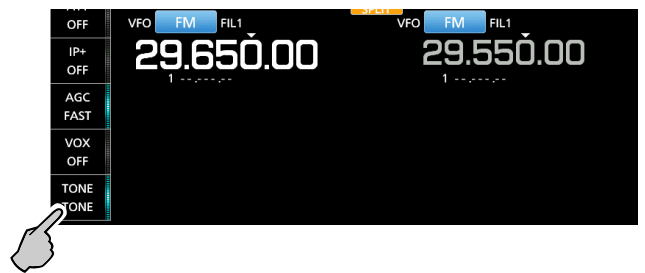
3. Rotate MAIN DIAL to select the subaudible tone frequency.
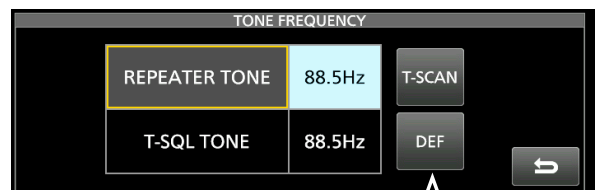
Resets the tone frequency to the default.

• **Selectable tone frequencies**

67.0	88.5	114.8	151.4	177.3	203.5	250.3
69.3	91.5	118.8	156.7	179.9	206.5	254.1
71.9	94.8	123.0	159.8	183.5	210.7	
74.4	97.4	127.3	162.2	186.2	218.1	
77.0	100.0	131.8	165.5	189.9	225.7	
79.7	103.5	136.5	167.9	192.8	229.1	
82.5	107.2	141.3	171.3	196.6	233.6	
85.4	110.9	146.2	173.8	199.5	241.8	

FM repeater operation (Continued)

◇ Setting the repeater tone frequency (Continued)

Checking the repeater tone frequency

You can check the tone frequency by receiving the repeater's input frequency using the tone scan. To receive the input signals, the transceiver detects the subaudible tone frequency using the tone scan function.

1. Touch [T-SCAN].
   • The scan starts, and then stops when a matching tone frequency the same as the repeater is received.
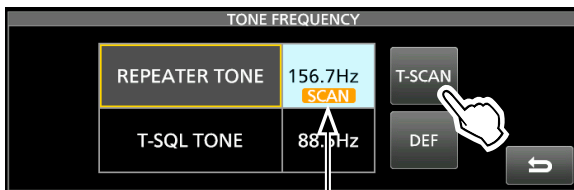
Blinks while scanning

2. To close the TONE FREQUENCY screen, push
   EXIT .

◇ **Checking the repeater input signal**

You can check whether you can directly receive another station's transmit signal or not, by listening to the repeater input frequency.

ⓘWhile receiving, hold down **XFC** to listen the repeater input frequency.
ⓘWhile listening, the TX/RX indicator lights green, and then the Noise Reduction and Notch Filter settings are cancelled.
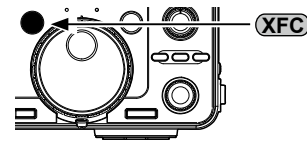
Quick Split function ON

While holding down **XFC** . ▼ ▲ Release **XFC** .
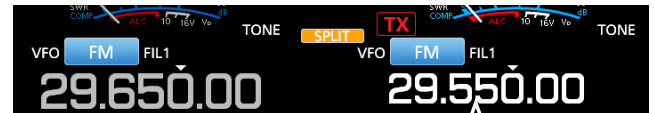
Another station's transmit frequency

Tone squelch operation

The Tone squelch opens only when you receive a signal that includes a matching subaudible tone in the FM mode. You can silently wait for calls from other stations using the same tone.
When you transmit, the tone frequency is superimposed on your own signal.

1. Set the operating frequency in the FM mode.
   (Example: 29.550.00 MHz)
2. Touch [TONE] several times to select "TSQL."
   ⓘ Touching [TONE] changes between "TONE," "TSQL" and "OFF."

3. Touch [TONE] for 1 second.
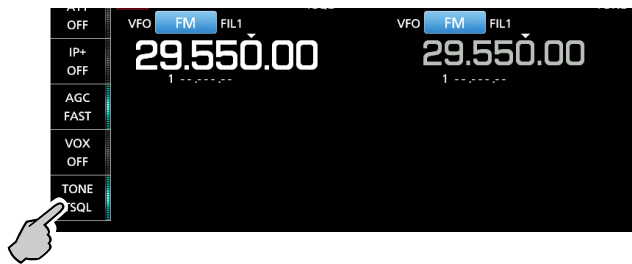
4. Rotate (MAIN DIAL) to select the tone frequency.

Touch for 1 second to reset to the default.

• **Selectable tone frequencies**

67.0	88.5	114.8	151.4	177.3	203.5	250.3
69.3	91.5	118.8	156.7	179.9	206.5	254.1
71.9	94.8	123.0	159.8	183.5	210.7	
74.4	97.4	127.3	162.2	186.2	218.1	
77.0	100.0	131.8	165.5	189.9	225.7	
79.7	103.5	136.5	167.9	192.8	229.1	
82.5	107.2	141.3	171.3	196.6	233.6	
85.4	110.9	146.2	173.8	199.5	241.8	
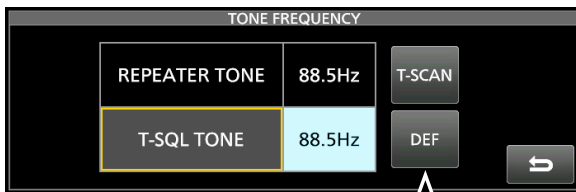
Checking another station's tone frequency

You can check another station's tone frequency by tone scanning while the station is transmitting.

1. Touch [T-SCAN].
   • The scan starts, and then stops when the tone frequency as another station is received.

Blinks while scanning

2. To close the TONE FREQUENCY screen, push [EXIT].

Data mode operation

You can operate in a data mode using AFSK (Audio Frequency Shift Keying).

ⓘWhen operating RTTY in the AFSK mode, PSK31, JT65, or FT8 with a PC application software, refer to the software's instruction manual.

1. Connect a PC or other device to the transceiver.
2. Set the operating band and data operating mode. (Example: 50 MHz band, FM-D1)
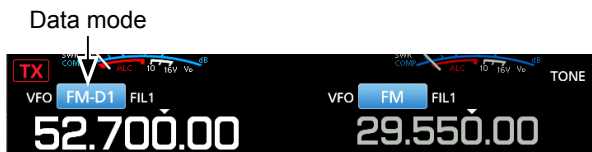
Data mode

3. Refer to your application software manual for setting and communication details.
   ⓘWhen operating in the SSB data mode, adjust the device's output level to be within the ALC zone.

TIP: The carrier point is displayed when operating AFSK in the SSB data mode.
See the illustration below for a tone-pair example in the LSB mode.
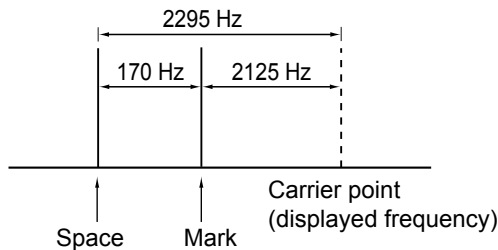
Transverter operation

You can use the Transverter function as an exciter for a transverter.

◇ Transverter setting example
This is an example of operating a 144 MHz band transverter using the IC-7610's 50 MHz band.

1. Connect the 144 MHz band transverter's RF output to [X-VERTER].
2. Set the operating band and mode. (Example: 50 MHz band (MAIN), SSB)
3. Rotate (MAIN DIAL) to set the frequency. (Example: 50.000.00)
4. Turn ON the "Transverter function" in the following item (Example: 94 MHz).

   MENU » SET > Function > **Transverter Function**

5. Set the "Transverter Offset" in the following item.

   MENU » SET > Function > **Transverter Offset**

   • The offset frequency (94.000) set in this item is added to the operating frequency (50.000.00) to operate the 144 MHz band transverter.

   ⓘThe first digit "1" is not displayed. Therefore, 144 MHz is displayed as "44.000.000."

6. Push EXIT several times to close the SET screen.

Displayed while the Transverter function is ON.

144.000.00 MHz   145.000.00 MHz

7. Rotate (MAIN DIAL) to set the frequency.

About the 5 MHz frequency band operation (USA version only)

Operation on the 5 MHz frequency band is allowed on 5 discrete frequencies and you must adhere to the following:

• The USB, USB Data, PSK, and CW modes.
• Maximum of 100 watts ERP (Effective Radiated Power)
• Maximum 2.8 kHz bandwidth

It is your responsibility to set all controls so that transmission in this frequency band meets the stringent conditions under which amateur operations may use these frequencies.

> **TIP:** We recommend that you save these frequencies, modes and filter settings into memory channels, for easy recall.

NOTE: To assist you in operating within the rules specified by the FCC, transmission is illegal on any frequencies other than the five shown in the tables below.

For the USB and USB data modes:

The FCC specifies center frequencies on the 5 MHz frequency band. However, the transceiver displays carrier frequency. Therefore, tune the transceiver to 1.5 kHz below the specified FCC channel center frequency.

Transceiver displayed frequency	FCC channel center frequency
5.33050 MHz	5.33200 MHz
5.34650 MHz	5.34800 MHz
5.35700 MHz	5.35850 MHz
5.37150 MHz	5.37300 MHz
5.40350 MHz	5.40500 MHz

For the CW and PSK modes:

The transceiver displays the center frequency. Therefore, tune the transceiver to the specified FCC channel frequency when you operate in these modes.

Transceiver displayed frequency	FCC channel center frequency
5.33200 MHz	5.33200 MHz
5.34800 MHz	5.34800 MHz
5.35850 MHz	5.35850 MHz
5.37300 MHz	5.37300 MHz
5.40500 MHz	5.40500 MHz

3. ADVANCED SCOPE OPERATION

Spectrum Scope screen

◇ Setting the Center Mode span

Displays signals around the operating frequency within the selected span. The operating frequency is always displayed in the center of the screen.

1. Display the SPECTRUM SCOPE screen.
   MENU » SCOPE

2. Touch [CENT/FIX] to select the Center mode.
   ⓘ Touch [CENT/FIX] to toggle between the Center and Fixed modes.

3. Touch [SPAN] several times until the desired scope span is selected.
   • Selectable span:
     ±2.5, 5.0, 10, 25, 50, 100, 250 and 500 kHz

Example: Setting for ±2.5 kHz span
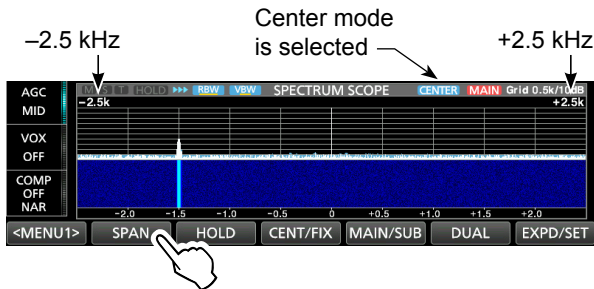
4. To close the SPECTRUM SCOPE screen, push EXIT.

◇ Setting the Fixed Mode range

Displays signals within a specified frequency range. The selected frequency band activity can easily be observed using this mode.
Four Fixed Edge bands can be set for each amateur frequency band covered by the transceiver.

1. Display the SPECTRUM SCOPE screen.
   MENU » SCOPE

2. Touch [CENT/FIX] to select the Fixed mode.
   ⓘ Touch [CENT/FIX] to toggle between the Center and Fixed modes.

3. Touch [EDGE] several times until the desired Fixed Edge frequency band is selected.
   ⓘ The fixed Edge frequencies are settable (p. 44).
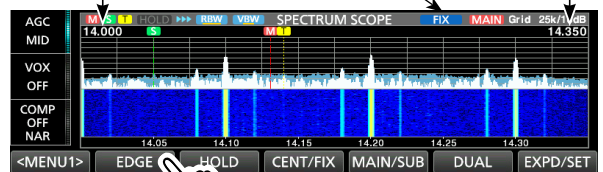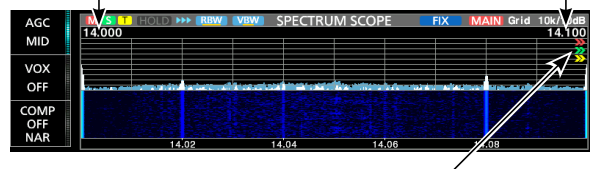
"≫" shows that the receive frequency is out of the fixed Edge frequency.

ⓘ When the operating frequency moves outside the upper or lower Edge frequency, "≪" or "≫" is displayed in the upper side corners of the SPECTRUM SCOPE screen.
   ≪: The frequency is outside the lower edge.
   ≫: The frequency is outside the higher edge.
ⓘ When the frequency moves further away, "Out of Range" is displayed.

4. To close the SPECTRUM SCOPE screen, push EXIT.

Spectrum Scope screen (Continued)

◇ Using the Scroll mode

Displays signals within a selected span. When the operating frequency moves outside of the screen, the displayed frequency range is automatically scrolled.

1. Display the SPECTRUM SCOPE screen.
   MENU » **SCOPE**

2. Touch [CENT/FIX] for 1 second to select the Scroll mode.
   • When changing the Center mode to the Scroll mode, "SCROLL-C" is displayed.
   You can change the scope span by touching [SPAN].
   • When changing the Fixed mode to the Scroll mode, "SCROLL-F" is displayed.
   You can change the Edge frequencies by touching [EDGE].

3. Touch [CENT/FIX] to return to the previous mode.
   • When returning to the Center mode, the scope span does not return to the previous setting.
   • When returning to the Fixed mode, the Edge frequencies return to the last selected "Fixed Edges." If the operating frequency is above the upper Edge frequency, or below the lower Edge frequency, ">>" or "<<" is displayed in the upper side corners of the SPECTRUM SCOPE screen.

Scroll-F mode is selected.*
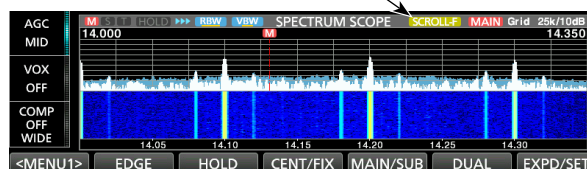
* When in the Scroll-C mode, SCROLL-C is displayed.

Spectrum Scope screen (Continued)

◇ Directly selecting a frequency

By touching or clicking on the FFT scope zone or the waterfall zone on the SPECTRUM SCOPE screen, you can directly tune your frequency on the displayed area of the band.

1. Display the SPECTRUM SCOPE screen.
   MENU » SCOPE

2. Touch the signal spectrum on the FFT scope zone or the waterfall zone or click on a signal. (Example: in the Center mode)

3. **If you touch the FFT scope zone or the waterfall zone**, the touched area is zoomed in.
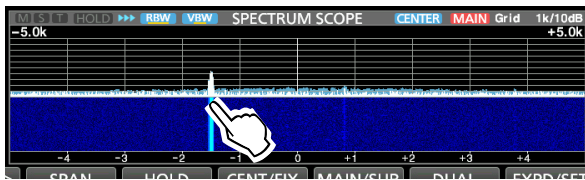
Touch the signal in the zoomed area.
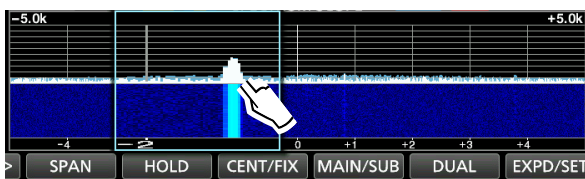
If you click on a signal, your frequency is tuned to the signal frequency.
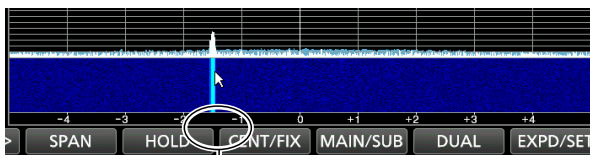
Click on the frequency

▼ Your frequency is tuned to the signal frequency.
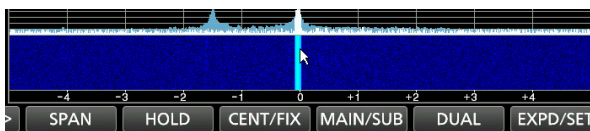
ⓘInformation
- While right-clicking on the screen, the frequency where the cursor is located is displayed.
- By right-clicking and dragging the cursor, the frequency changes. Release to return to the originally selected frequency.
- By clicking and dragging with the cursor, the frequency changes to that where the cursor is released.

4. To exit the SPECTRUM SCOPE screen, push EXIT.

◇ Displaying the Dual Scope screen

The transceiver has a Dual scope mode that simultaneously displays the Main and Sub band scopes during Dualwatch operation.

1. Display the SPECTRUM SCOPE screen.
   MENU » SCOPE

2. Touch [DUAL].
   ⓘTouching [DUAL] toggles between Dual scope and Single scope.
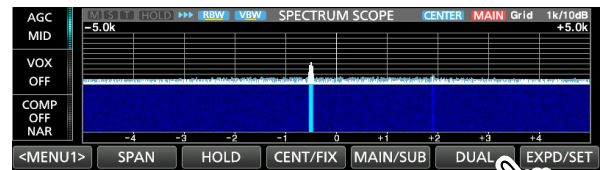
The selected scope is framed in orange.
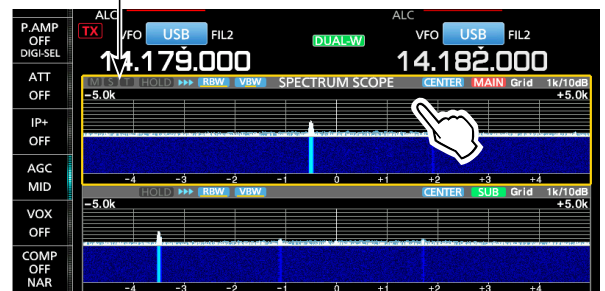
The Sub band scope is selected.
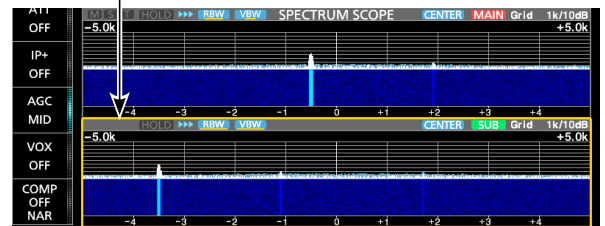
ⓘTouching or clicking the scope that is not framed in orange selects the Main band scope or Sub band scope.
ⓘYou can select the scope display type in the Dual Scope Type item.

MENU » SCOPE > EXPD/SET > **Dual Scope Type**
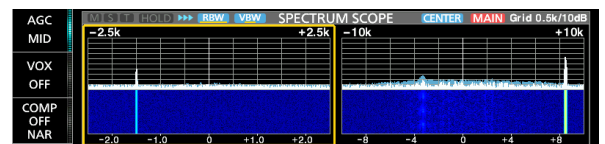
Example: "Side by Side"

ⓘYou can also set the Dual Scope Auto Select item not to change the operating band (Main/Sub) when the frequency is touched or clicked.

MENU » SCOPE > EXPD/SET > **Dual Scope Auto Select**

3. To exit the SPECTRUM SCOPE screen, push EXIT.

Spectrum Scope screen (Continued)

◇ Adjusting the sweep speed

Select the sweep speed to change the FFT scope refresh speed and the waterfall speed.
ⓘTo change only the waterfall speed, select "Slow," "Mid," or "Fast" in the Waterfall Speed.

1. Display the SPECTRUM SCOPE screen.

   MENU » **SCOPE**

2. Touch [<MENU1>] to display Menu 2.
3. Touch [SPEED] several times until the desired sweep speed is selected.
   • Selectable speeds: FAST, MID, or SLOW
   ⓘ"▶▶▶," "▶▶," or "▶" indicates FAST, MID, or SLOW.
   ⓘA popup window is displayed in the center of the SPECTRUM SCOPE screen and displays the selected sweep speed for 1 second.

"▶▶▶," "▶▶," or "▶" is displayed.

Displays the sweep speed.
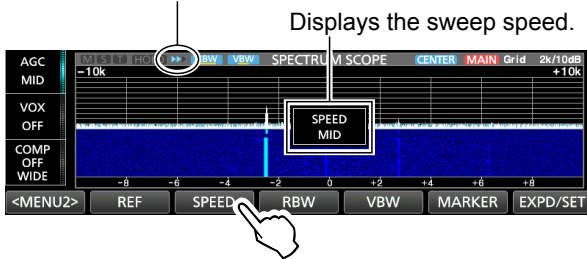
4. To exit the SPECTRUM SCOPE screen, push **EXIT**.

◇ Adjusting the Reference level

When monitoring a weak signal that is buried in the noise floor, or monitoring a strong signal but some stronger signals are nearby, adjusting the Reference level of the screen helps you to see these signals.
• Even if this setting is changed, it does not affect the input signal level.
• When you adjust the Reference level, the signal strength for the waterfall also appears to change.

1. Display the SPECTRUM SCOPE screen.

   MENU » **SCOPE**

2. Touch [<MENU1>] to display the Menu 2.
3. Touch [REF].
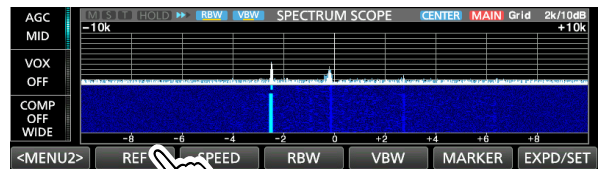
Displayed
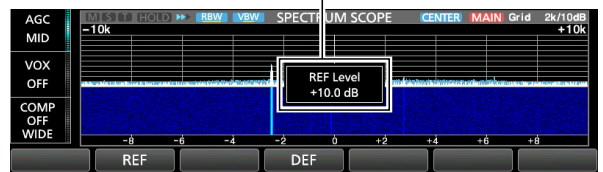
4. Rotate **MAIN DIAL** to adjust the level.
   • Adjustable range: –30.0 dB ~ +10.0 dB
   ⓘYou can reset to ±0.0 dB by touching [DEF].
5. To exit the SPECTRUM SCOPE screen, push **EXIT**.

Difference in the spectrum

Reference level
(+10.0 dB)   (–30.0 dB)

+10.0dB
±0.0dB
–30.0dB
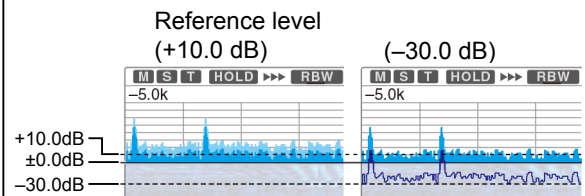
ⓘIf you adjust this setting to a positive level, all signal levels appear stronger.
Or, if you adjust to a negative level, all signal levels appear weaker.

SCOPE SET screen

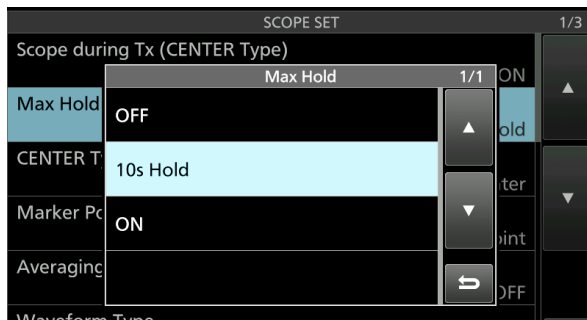This Set screen is used to set the waveform color, Scope range for the Fixed mode, and so on.

1. Display the SPECTRUM SCOPE screen.
   MENU » SCOPE

2. Touch [EXPD/SET] for 1 second.
3. Rotate (MAIN DIAL) to scroll through the items, and then touch the item you want to set.
   (Example: Max Hold)

SCOPE SET	1/3
Scope during Tx (CENTER Type)	ON
Max Hold	10s Hold
CENTER Type Display	Filter Center
Marker Position (FIX Type/SCROLL Type)	Carrier Point
Averaging	
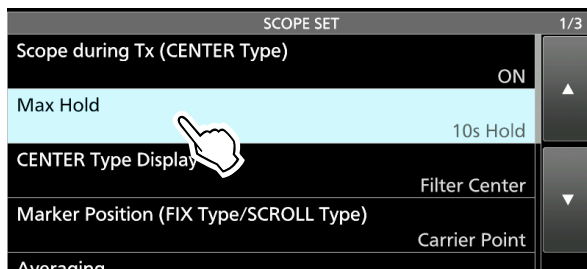
4. Touch an option to set.
   ⓘSee the column to the right for details on the items.

SCOPE SET		1/3
Scope during Tx (CENTER Type)		ON
Max Hold	OFF	old
CENTER T	10s Hold	ter
Marker Po	ON	int
Averaging		FF
Waveform Type		

5. To exit the SCOPE SET screen, push EXIT.

TIP: How to reset to the default setting
Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset the item/option to its default setting.

Scope during Tx (CENTER Type)　　(Default: ON)
Set the TX signal display to ON or OFF.

Max Hold　　(Default: 10s Hold)
Select the peak level holding function.
- OFF: Turns OFF the peak level holding function.
- 10s Hold: Holds the peak spectrum for 10 seconds.
- ON: Continuously holds the peak spectrum.

CENTER Type Display　　(Default: Filter Center)
Select the center frequency of the SPECTRUM SCOPE screen. (Only in the Center mode)
- Filter Center: Displays the selected filter's center frequency in the center of the SPECTRUM SCOPE screen.
- Carrier Point Center:
  Displays the carrier point frequency of the selected operating mode in the center of the SPECTRUM SCOPE screen.
- Carrier Point Center (Abs. Freq.):
  In addition to the carrier point center setting above, the actual frequency is displayed at the bottom of the scope.
  ⓘ Abs. Freq. : Absolute Frequency

Marker Position (FIX Type/SCROLL Type)
　　(Default: Carrier Point)
Select the marker position on the SPECTRUM SCOPE screen. (Only in the Fixed or Scroll mode)
- Filter Center: Displays the Marker on the selected filter's center frequency.
- Carrier Point: Displays the Marker on the carrier point frequency of the selected operating mode.

Averaging　　(Default: OFF)
Set the FFT scope waveform averaging function to between 2 and 4, or OFF.
- OFF: The FFT scope screen refreshes on each sweep time. This setting displays the critical spectrum view.
- 2, 3, 4: The FFT scope screen averages 2 to 4 sweeps to smoothly display the spectrum.

Waveform Type　　(Default: Fill)
Select the outline waveform display for the FFT scope screen.
- Fill: The waveform is drawn only in color.
- Fill+Line: The waveform is drawn in color with an outline.

SCOPE SET screen (Continued)

Waveform Color (Current)

(Default: (R) 217 (G) 241 (B) 247)

Set the waveform color for the currently received signals.

ⓘTouch and select the R (Red), G (Green) or B (Blue) scale, and then rotate ⊙**MULTI** to adjust the level from 0 to 255.

ⓘThe color is displayed in the box above the RGB scale.

Waveform Color (Line) (Default: (R) 70 (G) 30 (B) 0)

Set the waveform outline color for the currently received signals.

ⓘTouch and select the R (Red), G (Green) or B (Blue) scale, and then rotate ⊙**MULTI** to adjust the level from 0 to 255.

ⓘThe color is displayed in the box above the RGB scale.

Waveform Color (Max Hold)

(Default: (R) 58 (G) 110 (B) 147)

Set the waveform color for the received signals maximum level.

ⓘTouch and select the R (Red), G (Green) or B (Blue) scale, and then rotate ⊙**MULTI** to adjust the level from 0 to 255.

ⓘThe color is displayed in the box above the RGB scale.

Waterfall Display (Default: ON)

Turn the Water fall display ON or OFF for the normal scope or Mini scope screens.

ⓘOn the Expanded scope screen, the Waterfall is always displayed.
 • OFF: Turns OFF the Waterfall display.
 • ON: Turns ON the Waterfall display.

Waterfall Speed (Default: Mid)

Select the Waterfall speed.

 • Slow: Sets the waterfall speed to Slow.
 • Mid: Sets the waterfall speed to Mid.
 • Fast: Sets the waterfall speed to Fast.

Waterfall Size (Expand Screen) (Default: Mid)

Select the Waterfall height in the Expand scope screen.

 • Small: The same height as the Normal scope screen, only the FFT scope expands.
 • Mid: The Waterfall height expands at the same ratio as the FFT scope.
 • Large: Only the Waterfall height expands.

Waterfall Peak Color Level (Default: Grid 10)

Select the signal level that the Waterfall displays a peak color.

Higher signal levels are Red, Yellow, Green, Light-blue, Blue and Black, in that order.
 • Selection: Grid 1 ~ Grid 10

Waterfall Marker Auto-hide (Default: ON)

Set the Waterfall Marker Auto-hide function to ON or OFF.
 • OFF: The marker in the Waterfall zone stays ON.
 • ON: The marker in the Waterfall zone is hidden 2 seconds after it stops in place.

Dual Scope Type (Default: Over/Under)

When the Dual scope is selected, select the Main and Sub scope layout.
 • Over/Under: Displays the Main scope over the Sub scope.
 • Side by Side: Displays the Main and Sub scopes side by side.

Dual Scope Auto Select (Default: ON)

When the Dual scope is selected, by selecting the band (MAIN or SUB) simultaneously switches the Main or Sub scope.
 • OFF: The Main scope and Sub scope are not switched by selecting the Main band or Sub band.
 • ON: The Main scope and Sub scope are switched by selecting the Main band or Sub band.

3. ADVANCED SCOPE OPERATION

Fixed Edges

0.03 – 1.60

(Default: No.1 0.500–1.500 MHz)
(Default: No.2 0.500–1.500 MHz)
(Default: No.3 0.500–1.500 MHz)
(Default: No.4 0.500–0.550 MHz)

Set the Upper and Lower Edge frequencies for the Fixed or Scroll-F mode. Four edges are assigned to each band.

NOTE:
• First set the lower Edge frequency.
• Set the upper Edge frequency within 1 MHz of the lower frequency.

• Settable range: 0.030 ~ 1.600 MHz

Fixed Edges (0.03 - 1.60) No.1			
0.500 - 1.500 MHz			
1	2	3	◄►
4	5	6	
7	8	9	ENT
.	0	CE	↰
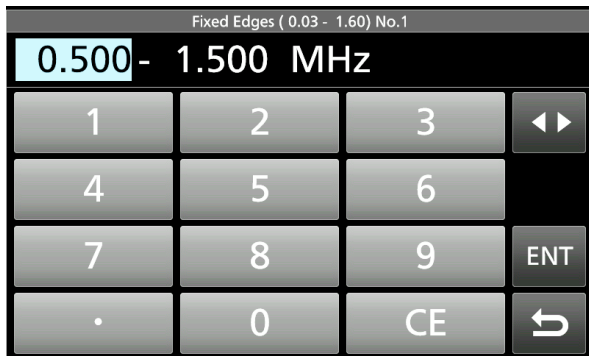
ⓘTouch ◄► to select the upper and lower edge frequency, and then rotate ⊙**MULTI** or touch the key pad to edit the frequency.

1.60 – 2.00

(Default: No.1 1.800–2.000 MHz)
(Default: No.2 1.800–1.830 MHz)
(Default: No.3 1.900–1.930 MHz)
(Default: No.4 1.800–1.850 MHz)

• Settable range: 1.600 ~ 2.000 MHz

2.00 – 6.00

(Default: No.1 3.500–4.000 MHz)
(Default: No.2 3.500–3.575 MHz)
(Default: No.3 3.750–3.850 MHz)
(Default: No.4 3.500–3.550 MHz)

• Settable range: 2.000 ~ 6.000 MHz

6.00 – 8.00

(Default: No.1 7.000–7.300 MHz)
(Default: No.2 7.000–7.030 MHz)
(Default: No.3 7.030–7.200 MHz)
(Default: No.4 7.000–7.050 MHz)

• Settable range: 6.000 ~ 8.000 MHz

8.00 – 11.00

(Default: No.1 10.100–10.150 MHz)
(Default: No.2 10.100–10.130 MHz)
(Default: No.3 10.130–10.150 MHz)
(Default: No.4 10.100–10.150 MHz)

• Settable range: 8.000 ~ 11.000 MHz

11.00 – 15.00

(Default: No.1 14.000–14.350 MHz)
(Default: No.2 14.000–14.100 MHz)
(Default: No.3 14.100–14.350 MHz)
(Default: No.4 14.000–14.050 MHz)

• Settable range: 11.000 ~ 15.000 MHz

15.00 – 20.00

(Default: No.1 18.068–18.168 MHz)
(Default: No.2 18.068–18.110 MHz)
(Default: No.3 18.110–18.168 MHz)
(Default: No.4 18.000–18.050 MHz)

• Settable range: 15.000 ~ 20.000 MHz

20.00 – 22.00

(Default: No.1 21.000–21.450 MHz)
(Default: No.2 21.000–21.150 MHz)
(Default: No.3 21.150–21.450 MHz)
(Default: No.4 21.000–21.050 MHz)

• Settable range: 20.000 ~ 22.000 MHz

22.00 – 26.00

(Default: No.1 24.890–24.990 MHz)
(Default: No.2 24.890–24.930 MHz)
(Default: No.3 24.930–24.990 MHz)
(Default: No.4 24.900–24.950 MHz)

• Settable range: 22.000 ~ 26.000 MHz

26.00 – 30.00

(Default: No.1 28.000–29.000 MHz)
(Default: No.2 28.000–28.200 MHz)
(Default: No.3 28.200–29.000 MHz)
(Default: No.4 28.000–28.100 MHz)

• Settable range: 26.000 ~ 30.000 MHz

30.00 – 45.00

(Default: No.1 30.000–31.000 MHz)
(Default: No.2 30.000–31.000 MHz)
(Default: No.3 30.000–31.000 MHz)
(Default: No.4 30.000–30.100 MHz)

• Settable range: 30.000 ~ 45.000 MHz

45.00 – 60.00

(Default: No.1 50.000–51.000 MHz)
(Default: No.2 50.000–50.100 MHz)
(Default: No.3 50.100–50.300 MHz)
(Default: No.4 50.000–50.100 MHz)

• Settable range: 45.000 ~ 60.000 MHz

4. VOICE RECORDER FUNCTIONS

Recording a QSO audio

This transceiver is equipped with a QSO recorder not only for the receive audio, but also for the transmit audio.
This function is useful to make a QSO record or to confirm your QSO with a rare entity's station or on a DX'pedition. You can also use the function to repeatedly send the same message.
The recorded contents are saved onto an SD card.

There are 3 ways to start recording.

● Hold down `REC` for 1 second.
● Push `QUICK` and select "REC Start."
● Push `MENU` and touch [RECORD].
  ⓘThe recorded audio is saved in the "Voice" folder on the SD card.

`MENU`　　`QUICK`　`REC`
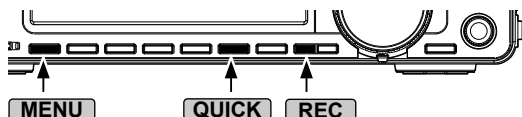
TIP: About the icons
• While recording, "●" is displayed under the clock readout and the SD card indicator next to the SD card slot blinks blue.
• While pausing, "❚❚" is displayed.
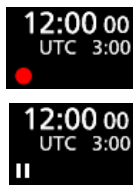
When the PTT Automatic Recording function, "PTT Auto REC" is set to ON in RECORDER SET, the recording automatically starts when you start transmitting.

`MENU` » RECORD > Recorder Set > **PTT Auto REC**

NOTE:
• To record a QSO, an SD card (user supplied) is required.
• If your SD card does not have an "IC-7610" folder, back up any data on the SD card, insert it in the transceivers card slot and then format it using the built-in format function.
• Once the recording starts, recording will restart after the transceiver is turned OFF and ON again.
• The recording continues until you touch <<REC Stop>> or the free space on the SD card has run out.
• When the recording file's content becomes 2 GB, the transceiver continues to record, but to a new file.

◇ Using the [REC] key
● Hold down `REC` for 1 second to start recording.
  ⓘTo stop recording, hold down `REC` for 1 second again.
  ⓘYou can change the recorder settings on the RECORDER SET screen (p. 50).

◇ Using the [QUICK] key
1. Push `QUICK`.
2. Touch [<<REC Start>>] to start recording.
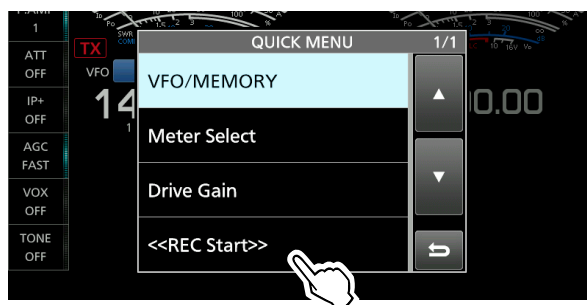
◇ Using the MENU screen
1. Display the QSO RECORDER screen.

   `MENU` » `RECORD`

2. Touch "<<REC Start>>" to start recording.
   • "Recording Started" is displayed for 1 second.

3. To stop recording, touch "<<REC Stop>>."
   ⓘThe "<<REC Stop>> is displayed while recording instead of "<<REC Start>>."
4. To close the QSO RECORDER screen, push `EXIT`.

Playing back a QSO audio

You can playback the recorded QSO audio.

1. Insert the SD card in which the recorded audio is saved.
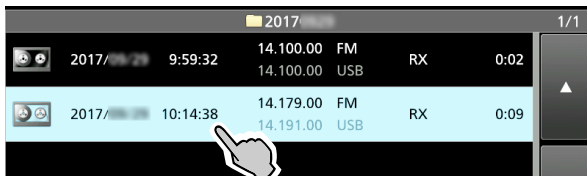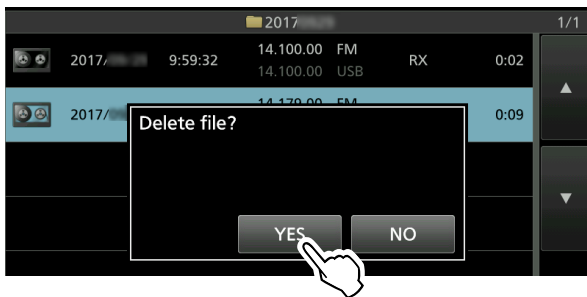2. Display the PLAY FILES screen.
   MENU » RECORD > **Play Files**

3. Select the folder that the file you want to playback is saved.

PLAY FILES	1/1
📁 2017	
📁 2017	
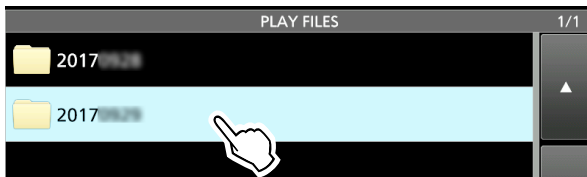
4. Select the file to play back.
   • Starts a playback.

📁 2017				1/1
🔘🔘 2017/ 9:59:32	14.100.00 FM 14.100.00 USB	RX	0:02	
🔘🔘 2017/ 10:14:38	14.179.00 FM 14.191.00 USB	RX	0:09	

   ⓘ Playback continues to the next file, and stops when the last file in the folder is played back.
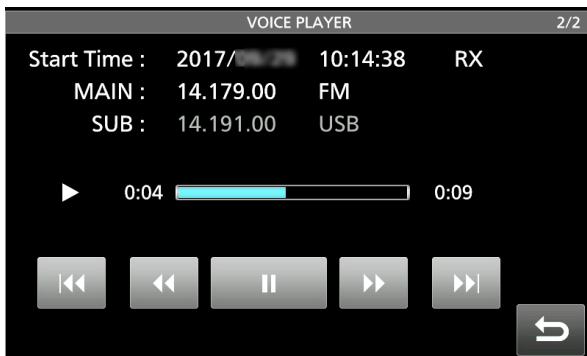
   VOICE PLAYER 2/2
   Start Time : 2017/ 10:14:38 RX
   MAIN : 14.179.00 FM
   SUB : 14.191.00 USB

   ▶ 0:04 ▬▬▬▬ 0:09

   |◀◀ ◀◀ ❚❚ ▶▶ ▶▶| ↩

5. To close the PLAY FILES screen, push EXIT several times.

Operating frequency, operating mode, of the Main and Sub bands.

The TX/RX status of the recorded audio.

Recording start time and date

The number of file

VOICE PLAYER 2/2
Start Time : 2017/ 10:14:38 RX
MAIN : 14.179.00 FM
SUB : 14.191.00 USB

▶ 0:04 ▬▬▬▬ 0:09

|◀◀ ◀◀ ❚❚ ▶▶ ▶▶| ↩

Play back icon

Play back time

Play back process

Total time

0:04 ▬▬▬▬ 0:09

|◀◀ ◀◀ ❚❚ ▶▶ ▶▶| ↩

Play the previous file

Pause/Playback

Play the next file

Rewind

Forward
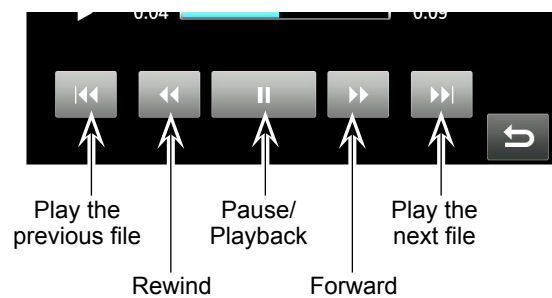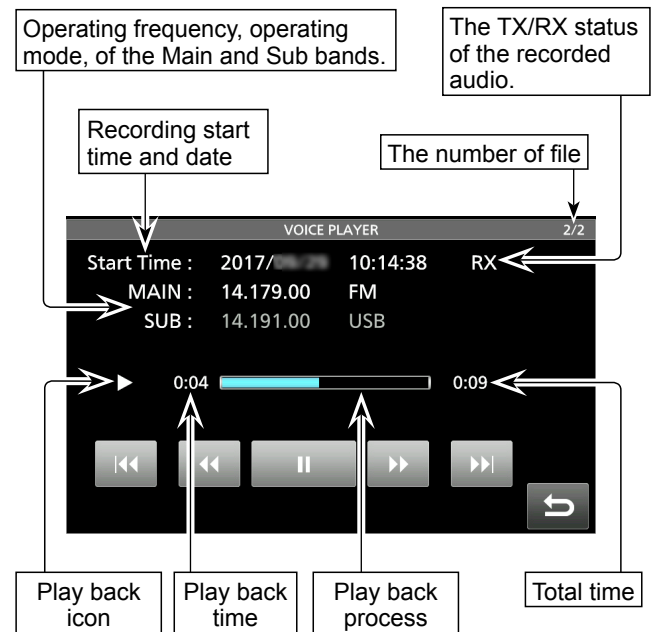
Playing back a recorded audio on a PC

You can also playback the voice memory data on a PC.
ⓘ The recorded information (frequency, date, and so on) is not displayed.

1. Insert the SD card into your PC.

SD card
Memory card reader
PC
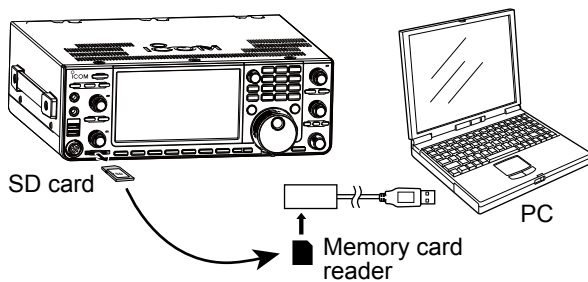
2. Open the "Voice" folder.

3. Open the folder where the file you want to playback is saved.
   ⓘThe folders are titled based on the recorded date. (yyyymmdd)

IC-7610

Capture

Decode ── Psk

Setting ── Rtty

Voice ── yyyymmdd

VoiceTx ── yyyymmdd
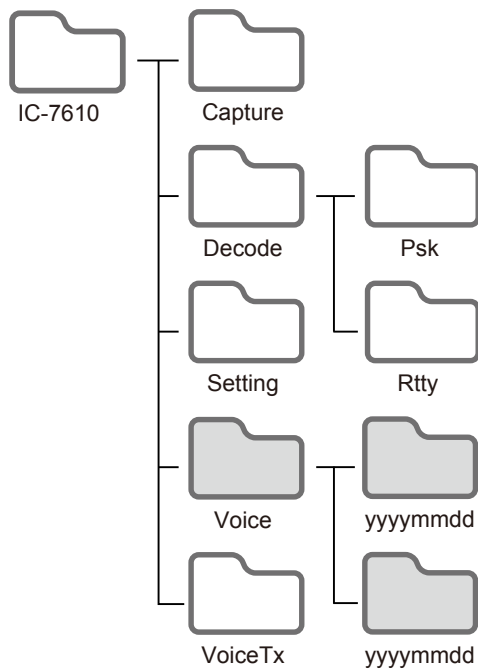
4. Double-click file that you want to play back.
   • The audio starts playing back.
   ⓘThe files are titled based on the date and time (yyyymmdd_hhmmss.wav).
   (Example: 20171001_120255.wav)

NOTE:
• The operations while playing back may differ, depending on the application. Refer to the application's instruction manual for details.
• When the file does not playback, after double-clicking the file, download an appropriate software.
(Example: Windows Media® Player)

Checking the folder information and file information

You can check the folder name, size, and saved date or recorded file's operating frequency, operating mode, date, and so on.

Checking the folder information:
1. Display the PLAY FILES screen.
   MENU » RECORD > **Play Files**

2. Touch a folder for 1 second.
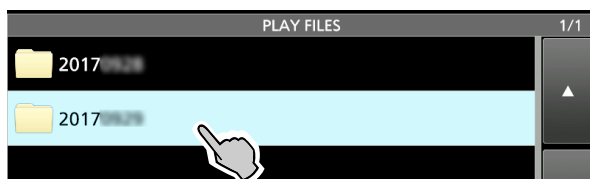
3. Touch "Folder Information."
   • The FOLDER INFORMATION screen is displayed.
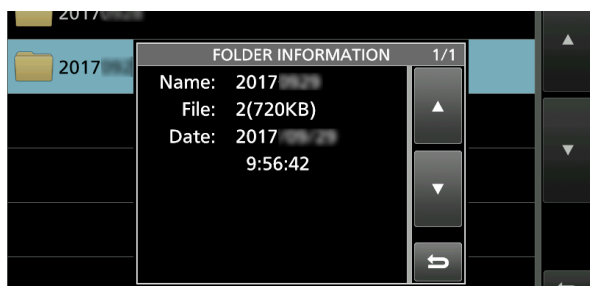
4. To close the PLAY FILES screen, push EXIT several times.

Checking the file information:
1. Display the PLAY FILES screen.
   MENU » RECORD > **Play Files**

2. Touch a folder.

3. Touch a file to check its information for 1 second.
   • The QUICK MENU is displayed.
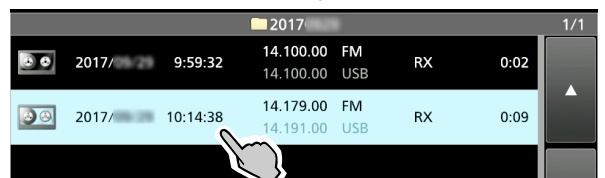
4. Touch "File Information."
   • The FILE INFORMATION screen is displayed.
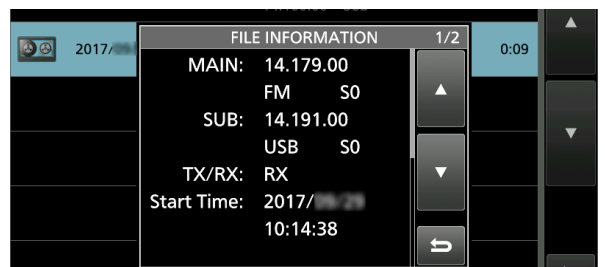
5. To close the PLAY FILES screen, push EXIT several times.

Deleting files

1. Display the PLAY FILES screen.
   [MENU] » RECORD > **Play Files**

2. Select the folder that the file you want to delete is saved.
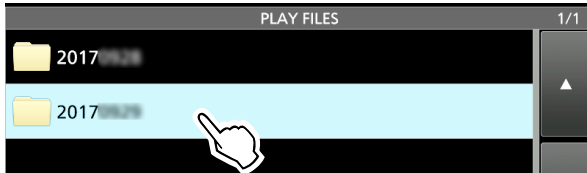
3. Touch the file that you want to delete for 1 second.
   • The QUICK MENU is displayed.

4. Touch "Delete."
   ⓘIf you want to delete all files in the selected folder, touch "Delete All."
   • "Delete File?" is displayed.
5. Touch [YES].
   • The file is deleted and returns to the previous screen.

6. To close the PLAY FILES screen, push [EXIT] several times.

Deleting folders

1. Display the PLAY FILES screen.
   [MENU] » RECORD > **Play Files**

2. Touch the folder you want to delete for 1 second.
   • The QUICK MENU is displayed.
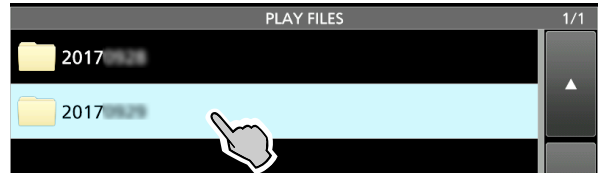
3. Touch "Delete."
   ⓘIf you want to delete all folders, touch "Delete All Folders."
   • "Delete Folder?" is displayed.
4. Touch [YES].
   • The folder is deleted and returns to the previous screen.

5. To close the PLAY FILES screen, push [EXIT] several times.

RECORDER SET screen

You can change the recorder settings on this screen.

MENU » RECORD > **Recorder Set**

REC Mode   (Default: TX&RX)

Selects the recording mode to record a QSO audio.

- TX&RX: Records both the transmit and receive audio.
- RX Only: Records only the received audio.

TX REC Audio   (Default: Direct)

Selects the recording audio to transmit.

- Direct: Records the microphone audio.
- Monitor: Records the TX monitor audio.

RX REC Condition   (Default: Squelch Auto)

Selects the recording condition for receive.

- Always: Records even if no signal is received.
- Squelch Auto: Records only when the squelch opens.
                (The recording will be paused when the squelch closes while recording.)

File Split   (Default: ON)

Turns the File Split function ON or OFF.

- OFF: The audio is continuously recorded into the file even if you switch between transmit and receive or the squelch status changes between open and closed.
                When the recording file's size becomes 2 GB, the transceiver continues to record, but to a new file.
- ON: While recording, and if you switch between transmit and receive, or the squelch status changes between open and closed, a new file is automatically created in the same folder, and the audio is saved into the new one.

PTT Auto REC   (Default: OFF)

Turns the PTT Automatic Recording function ON or OFF.

- OFF: The recording does not start, even if a signal is transmitted.
- ON: The recording automatically starts when a signal is transmitted.

The recording will stop when:
- 10 seconds has passed without transmission after the last transmission.
- 10 minutes has passed with no signal after the last transmission.
  - If you receive a signal within 10 seconds after the last transmission, the received audio is also recorded.
  - If you receive another signal within 10 seconds after the last reception, the received audio is also recorded.
- 10 minutes has past while operating with the squelch is open in the SSB, CW, RTTY, or AM mode.
- The frequency or operating mode is changed.
- The operating method (V/M, M-CH, Band Stacking Register, and so on) is changed.

PRE-REC for PTT Auto REC   (Default: 10sec)

Selects whether or not record the audio that is received before the PTT Automatic Recording function is activated.

- OFF: Does not record the audio.
- 5sec/10sec/15sec:
                Records the audio that is previously received in this set period of time.

> **TIP: How to reset to the default setting**
> Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

PLAYER SET screen

You can fast forward or rewind while playing back an audio file. You can change the skip time in the PLAYER SET screen.

1. Display the PLAYER SET screen.

   MENU » RECORD > **Player Set**

2. Touch "Skip Time."
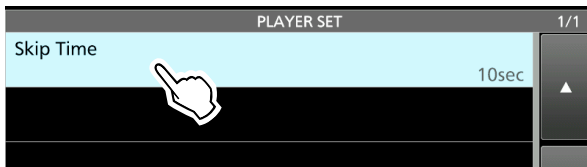
3. Touch an option. (Example: 5 seconds)

4. To close the PLAYER SET screen, push **EXIT**.

TIP: How to reset to the default setting
Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

INSTANT REPLAY SET screen

You can set the recording time and the playing back time for the Instant Replay function.
ⓘSee the right column for using the Instant Replay function.

1. Display the INSTANT REPLAY SET screen.
   MENU » RECORD > **Instant Replay Set**

2. Touch the setting item. (Example: REC Time)
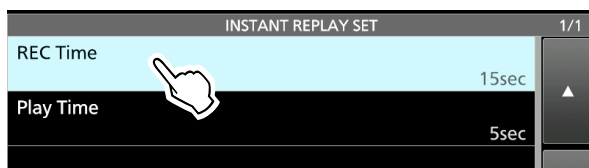
3. Rotate ⦿MULTI to set the recording time.
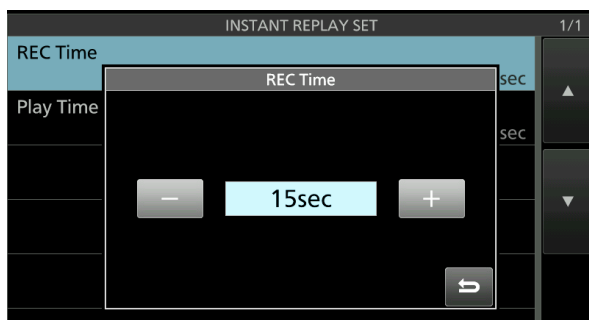
REC Time   (Default: 15sec)

Set the recording time for the Instant Replay function between 5 ~ 30 seconds. The audio is saved in the built-in audio memory.

Play Time   (Default: 5sec)

Set the play back time for the Instant Replay function between 3 ~ 10 seconds.

The Instant Replay function plays back the recorded audio in the built-in audio memory, from the last 5 seconds (default) from the time REC was pushed.

TIP: How to reset to the default setting
Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

Instant Replay function

◇ **Recording the Instant Replay**
The Instant Replay function records the previous 15 seconds (default) from the time when REC has been pushed. The audio is recorded into the built-in memory.
ⓘYou can only record once, and the memory is overwritten by pushing REC again.
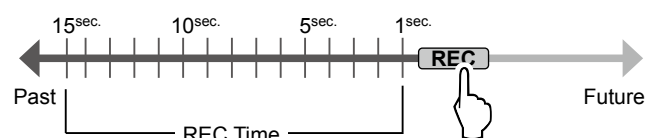
◇ **Playing back the Instant Replay**
After recording an audio using the Instant Replay function, you can play back the last 5 seconds (default) from the time PLAY was pushed.
ⓘWhile playing back, ▶PLAY is displayed.
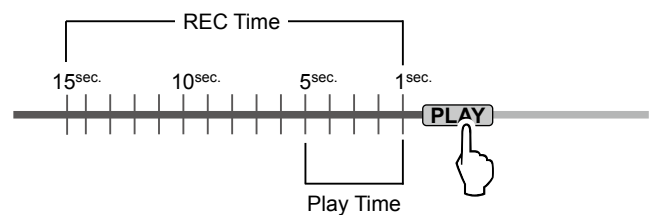
Playing back all the recorded memory
After recording an audio using the Instant Replay function, you can also play back the entire memory from the top, by holding down PLAY for 1 second.
ⓘWhile playing back, ▶PLAY is displayed.

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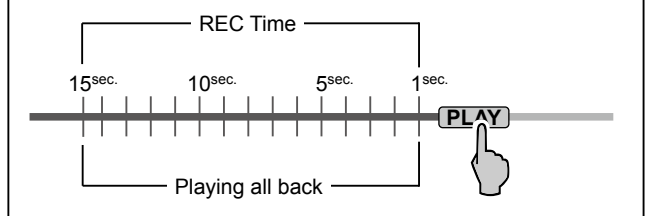
5. VOICE TX MEMORY OPERATION

Recording a Voice TX memory

You can record up to 8 Voice transmit memories (T1 ~ T8) of up to one and a half minutes in each memory, onto an SD card. To transmit a recorded content using a Voice TX memory, first record the message, as described below.
ⓘA user supplied SD card is required to use the Voice TX memory function.
ⓘYou can also transmit the recorded content using an external keypad.

◇ Recording

1. Display the VOICE TX screen in the SSB, AM, or FM mode.

   MENU » VOICE

2. Touch [REC/SET].

3. Touch "REC."
   • The VOICE TX RECORD screen is displayed.
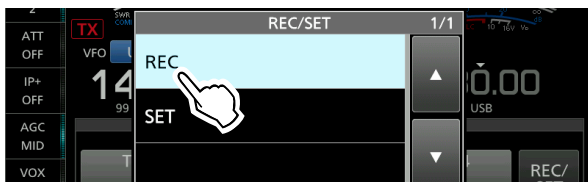
4. Touch "�'" of the TX memory.
   (Example: T1)
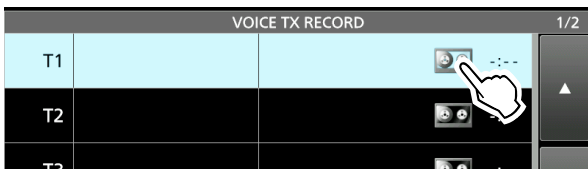
5. Touch 🔴 and speak into the microphone without holding down [PTT] to start recording.

   ⓘ**Information**
   • You can record up to one and a half minutes in each memory.
   • The previously recorded content is overwritten.

Displays the input audio level   Adjust the Mic gain so that the "REC Level" meter does not reach 80%
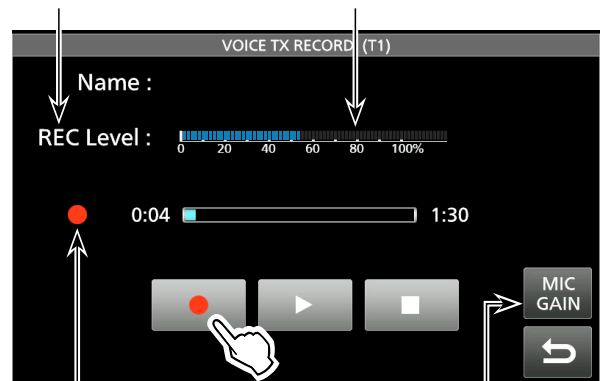
Displayed while recording   Touch to open the MIC GAIN adjustment window
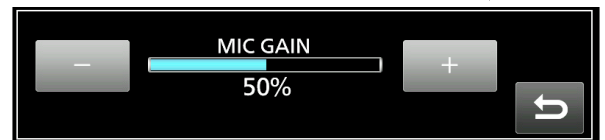
6. Touch ⬛ to stop recording.
7. To close the VOICE TX screen, push EXIT several times.

◇ Playing back

● On the selected memory's recording screen, touch ▶ to start playing back without transmitting.
   ⓘTo stop the playback, touch ⬛ .
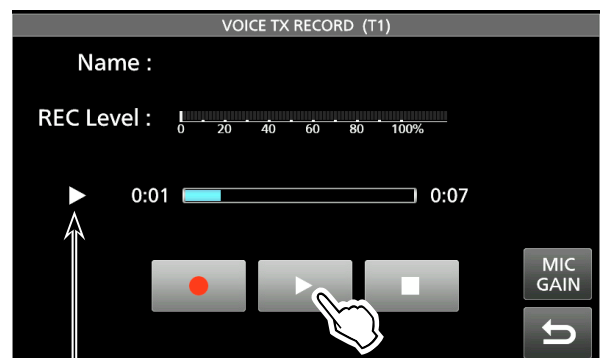
Displayed while playing back

TIP: How to clear the recorded content
Touch the Voice memory for 1 second in step 4 to display the Quick menu, and then touch "Clear."

Entering a Voice TX memory name

You can assign a name to the recorded Voice memories.

1. Open the VOICE TX RECORD screen.
   MENU » VOICE > REC/SET > **REC**

2. Touch the Voice TX memory to enter the name for 1 second.
   ⓘThe selected memory needs to contain a recording.
   • Opens the QUICK MENU screen.

3. Touch "Edit Name."
   • Opens the Name editing screen.

4. Enter a name, and then touch [ENT] to save.
   • The editing screen closes and returns to the VOICE TX RECORD screen.
   • The entered name is displayed.
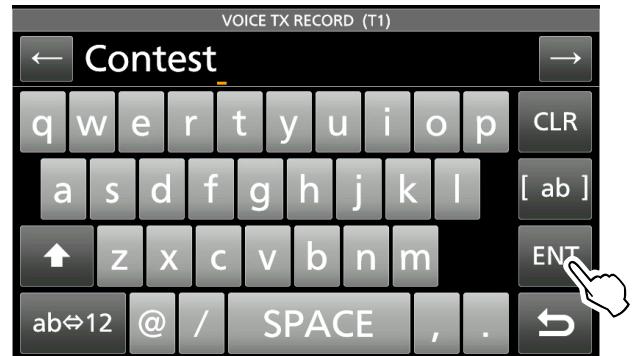
5. To close the VOICE TX RECORD screen, push EXIT.
   ⓘThe entered memory name is also displayed on the VOICE TX screen.

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Transmitting a Voice memory content

You can transmit the Voice TX memory contents once, or repeatedly. This is useful for transmitting your call sign, contest number or name in some contests, or repeatedly calling CQ.

◇ Transmitting

Transmits the prerecorded contents. (p. 53)

1. Display the VOICE TX screen.
   MENU » VOICE

2. Touch the desired Voice TX memory key [T1] ~ [T8].
   • Transmits the recorded content once.
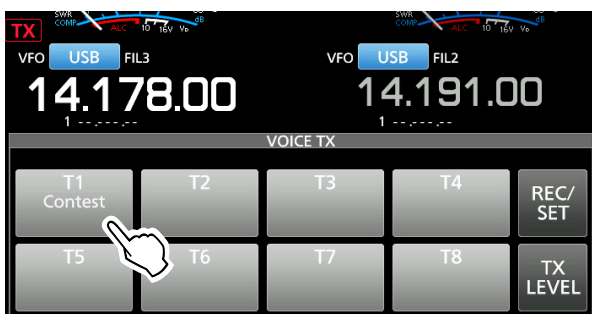
Transmitting   The SD card indicator next to the card slot blinks while transmitting.

The transmission's remaining time

3. To close the VOICE TX screen, push EXIT.

When a keyboard or keypad is connected:

• You can transmit the preset contents in the Voice TX memory (T1 ~ T8) by pushing [F1] ~ [F8] on the keyboard.
   - Pushing [F1] ~ [F8] while holding down the [Shift] key repeatedly transmits the contents.

MENU » SET > Connectors > Keyboard/Mouse > **Keyboard [F1]-[F8] (VOICE)**

• You can transmit the contents in the Voice TX memory (T1 ~ T8) from an external device by setting the "External Keypad," and then connecting an external keypad to [MIC] or [EXT KEYPAD] on the IC-7610.

MENU » SET > Connectors > External Keypad > **VOICE**

Transmitting a Voice memory content (Continued)

◇ Repeatedly transmitting

1. Display the VOICE TX screen.
   MENU » VOICE

2. Touch a Voice TX memory key [T1] ~ [T8] for 1 second.
   • Repeatedly transmits the recorded content.

Transmitting   The SD card indicator located next to the card slot blinks while transmitting.

Repeat icon   The transmission's remaining time

ⓘ Information

• The recorded content is repeatedly transmitted for 10 minutes, unless you manually stop transmission by touching the selected memory.
• You can set the pause interval between the repeated transmissions in the "Repeat Time" item on the VOICE TX SET screen. During this interval, the transceiver returns to receive. (p. 57)
• After 10 minutes have passed, and all of the recorded content in the memory is transmitted, the transceiver automatically returns to receive.
• When a signal is received in the interval between transmissions, the transceiver pauses the next transmission until the signal disappears. However, if the squelch is set to open, the transceiver repeatedly transmits after the repeat interval time expires, even signals are received.

3. To close the VOICE TX screen, push EXIT.

TIP:
If the "DATA OFF MOD" is set to "ACC," "USB" or "LAN," Voice TX memories can not be transmitted.

MENU » SET > Connectors > MOD Input >
DATA OFF MOD

◇ Adjusting the output level

Adjust the Voice TX memory level.

1. Display the VOICE TX screen.
   MENU » VOICE

2. Touch [TX LEVEL].
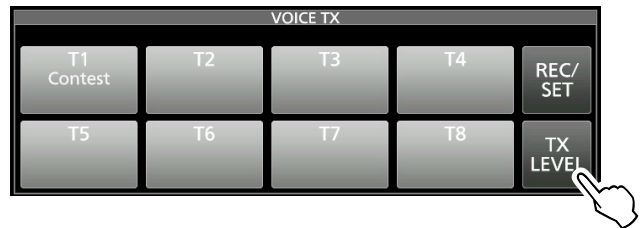
3. Touch any Voice memory key other than [T4] or [T8]. ([T1] ~ [T3] or [T5] ~ [T7])
   • The transceiver automatically transmits.
   ⓘ To adjust the Transmit voice level for [T4] and [T8], reverse steps 2 and 3.
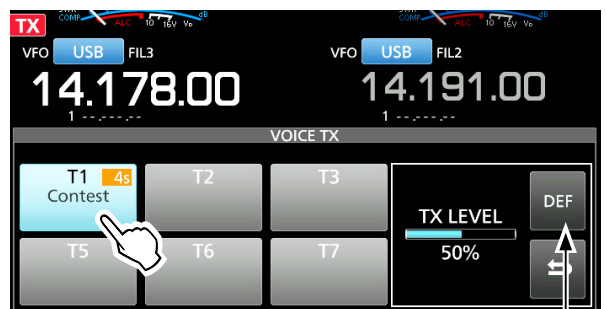
Rotate MAIN DIAL to adjust.
Touch for 1 second to reset to the default setting

4. While transmitting, rotate MAIN DIAL to adjust the transmit voice level.
   ⓘ Adjusting the level too high may result in over modulation, and transmit signal distortion.

5. To close the VOICE TX screen, push EXIT several times.

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VOICE TX SET screen

This set screen is used to set the Automatic Monitor function and the Transmit Repeat Interval.

1. Display the VOICE TX SET screen.
   MENU » VOICE > REC/SET > **SET**

2. Touch the setting item. (Example: Auto Monitor)

VOICE TX SET	1/1
Auto Monitor	ON
Repeat Time	5sec
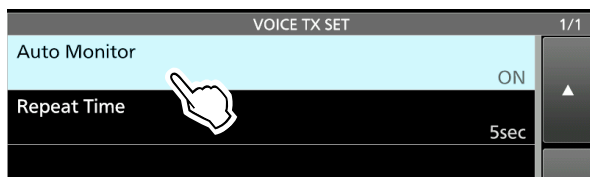
3. Select an option. (Example: OFF)
   ⓘSee to the right for details of the setting items and their options.

VOICE TX SET	1/1
Auto Monitor	
Auto Monitor	1/1
Repeat Ti	OFF
	ON
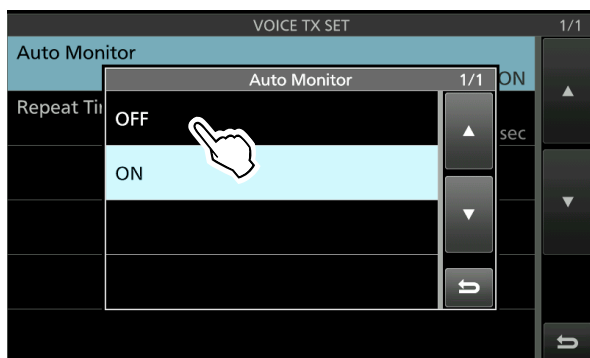
4. To close the VOICE TX SET screen, push **EXIT**.

Auto Monitor   (Default: ON)

Turn the Automatic Monitor function for recorded audio contents transmission, ON or OFF.

- ON: Automatically monitors the transmit audio when transmitting a recorded audio.
- OFF: Monitors the transmit audio only when the Monitor function is ON.

Repeat Time   (Default: 5sec)

Set the repeat interval to repeat the voice transmission.

The recorded content is repeatedly transmitted the at this set interval.

- Range: 1 ~ 15 seconds

ⓘRepeatedly transmits the recorded content for up to 10 minutes.
ⓘAfter 10 minutes have passed, and all of the recorded content in the memory is transmitted, the transceiver automatically returns to receive.

TIP: How to reset to the default setting
Touching the item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

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6. SD CARD/USB FLASH DRIVE (ADVANCED)

Saving the setting data onto an SD card or USB flash drive

The Memory channels and the transceiver's settings can be saved onto an SD card or USB flash drive.
This function is convenient when:
• Copying the saved data to another IC-7610 to operate using the same data.
• Using an IC-7610 by two or more operators with their own individual settings.

1. Insert an SD card or USB flash drive.
2. Display the SAVE SETTING screen.
   MENU » SET > SD Card > **Save Setting**

   MENU » SET > USB Flash Drive > **Save Setting**

3. Touch "<<New File>>."
   ⓘThe file name is automatically set in the following format: Setyyyymmdd_xx (yyyy: Year, mm: month, dd: day, xx: serial number).
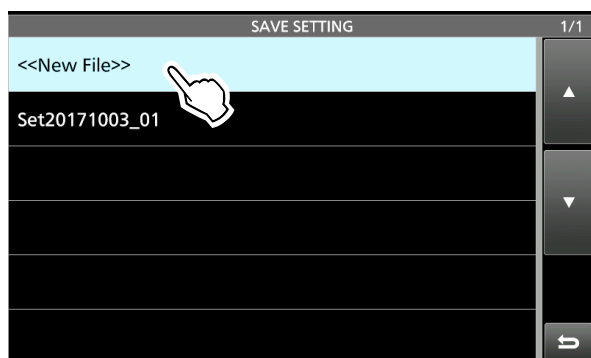
TIP: When you have updated the transceiver's firmware, the "Save Form" item will be added on the setting screen. If this item is set to the earlier firmware version, the confirmation window is displayed after step 3. To save the data in the earlier firmware version, touch [YES].

---

4. To save the file with the displayed name, touch [ENT].
   ⓘIf you want to change the name, delete the name and re-enter it, and then touch [ENT].
   • "Save file?" is displayed.

5. Touch [YES].
   • Saves the data settings.
6. To close the SET screen, push EXIT several times.

Loading the saved data files onto an SD card or USB flash drive

You can load the Memory channels and transceiver's settings from the SD card or USB flash drive to the transceiver.
This function is convenient when:
• Copying the saved data to another IC-7610 to operate with the same data.
• Using one IC-7610 by two or more operators with their own individual data.

ⓘThe transceiver has "ALL" and "Select" loading options to choose from.

> **TIP:** Saving the current data is recommended before loading other data into the transceiver. (p. 58)

1. Display the LOAD SETTING screen.
   `MENU` » `SET > SD Card > ` **Load Setting**
   `MENU` » `SET > USB Flash Drive > ` **Load Setting**
2. Touch the file to load.
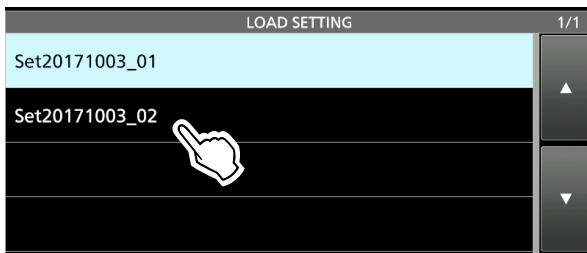
3. Touch "Select."
   ⓘIf you want to load all the contents on the LOAD OPTION screen, touch "ALL" and go to step 6.
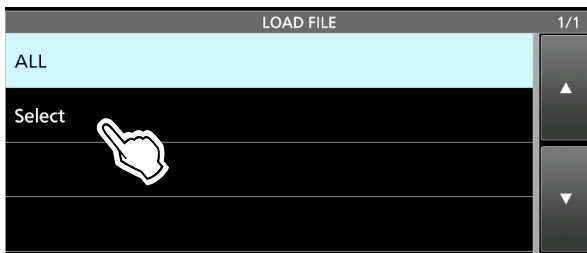
4. Touch the loading options.
   (Example: Antenna Memory)
   • "✓" is displayed left side of the selected option.
   ⓘThe Set mode settings and Memory channel contents are always loaded.
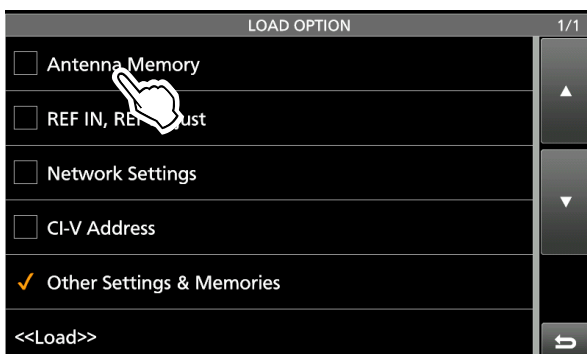
5. Touch "<<Load>>."
   • "Load file?" is displayed.
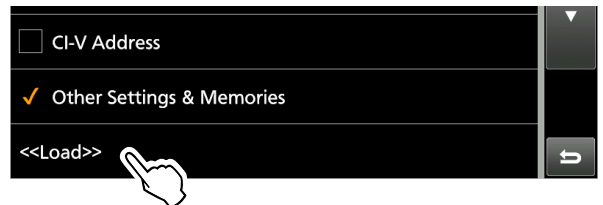
6. Touch [YES].
   • After the loading ends, "COMPLETED! Restart the IC-7610." is displayed.
   ⓘWhen you select "REF Adjust" in step 4, "The new "REF Adjust" setting will be saved" is displayed.
7. Turn OFF the transceiver power, then turn it ON again to restart the transceiver.

Deleting a data file

Follow the steps below to delete the files you no longer need on the SD card or the USB flash drive.

> **NOTE:** Deleted data from a card or flash drive cannot be recalled. Before deleting any data, back up the card data onto your PC.

1. Display the SAVE SETTING screen.

   MENU » SET > SD Card > **Save Setting**

   MENU » SET > USB Flash Drive > **Save Setting**

2. Touch the file to delete for 1 second.
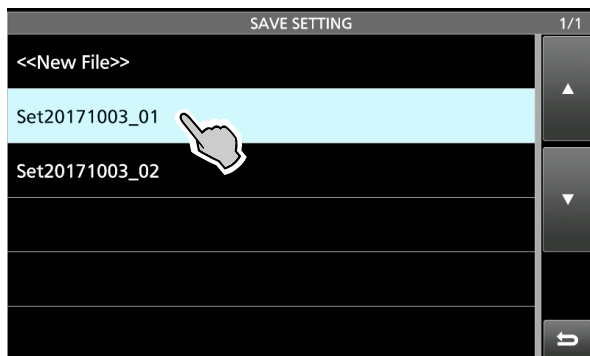
3. Touch "Delete."
   • "Delete file?" is displayed.
   ⓘTo delete all files, touch "Delete All."
   ⓘTo cancel deleting, push **EXIT**.
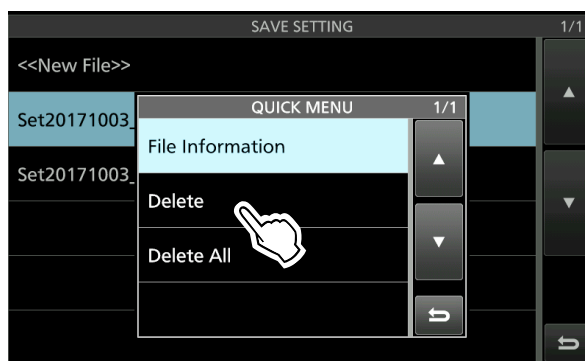
4. Touch [YES].
5. To close the SET screen, push **EXIT** several times.

> ***Checking the file information***
> Touch "File Information" on the QUICK MENU to display the file name, size and the saved date.
>
>
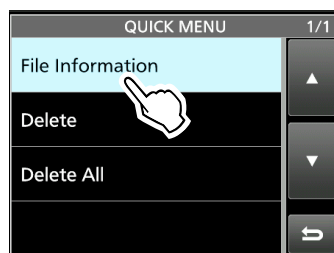
Displaying the SD card or USB flash drive information

You can display SD card or USB flash drive capacity, and the time remaining for voice recording (SD card only.)

1. Display the SD CARD or USB FLASH DRIVE screen.

    MENU » SET > **SD Card**

    MENU » SET > **USB Flash Drive**

2. Touch "SD Card Info" or "USB Flash Drive info." (Example: SD Card Info)
    • Displays the card or flash drive's free space and the capacity.
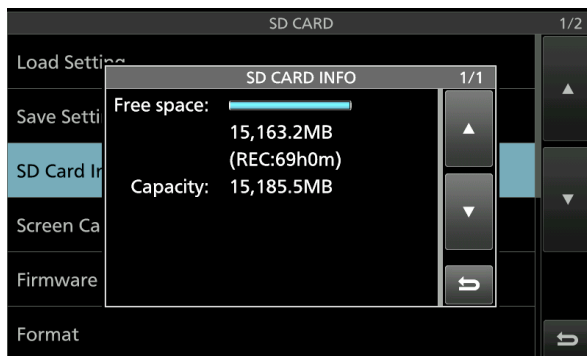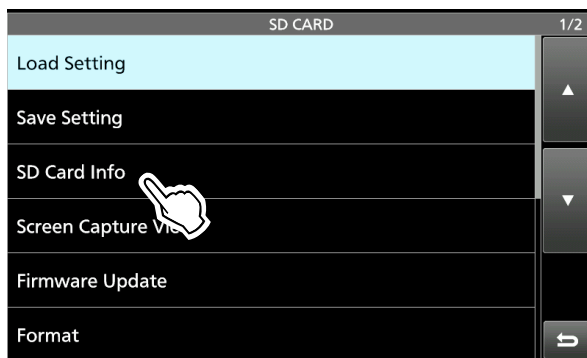
3. To close the SET screen, push **EXIT** several times.

About the SD card and USB flash drive's folders

You can easily restore data with a backup file, even if the setting data in the SD card is accidentally deleted.
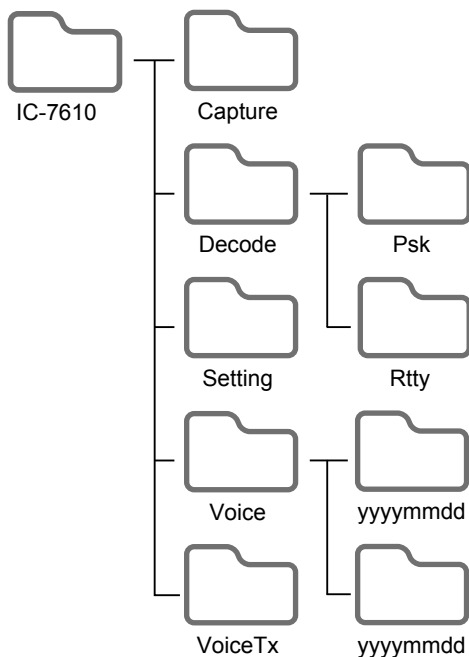
◇ The SD card folder
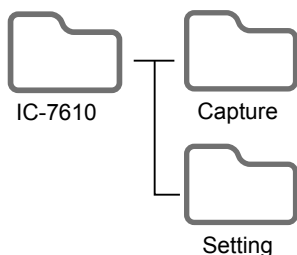
The folder in the SD card contains the following.
The USB flash drive contains the IC-7610 folder, Capture folder and the Setting folder.

● **IC-7610 folder**
 The folders created in the IC-7610 are contained in this folder.
● **Capture folder**
 The captured screen data is saved in the 'png' or 'bmp' format.
● **Decode folder**
 The RTTY and PSK decode log folders are created.
● **PSK folder**
 The transmitted or received PSK decode log data is saved in the 'txt' or 'html' format.
● **RTTY folder**
 The transmitted or received RTTY decode log data is saved in the 'txt' or 'html' format.
● **Setting folder**
 The transceiver's setting data is saved in the 'dat' format.
● **Voice folder**
 The recorded QSO audio date folders are created.
● **yyyymmdd folder**
 Recorded audio files are saved in the 'wav' format.
 The folder name is automatically created in the following format: yyyymmdd (yyyy:Year, mm:month, dd:day)
● **VoiceTx folder**
 Recorded voice audio data for the Voice TX function is saved in the 'wav' format.

◇ USB flash drive folder

7. MEMORY OPERATION

Memory channels

The Memory mode enables you to quickly select often-used frequencies, modes and other parameters. You can change the operating frequency, mode and so on while operating in the Memory mode.

ⓘ You can temporarily tune all the memory channel frequencies by rotating (MAIN DIAL).

Memory channel	Displayed
1 ~ 99	Regular memory channels. 1 frequency, 1 mode, 1 filter, memory name, tone settings (including tone frequencies for repeater and tone squelch) and select memory scan setting in each memory channel.
P1/P2	Scan Edge memory channels. 1 frequency, and 1 mode and 1 filter in each memory channel as scan edges for programmed scans.

Selecting a Memory channel

1. Select the Main band or Sub band. (Example: Main band)
2. Push **QUICK**, and then touch "VFO/MEMORY" on the Quick menu.
3. Touch [MEMORY] to select the Memory mode.
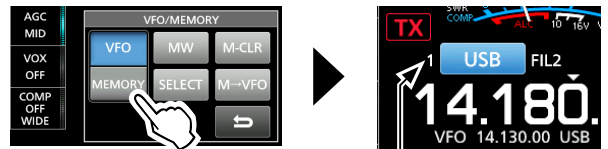
Memory mode
(Example: Memory channel 1)

4. Select the Memory channel.
   Rotating (⊙MULTI) to select a channel:
   Rotate (⊙MULTI) until you select the Memory channel you want to use. (Example: 2)
   To close the VFO/Memory screen, push **EXIT**.

Selecting a channel on the MEMORY screen:
Display the MEMORY screen, and then touch to select a Memory channel. (Example: 2)
• The channel is selected and automatically closes the MEMORY screen.

MENU » **MEMORY**
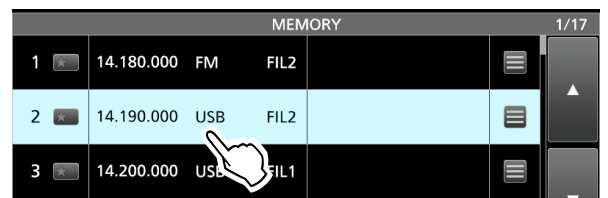
Entering memory channel contents

The operating frequency, operating mode, IF filter bandwidth, and so on can be entered to each memory channel. (p. 63)

NOTE: New content you enter will overwrite any content already in the selected memory.

1. Select the Main band or Sub band. (Example: Main band)
2. Push `QUICK`, and then touch "VFO/MEMORY" to select the VFO mode.
3. Set the frequency, operating mode, and other parameters you want to save in memory.
4. Rotate `⊙ MULTI` to select the Memory channel to enter the contents set in step 3. (Example: 2)
   ⓘ You cannot select the channel number when the Mini scope screen, expanded screen or dual screen is displayed.
   ⓘ If " - - . - - - . - - " is displayed next to the selected memory channel number, it is a blank channel, meaning that no contents are entered in that channel.

The channel is blank.

5. Push `QUICK`, and then touch "VFO/MEMORY."
6. Touch [MW] for 1 second.
   • The contents are entered in the selected Memory channel.

The entered contents are displayed.

ⓘ To enter another channel with the same operating mode and settings, but on a different frequency, repeat steps 4 ~ 6 after changing the frequency.

7. To close the VFO/MEMORY screen, push `EXIT`.

To edit the Memory channel contents:
1. Select the Memory channel to edit.
2. Change the frequency and other parameters in the Memory mode.
3. Push `QUICK`, and then touch "VFO/MEMORY."
4. Touch [MW] for 1 second to overwrite onto the selected Memory channel.

Copying the Memory channel contents

You can copy a Memory channel contents to the VFO or another memory channel.

◇ Copying to the VFO
1. Select the Main band or Sub band.
    (Example: Main band)
2. Select the Memory mode.
3. Rotate (◉**MULTI**) to select the channel to be copied. (Example: Memory channel 3)

The selected channel to be copied.

VFO mode contents before copying: 14.130.00 USB

4. Touch [M→VFO] for 1 second.
    • The copied contents are entered in the VFO mode.

VFO mode contents after copying: 14.200.00 USB

5. Touch [VFO] to select the VFO mode.
6. To close the VFO/MEMORY screen, push **EXIT**.

◇ Copying to the other Memory channel
1. Select the Main band or Sub band.
    (Example: Main band)
2. Select the Memory mode.
3. Rotate (◉**MULTI**) to select the channel to be copied. (Example: Memory channel 3)

Select the channel to be copied

4. Display the MEMORY screen.
    MENU » **MEMORY**
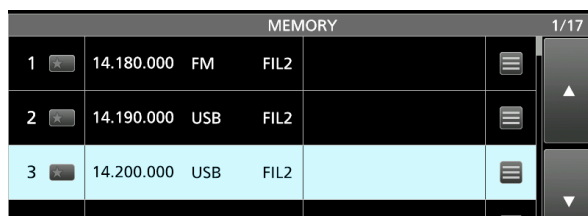
5. Rotate (◉**MULTI**) to select the channel to write the copied contents to. (Example: Memory channel 5)
6. Touch ▤ of the selected channel.
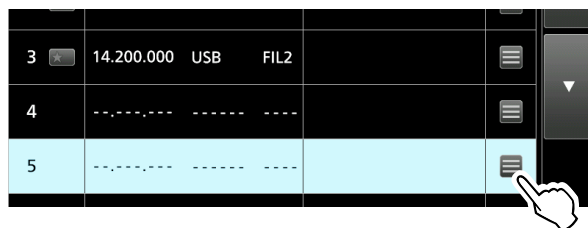
7. Touch "Memory Write."
    • "Write Memory?" is displayed.
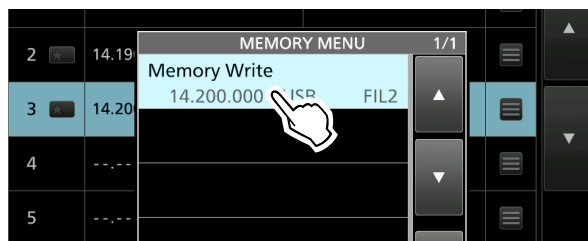
8. Touch [YES].
    • The copied channel contents are entered to the selected channel.
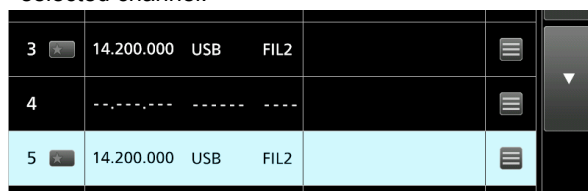
9. To close the MEMORY screen, push **EXIT**.

65

Entering a memory name

Except for the blank channels, you can assign a name to all memory channels, including scan edges.

The names will be displayed along with the frequency, mode and filter number.

1. Display the MEMORY screen.
   MENU » MEMORY

2. Rotate ⊙MULTI to select the channel to enter a name. (Example: Memory channel 2)
3. Touch ☰ of the selected channel.
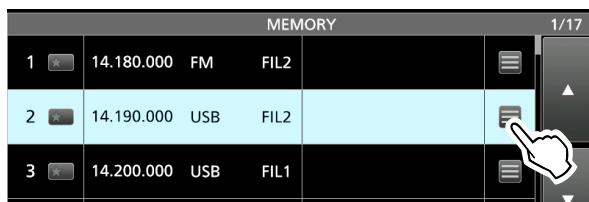
4. Touch "Edit Name."
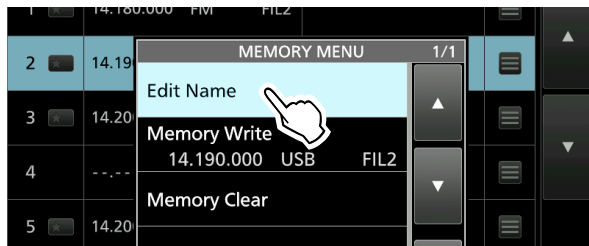
5. Enter a name, and then touch [ENT]. (Example: #1DX Spot)
   ⓘRefer to page 14 for character entry.

Memory name
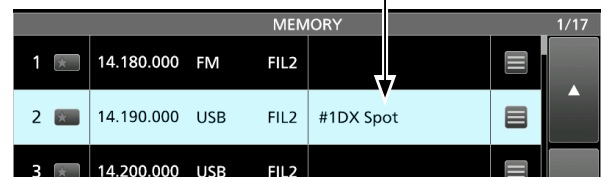
6. To close the MEMORY screen, push EXIT.

Memory name

ⓘThe Memory name is not displayed when the Mini scope screen or expanded screen is displayed.
ⓘYou can also select not to display the Memory name on the standby screen.

MENU » SET > Display > **Memory Name**

Clearing a memory channel

You can clear a no-longer-used memory channel and reset it as a blank channel, except for the program channels (P1 and P2).

1. Select the Main band or Sub band.
   (Example: Main band)
2. Select the Memory mode.
3. Rotate (MULTI) to select the channel to clear.
   (Example: Memory channel 3)

The memory channel to clear

4. Touch [M-CLR] for 1 second.

Cleared

5. To close the VFO/MEMORY screen, push EXIT.

About the MEMORY screen
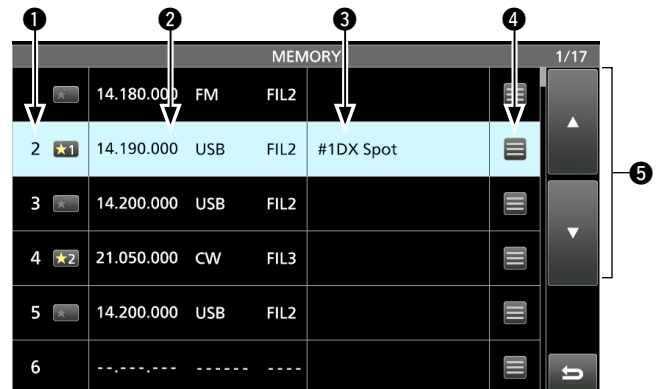
❶ **Memory channel number**
Displays the memory channel number.
ⓘ"P1" or "P2" is displayed for the Scan Edge memory channels.

Memory select icon ★1
Touch this icon to set the select number "★1," "★2," "★3" or OFF. See page 72 for the Select Memory scan.
ⓘYou can also touch the icon for 1 second to display the SELECT ALL CLEAR screen, and then select the item to reset the select number.

❷ **Frequency/Operating mode/IF filter**
Displays the entered frequency, selected operating mode, and the IF filter.

❸ **Memory name**
Displays the memory name, if entered.
ⓘSee the previous for details.

❹ **Memory menu**
Touch to display the MEMORY MENU.
ⓘYou can select between "Edit Name," "Memory Write" and "Memory Clear".

❺ **[▲] and [▼]**
Touch to scroll through the Memory channels, 6 channels at a time.

About the QUICK MENU

While selecting a memory channel with memory contents, push QUICK to display the QUICK MENU, where you can select "SELECT," "Edit Name," "Memory Write," "Memory Clear," and "SELECT All Clear."

Memo Pad

There are 5 Memo Pads as the default to save frequencies and operating modes for easy write and recall. You can increase the Memo Pads to 10 in "Memopad Numbers. "

MENU » SET > Function > **Memo Pad Quantity**

ⓘThe Memo Pads are separate from memory channels.

Memo Pads are convenient when you want to temporarily memorize a frequency and operating mode, such as when you find a DX station in a pile-up, or when the desired station is busy for a long time and you want to temporarily search for other stations.
Use Memo Pads instead of relying on hastily scribbled notes that are easily misplaced.

◇ Saving the displayed contents into a Memo Pad

1. Select the Main band or Sub band.
   (Example: Main band)
2. Push `QUICK`, then touch "VFO/MEMORY" in the Quick menu.
3. Touch [VFO] to select the VFO mode.
4. Push `MP-W` to save the displayed content.
   • A beep sounds.
   ⓘTo save additional Pads, repeat steps 1 to 4.
   ⓘ When you save up to the set number of Memo Pads in "Memo Pad Quantity," the oldest Memo Pad is automatically cleared to make room for the new Memo Pad.

◇ Calling up the Memo Pads

1. Select the Main band or Sub band.
   (Example: Main band)
2. Push `MP-R`.
   ⓘPushing `MP-R` scrolls through the contents saved in the Memo Pads.

About the MEMO PAD screen

The MEMO PAD screen displays the saved contents in a list, in which you can select or delete the saved contents.

To display the MEMO PAD screen,
● Push `MP-R` for 1 second or touch [MPAD] on the MENU screen.

MENU » **MPAD**

Temporary Pad

ⓘIf you change the frequency or operating mode called up from Memo Pads, the contents are automatically updated in a temporary Pad.

Key		Action
▲/▼		Scrolls through the list.
DEL	Touch 1 second	Deletes the selected Memo Pad.
DEL ALL	Touch 1 second	Deletes all the Memo Pads.
EXPAND		Select to display the MEMO PAD list in a normal or larger size screen.

8. SCANS

Scan types

Scan types			Operation (Scan function is enabled in the Main band)
VFO SCAN			Used to detect a signal by automatically changing the frequency in the VFO mode.
	Programmed scan		Repeatedly scans between two Scan Edge frequencies. The edge frequencies are programmable, and are preset in P1 and P2 as the default. (pp. 64, 67)
		Fine Programmed scan	If the squelch opens while scanning, the tuning step changes to 10 Hz. This reduces the scan speed, but the transceiver keeps scanning.
MEMORY SCAN			Used to detect a signal by automatically scanning the memories in the Memory mode.
	Memory scan		Repeatedly scans all entered Memory channels.
	Select Memory scan		Repeatedly scans all or one of 3 select Memory channels.
┄F SCAN			Repeatedly scans within the ┄F span area. The scan starts from the center frequency. (p. 74)
	Fine ┄F scan		If the squelch opens while ┄F scanning, the tuning step changes to 10 Hz. This reduces the scan speed, but the transceiver keeps scanning.

Preparation

◇ Squelch status
Scans work with the Main band's squelch status.
Be sure to adjust the squelch level according to your operating environment.
ⓘNormally, set (AF⊙RF/SQL) to the point where noise disappears, and the TX/RX indicator goes OFF.

When the scan starts with the squelch open:
• For a Programmed scan
When the tuning step is 1 kHz or less, the scan continues until it is manually stopped— it does not pause* even if signals are detected.

*The scan pauses when the squelch is closed and then opened. The scan resumes after 10 seconds has passed when the Scan Resume function is ON. It is cancelled when the function is OFF.

When the tuning step is 5 kHz or more, the scan pauses on each step when the Scan Resume function is ON. It does not pause when the function is OFF.

• For a Memory scan
The scan pauses on each channel when the Scan Resume function is ON. The scan does not pause when the function is OFF.

When the scan starts with the squelch closed:
The scan stops when a signal is detected, regardless of the tuning step.
• When the Scan Resume function is ON, the scan pauses for 10 seconds after detecting a signal, then resumes 2 seconds after the signal disappears.

SCAN screen

To display the SCAN screen, push ⬚MENU⬚, and then touch [SCAN].
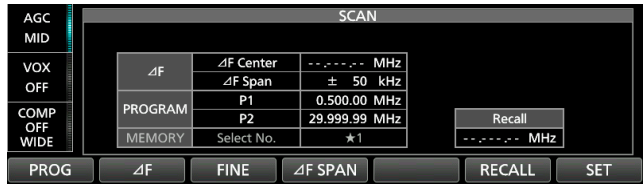
Main band: VFO mode

▼ ▲

Main band: Memory mode

ⓘTo select the VFO mode or Memory mode, push ⬚QUICK⬚ and touch "VFO/MEMORY," and then on the VFO/MEMORY screen, touch [VFO] or [MEMORY].

Key	Action
PROG	Starts or cancels the Programmed scan.
MEMO	Starts or cancels the Memory scan.
⊿F	Starts or cancels the ⊿F scan
FINE	While Programmed scanning, touch to switch to the Fine Programmed scan. While ⊿F scanning, touch to switch to the Fine ⊿F scan. ⓘIn the Memory mode, this key is displayed when a ⊿F scan is started.
⊿F SPAN	Touch to select the ⊿F span between ±5 kHz, ±10 kHz, ±20 kHz, ±50 kHz, ±100 kHz, ±500 kHz, and ±1 MHz.
RECALL	Touch 1 second	Recalls the frequency that was set before starting the scan in the VFO mode.
SET	Displays the SCAN SET screen.
SELECT	Touch	Selects a Memory channel to set as a Select Memory channel. "★1," "★2," "★3," and "(no icon)" are alternately displayed.
	Touch 1 second	Displays the SELECT ALL CLEAR screen.
SEL No.	Selects the Select scan number for the Select Memory scan. Each time you touch [SEL No.], "★1," "★2," "★3," and "★1,2,3" are alternately displayed.

SCAN SET screen

1. Display the SCAN screen.
   ⬚MENU⬚ » ⬚SCAN⬚

2. Touch [SET].
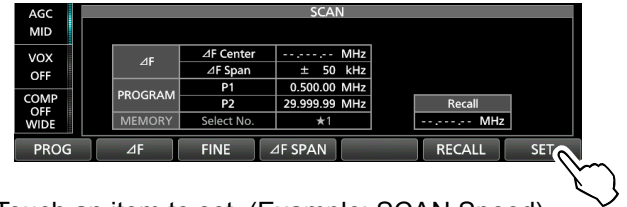
3. Touch an item to set. (Example: SCAN Speed)
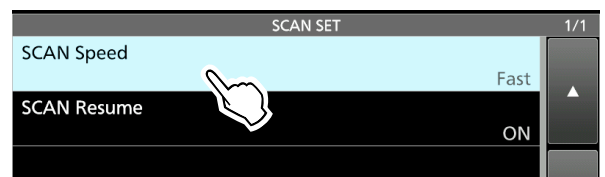
4. Touch an option. (Example: Slow)
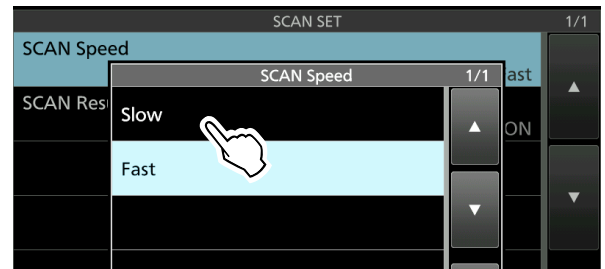
5. To close the SCAN SET screen, push ⬚EXIT⬚.

SCAN Speed (Default: Fast)

Set the desired scan speed to slow or fast.
• Slow: Scan speed is slow.
• Fast: Scan speed is fast.

SCAN Resume (Default: ON)

Set the Scan Resume function to ON or OFF.
• OFF: When a signal is detected, cancels the scan.
• ON: When a signal is detected, scan pauses for 10 seconds, then resumes.
  Two seconds after the signal disappears, the scan resumes.

TIP: How to reset to the default settings
Touching an item or its option for 1 second displays the Quick menu, and then touch "Default" to reset to the default setting.

Programmed scan

Programmed scan and Fine Programmed scan

Scan edge   Scan edge
P1 or P2   P2 or P1

Scan

Jump
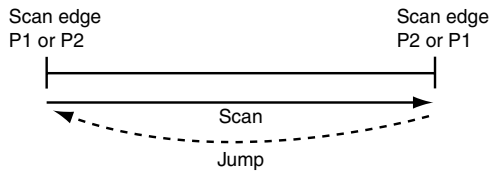
Repeatedly scans between two Scan Edge frequencies.
The edge frequencies are preset in P1 and P2 as the default.
(P1: 0.500000 MHz / P2: 29.999999 MHz)

ⓘ To change the P1 and P2 Scan Edge Memory channels, see "Entering memory channel contents" (p. 64) for details.
ⓘ If the same frequencies are entered into P1 and P2, the Programmed scan does not start.
ⓘ The Fine Programmed scan is most effective in the SSB, CW, and RTTY modes.

◇ Programmed scan operation

1. Select the VFO mode in the Main band.
2. Select the operating mode (example: USB), tuning step (1 kHz).
3. Display the SCAN screen.
   MENU » **SCAN**

4. Touch [PROG] to start the Programmed scan.
   ⓘ "PROGRAM SCAN" blinks while scanning.
   ⓘ You can change the operating mode and the tuning step while scanning.

Blinks   Frequency before scan
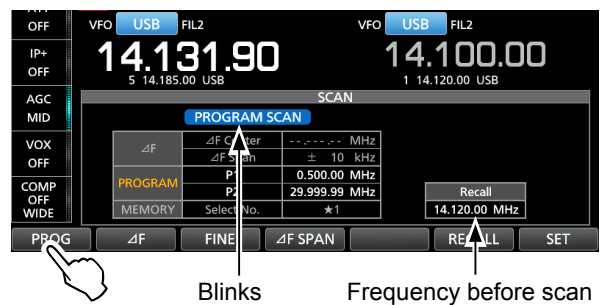
5. Touch [FINE] to switch to the Fine Programmed scan.
   ⓘ While scanning, "FINE PROGRAM SCAN" blinks instead of "PROGRAM SCAN."
   ⓘ Touch [FINE] again to return to the Programmed scan.

Blinks
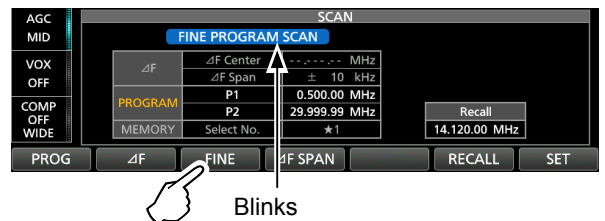
6. To close the SCAN screen, push **EXIT** several times.

Memory scan

<table>
<tr><td>

Memory scan

Blank channels are skipepd

Repeatedly scans all entered Memory channels.
Blank (not entered) Memory channels are skipped.
ⓘIf two or more Memory channels are not entered, the Memory scan does not start.

</td><td>

Select Memory scan

"★1," "★2" and "★3" show that the channel is specified as a Select Memory.

(Example: Select Memory channel ★1)

Repeatedly scans all or one of 3 Select Memory channels (★1, ★2, ★3).
ⓘIf two or more Memory channels are not designated as Select Memory channels, the Select Memory scan does not start.

</td></tr>
</table>

◇ Memory scan operation

1. Select the Main band.
2. Display the SCAN screen.
   MENU » **SCAN**
3. Touch [MEMO] to start the Memory scan.
   ⓘWhen a signal is detected, the scan pauses according to the "SCAN Resume" setting, and then resumes.
   ⓘTo cancel the scan, touch [MEMO] again.

Blinks   Not displayed while a Memory scan.
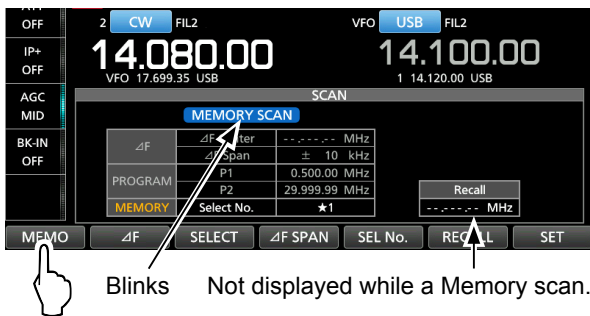
4. To close the SCAN screen, push **EXIT**.

◇ Setting the Select Memory channels

1. Select the Main band.
2. Display the SCAN screen.
   MENU » **SCAN**
3. Rotate ⊛**MULTI** to select memory channels to set as the Select Memory channel. (Example: ★1)
4. Touch [SELECT] to set the selected number.
   ⓘ"★1," "★2," "★3," and "(no icon)" are alternately displayed.

"★1" is set to Memory channel 3.
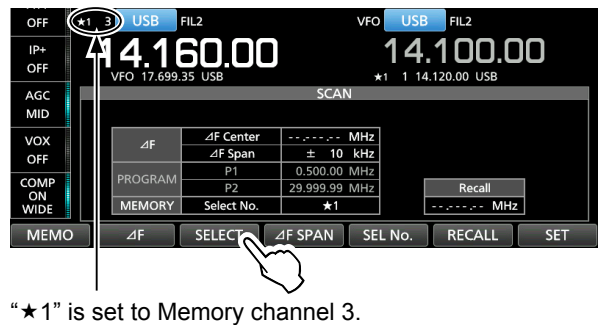
5. Repeat steps 3 and 4 to set more than two Memory channels.
   ⓘYou cannot set blank channels as Select Memory channels.
   ⓘYou can check the Select Memory channel settings on the MEMORY screen.

   MENU » **MEMORY**

(Example: "★1" is set to Memory channel 1 and 3)

Memory scan (Continued)

◇ Select Memory scan operation

1. Select the Main band.
2. Display the SCAN screen.
   MENU » **SCAN**

3. Touch [MEMO] to start a regular Memory scan.
   ⓘWhen a signal is detected, the scan pauses according to the "SCAN Resume" setting, and then resumes.

Blinks   **Memory scan**
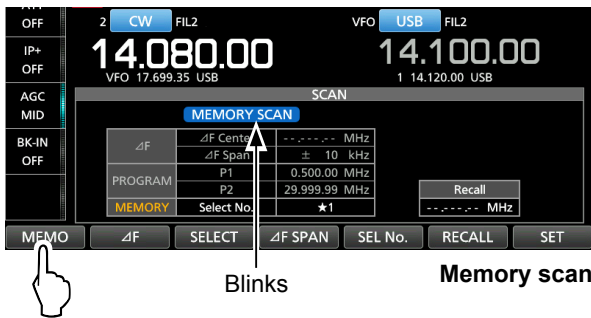
4. While scanning, touch [SEL No.] to select the Select Memory scan number.
   ⓘEach time you touch [SEL No.], "★1," "★2," "★3," and "★1,2,3" are alternately displayed.
   - ★1:   Channels specified as ★1 are scanned.
   - ★2:   Channels specified as ★2 are scanned.
   - ★3:   Channels specified as ★3 are scanned.
   - ★1,2,3: Channels specified as ★1, ★2, or ★3 are scanned.
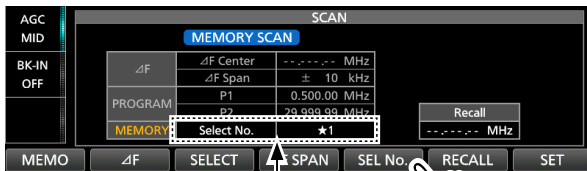
Select the Select Memory scan number (Example: ★1)

5. Touch [SELECT] to switch to the Select Memory scan.
   ⓘTouching [SELECT] switches between the Memory scan and the Select Memory scan.

Blinks   **Select Memory scan**
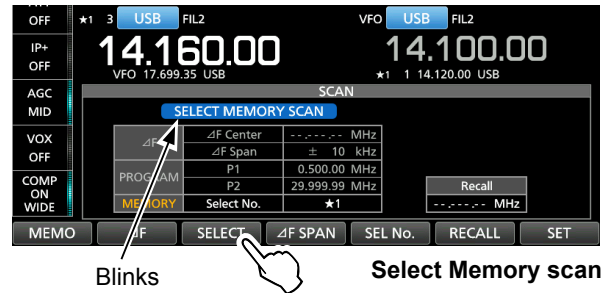
6. To cancel the scan, touch [MEMO].
7. To close the SCAN screen, push **EXIT**.

Clearing all Select Memory channel settings
1. Touch [SELECT] for 1 second on the SCAN screen.
   • The SELECT ALL CLEAR screen is displayed.
2. Touch the Select Memory channel setting to clear.
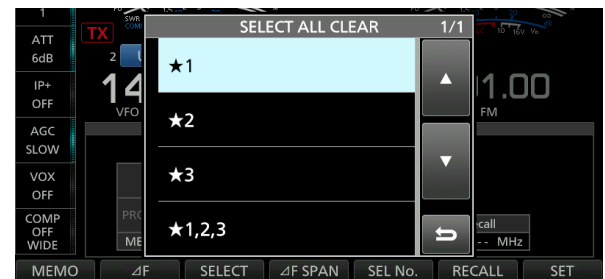
⊿F scan

⊿F scan and Fine ⊿F scan

(Example: Span: ±10 kHz)
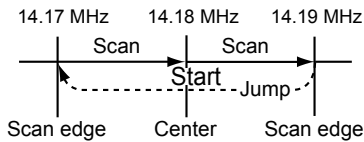
14.17 MHz   14.18 MHz   14.19 MHz

Scan | Scan

Start

Jump

Scan edge   Center   Scan edge

Repeatedly scans within the ⊿F span area.
The scan starts from the center frequency.
ⓘIn fine scan (programmed or ⊿F), the scan
speed decreases when the squelch opens, but
the transceiver keeps scanning. The scan tuning
step changes to 10 Hz when the squelch opens.

◇ ⊿F scan operation

1. In the Main band, set the center frequency.
   (Example: in the VFO mode)
2. Set the operating mode and the tuning step.
   (Example: USB, 1 kHz)
   ⓘYou can also change these settings while scanning.
3. Display the SCAN screen.
   MENU » **SCAN**

4. Touch [⊿F SPAN] to select the span.
   • Options: ±5 kHz, ±10 kHz, ±20 kHz, ±50 kHz,
             ±100 kHz, ±500 kHz, or ±1 MHz

5. Touch [⊿F] to start the scan.
   ⓘWhen a signal is detected, the scan pauses
   according to the "SCAN Resume" setting, and then
   resumes.
   ⓘTo cancel the scan, touch [⊿F] again.
   ⓘTo turn the TS function to scan by the frequency step
   setting, touch the 100 kHz digit on the frequency
   readout.

Blinks

The span set in step 4

The frequency
before starting the scan

6. To switch to the Fine ⊿F scan, touch [FINE].
   • The scan frequency step changes to 50 Hz.
   ⓘTouching [FINE] switches between the ⊿F scan and
   the Fine ⊿F scan.

Blinks
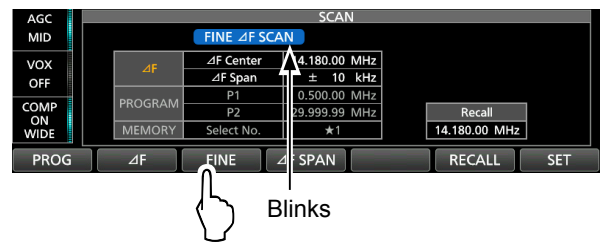
7. To close the SCAN screen, push **EXIT**.
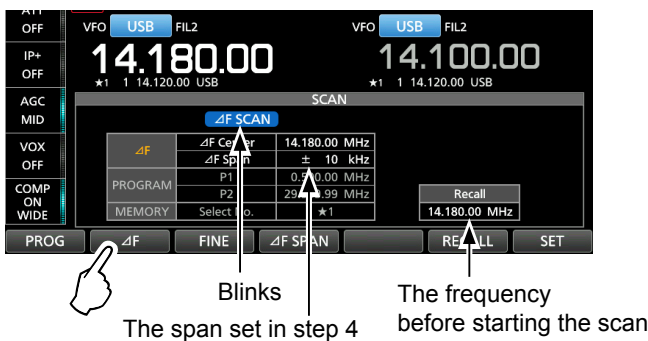
9. CLOCK AND TIMERS (ADVANCED)

NTP function

The NTP (Network Time Protocol) function synchronizes the internal clock with the time management server.
ⓘTo use this function, an internet connection and default gateway settings are necessary.

◇ Using the NTP Time Synchronize function
Using this function you can manually synchronize the internal clock by accessing the time management server.

1. Display the DATE/TIME screen.

   MENU » SET > Time Set > **Date/Time**

2. Touch "<<NTP TIME SYNC>>."

   • "NTP Time Sync. Please wait..." is displayed.
   • The transceiver starts accessing the NTP server address that is set in the "NTP Server Address" item.

3. When "Time Sync completed." is displayed, touch [OK].
4. To close the DATE/TIME screen, push EXIT several times.

◇ Using the NTP function
By turning ON the NTP function, the transceiver automatically synchronizes the internal clock with the time management server.
ⓘThis function is set to ON by default.

1. Display the DATE/TIME screen.

   MENU » SET > Time Set > **Date/Time**

2. Touch "NTP Function."
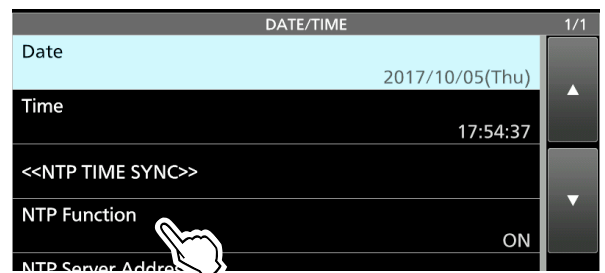
3. Select ON or OFF.
   • When ON is selected, the transceiver starts accessing the NTP server address that is set in the "NTP Server Address" item.
4. To close the DATE/TIME screen, push EXIT several times.

Setting the Timers

◇ Setting the Sleep Timer

The Sleep Timer automatically turns OFF the transceiver power when the set time period has passed. You can set the timer to between 5 and 120 minutes, in 5 minute steps.

1. Push [TIMER] for 1 second.
2. Touch "Sleep Timer."
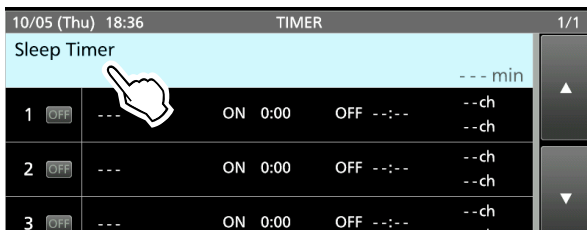
3. Rotate (●MULTI) to set the sleep timer.
   (Example: 120 minutes)
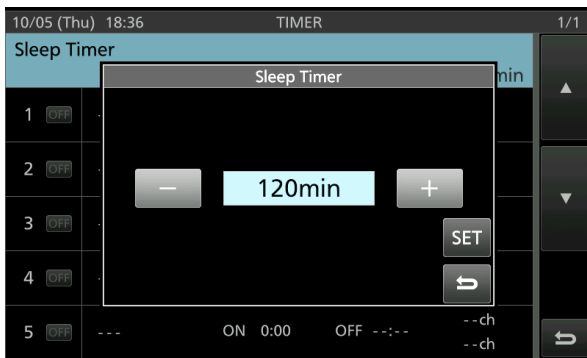
4. Touch [SET] to save the setting and to start the timer.
   • The timer indicator on the [TIMER] key turns ON.
   • Approximately 10 seconds before the transceiver power turns OFF, the indicator on the key starts blinking.
   ⓘAfter the transceiver turns OFF, the Sleep Timer set in step 3 is cleared.
   ⓘTo pause and resume the timer while the timer is running, push [TIMER].

5. To close the TIMER screen, push [EXIT].

Setting the Timers (Continued)

◇ Setting the Daily Timer

The Daily Timer automatically turns the transceiver power ON or OFF on the set day and time.
ⓘYou can set up to 5 timers.

1. Push [TIMER] for 1 second.
2. Touch the timer to set (Example: 1)

3. Rotate [⊙MULTI] scroll through the setting items, and then touch an item to select.
   ⓘEach setting items are described on the next page.
   ⓘYou can reset to the default setting or cancel the setting by pushing [QUICK].

4. After setting the items, touch "<<Set>>" to save them.

Repeat Setting   Power OFF Timer

Timer Status   Reservation Timer

Day of the Week   Reservation Channel (MAIN/SUB)

5. To close the TIMER screen, push [EXIT].

◇ Daily Timer setting items

NOTE: All of the following settings are not saved until you touch "<<Set>>."

Timer Status (Default: OFF)

Select ON to start the Daily Timer, and select OFF to stop the timer.

Reservation Timer (Default: 0:00)

Set the time to automatically turn ON the transceiver power.
ⓘTo clear the setting, push QUICK and touch "Clear."

Power OFF Timer (Default: --:--)

Set the time to automatically turn OFF the transceiver power.
ⓘTo clear the setting, first set the Reservation Timer time, and then push QUICK to select "Clear."

NOTE: When Power OFF Timer is set to an earlier time than the Reservation Timer time, the transceiver will not be turned OFF automatically.

To automatically turn the transceiver ON and OFF, set Power OFF Timer to a later time than the Reservation Timer time.

Example:
• Reservation Timer: 8:00
• Power OFF Timer: 9:30

Reservation Channel (MAIN) (Default: -- ch)
Reservation Channel (SUB) (Default: -- ch)

The Memory channel set in this item is automatically selected when the transceiver is automatically turned ON by the Reservation Timer, or the set time has come while the transceiver is turned ON.
ⓘYou cannot select a blank channel.
ⓘTo clear the setting, push QUICK and touch "Clear."

Day of the Week (Default: --)

Select a day of the week to set the Daily Timer function.
ⓘTo not to select a day, leave the item set to default, or reset to the default by pushing QUICK and then touch "Clear."

Repeat Setting (Default: OFF)

Set the Repeat Setting to ON or OFF.
When this item is set to ON, the timer is activated every selected day of the week, or everyday if the Day of the Week item is not set.
ⓘTo clear the setting, push QUICK and touch "Clear."

<<Set>>

Touch to save all the timer settings for the selected timer.

10. ANTENNA TUNER OPERATION (ADVANCED)

Antenna switching setting when operating with Dualwatch

You can connect a Transmit/Receive antenna to either ANT1 or ANT2 for the normal operation. However, if you want to use separate antennas for transmit and receive you need to set "RX-ANT," or if you want to add an external device, such as a filter/pre-amplifier for receive you need to set "RX-I/O."

To change the RX-ANT Connectors Type, touch [TYPE] on the ANTENNA screen, then select between "Connect Receive Antenna" and "Connect External RX Device."

MENU » ANTENNA > **TYPE**

If you switch the RX-ANT Connectors Type to the opposite type, (to "Connect External RX Device" or to "Connect Receive Antenna") the previous RX-ANT (or RX-I/O) memory settings for both the Main and Sub bands are cleared.

The "RX-I/O" settings are limited according to the antenna connector setting (ANT1 or ANT2), as follows.

Example:
When both the Main and Sub bands are using the same antenna (Example: ANT1) and the RX-ANT Connectors Type is set to "Connect External RX Device," if the Main is set to RX-I/O, the Sub RX-I/O is forcibly set (temporarily) the same as the Main setting. Turning OFF the RX-I/O on the Sub band clears the RX-I/O settings for both the Sub and the Main bands.

"RX-I/O" is set to both the Main and Sub bands.
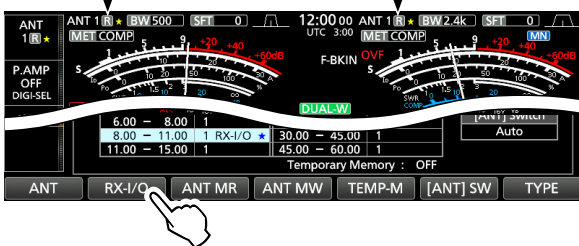
If you turn OFF RX-I/O on the Sub band that was forcibly set by above operation, RX-I/O on the Main band is also forcibly turned OFF, and R is displayed.

RX-I/O is forcibly cleared.

RX-I/O is OFF.

(Example: Main band=ANT1, Sub band=ANT2)
When the Main (ANT1) and Sub (ANT2) bands are set to different antennas, if you set RX-I/O to the Main band, and then you set RX-I/O to the Sub band, the previous Main band setting is forcibly cleared, and R is displayed. Setting Main back to RX-/IO SUB is forcibly cleared, and R is displayed.

RX-I/O is set to ANT1.   ANT2 is selected.

RX-I/O is forcibly turned OFF.   RX-I/O is set.

RX-I/O is set to ANT2

The Main and Sub bands are not forcibly set or cleared when the RX-ANT Connectors Type is set to "Connect Receive Antenna."

Selecting the antenna connector

Set the antenna connector to "ANT1" or "ANT2," and turn the receive antenna connector ON or OFF.

1. Select the Main band or Sub band.
2. Select the operating band.
3. Touch [ANT] in the Multi-function key group to set to "ANT1" or "ANT2."
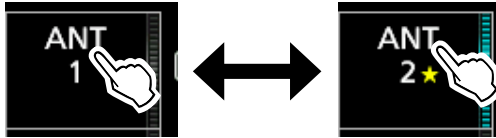
ⓘWhile "ANT1" is selected, touch [ANT] for 1 second to set the antenna that is connected to [ANT1] for transmitting, and the antenna connected to [RX-ANT IN] for receiving.
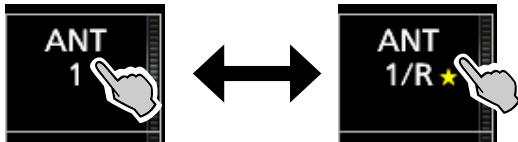
ⓘWhile "ANT2" is selected, touch [ANT] for 1 second to set the antenna that is connected to [ANT2] for transmitting, and the antenna connected to [RX-ANT IN] for receiving
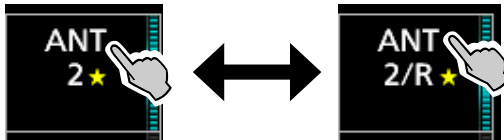
• "★" is displayed if you temporarily select an antenna that is different from the one that is saved in memory.
 - Touch [ANT MW] for 1 second to save the temporary selection into memory, then "★" disappears.

  MENU » ANTENNA > **ANT MW**

• When the antenna selection mode ([ANT] SW) is set to "Manual," each antenna connector is selected according to the saved settings.

  MENU » ANTENNA > **[ANT] SW**

When not using the [RX-ANT] connector,
Set "ANT1" or "ANT2."

ⓘWhen "ANT1/R" or "ANT2/R" is selected, the signal is switched to the [RX-ANT IN] connector, and then reception in the [ANT1] and [ANT2] are disconnected.

11. OTHER FUNCTIONS

RF Direct Sampling System

The IC-7610 employs an RF direct sampling system and has 2 completely independent and identical receiver circuits for the Main and Sub bands from the antenna to the AF output. RF signals are directly converted to digital data and processed in a Field Programmable Gate Array (FPGA) with Icom's state of the SDR technology.
The RF signals are sent to the A/D converter, resulting in digital signal, then is processed by the FPGA to be restored to an analog audio signal according to the receive mode.
This system is a leading technology marking an epoch in amateur radio.

In the Direct Sampling System, there is no local oscillator or mixer circuits that are used in ordinary super heterodyne systems. That makes the received signal less distorted in the amplification stage, resulting a higher image response received signal.
In the transmit circuit, since the transmit signal is generated by the FPGA regardless of the type of emission, a pure high C/N ratio transmit signal is obtained.
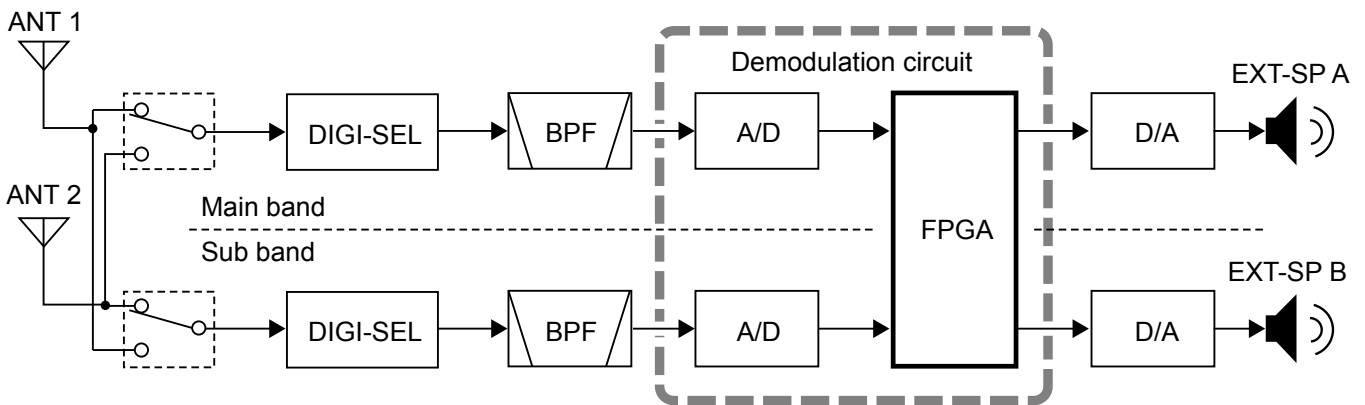
About the RF/SQL Control

MENU » SET > Function > **RF/SQL Control**

You can set the (AF○RF/SQL) (outer) control type in the RF/SQL Control item in the set mode.

- Auto: While in the AM or FM mode, used only as a squelch control.
  While in the SSB, CW, RTTY, or PSK mode, used only as an RF gain control.
- SQL: Used as only a squelch control.
  ⓘRF gain is fixed at maximum sensitivity.
- RF+SQL: Used as an RF gain control, and a noise squelch or S-meter squelch.

When using as an RF gain/squelch control
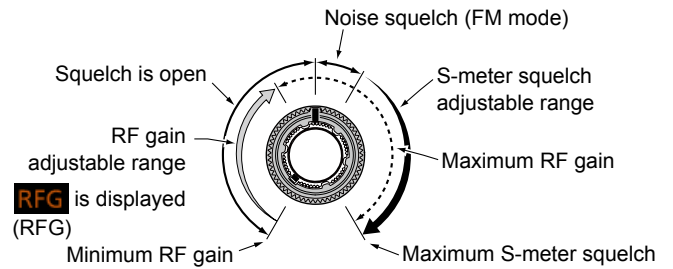
When using as an RF gain control
(Squelch is fixed open: SSB, CW, RTTY, PSK only)
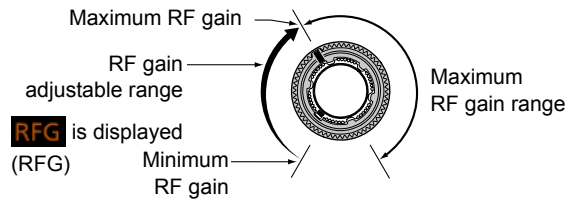
When using as a squelch control
(RF gain is fixed at maximum.)
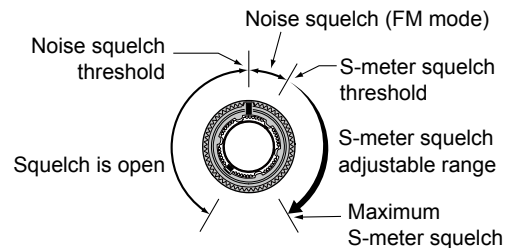
About "USB SEND/Keying"

You can control transmit, receive and CW/RTTY keying from the PC, through the USB port.
Select the control port to be used for communication between the IC-7610 and PC in the "USB SEND," "USB Keying (CW)" and "USB Keying (RTTY)" items according to your operating needs.

MENU » SET > Connectors > **USB SEND/Keying**

The IC-7610 has two virtual COM ports, A and B. When connecting to a USB port on your PC, the ports are virtually named as USB1 (A) and USB1 (B), and then the transmit and receive control (USB SEND), CW Keying, or RTTY (FSK) Keying signals from the PC are assigned to the DTR/RTS terminals in the virtual port.

USB SEND   (Default: OFF)
USB Keying (CW)   (Default: OFF)
USB Keying (RTTY)   (Default: OFF)
• OFF: Turns OFF the function.
• USB1 (A) DTR: Uses the DTR terminal on USB1 (A).
• USB1 (A) RTS: Uses the RTS terminal on USB1 (A).
• USB1 (B) DTR: Uses the DTR terminal on USB1 (B).
• USB1 (B) RTS: Uses the RTS terminal on USB1 (B).
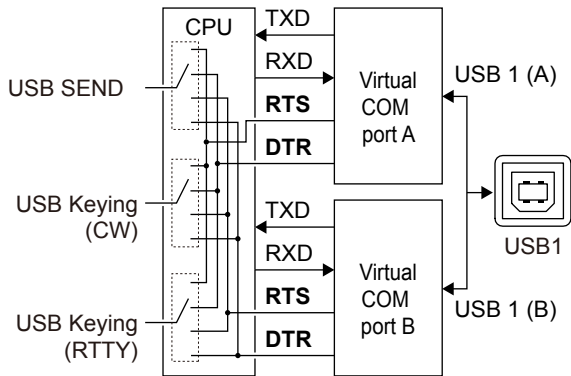
TIP: About the USB SEND/Keying items
ⓘWhen you operate RTTY or CW through your PC's USB port and your IC-7610, you may not be able to send the "SEND" or "Keying" signals until a few seconds after you connect the USB cable.
ⓘWhen you operate through your PC's USB port and the IC-7610, and connect a second transceiver to another PC USB port, a short "SEND" or "Keying" signal will be sent from the first transceiver. Therefore, we recommend that you do not connect a second transceiver to a USB port of the same PC. Or, always turn OFF the transceiver power before you connect a USB cable.

Measuring SWR

The transceiver has a high-performance SWR meter. This meter displays a stable measurement in real time, even if the transmit output power varies frequently. You can measure the SWR of an antenna itself through the internal antenna tuner.

1. Select the RTTY mode.
2. Set the frequency band for the antenna.
3. Touch the meter indicator several times to display the SWR meter.
    ⓘYou can also display the SWR on the Multi-function meter by touching the meter indicator for 1 second.

SWR meter display
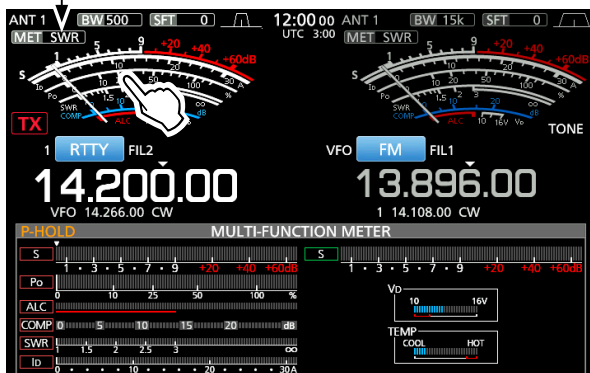
4. Select the antenna connector that the antenna that you want to measure is connected to.
5. Push ⦿MULTI to adjust the RF POWER to more than 30 W in the Multi-function menu.

Before transmitting, monitor the operating frequency to make sure you will not cause interference to other stations on the same frequency.

6. Hold down [PTT] (or push TRANSMIT) to transmit.

The best match is within this range. (1.5 or less)
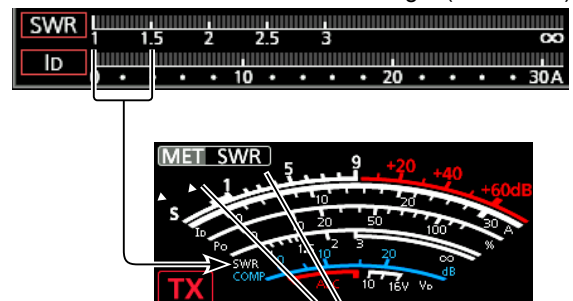
ⓘIf the SWR meter indicates 1.5 or less, the antenna is matched.
ⓘIf the measured SWR is more than 1.5:1, you need to match the antenna with the transceiver.

7. After reading the SWR, release [PTT] (or push TRANSMIT) to return to receive.

Selecting the Display Type

You can select between 2 display backgrounds.

1. Display the DISPLAY screen.

   MENU » SET > **Display**

2. Touch "Display Type."
3. Select the background display type from A and B.
   • A: Black background (default)
   • B: Blue background
4. To close the DISPLAY screen, push EXIT.

Selecting the Display Font

You can select between 2 frequency readout fonts.

1. Display the DISPLAY screen.

   MENU » SET > **Display**

2. Touch "Display Font."
3. Select the display font type from "Basic" and "Round."
   • Basic (default)

   14.170.00   14.180.00

   • Round

   14.170.00   14.180.00

4. To close the DISPLAY screen, push EXIT.

Displaying my call sign

You can set to display your own call sign at power ON.
(Example: displaying the call sign JA3YUA)

1. Display the DISPLAY screen.

   MENU » SET > **Display**

2. Touch "My Call."
3. Enter "JA3YUA," and touch [ENT] to save.

MY CALL
← JA3YUA →
Q W E R T Y U I O P CLR
A S D F G H J K L SYMB
Z X C V B N M ENT
AB⇔12 @ / SPACE . ↰

DISPLAY	3/3
External Display Resolution	800x480
Opening Message	ON
My Call	JA3YUA
Power ON Check	ON
Display Language	English
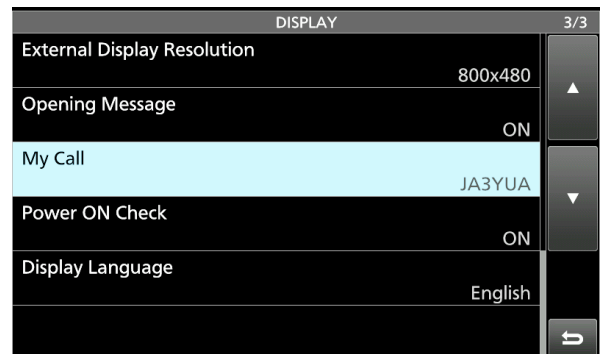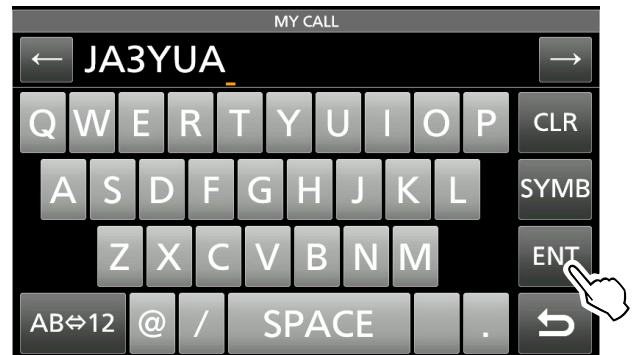
4. To close the DISPLAY screen, push EXIT.

Screen Capture function

You can capture the transceiver display onto an SD card or a USB flash drive. Most of the screens used in this manual are captured using this function. However, some screens cannot be captured.

◇ Setting the Screen Capture function

1. Display the "Screen Capture [POWER] Switch" screen.

    MENU » | SET > Function > **Screen Capture [POWER] Switch**

2. Touch "ON" to turn ON the Screen Capture function.
3. Touch "Screen Capture Storage Media" to select "SD Card" or "USB Flash Drive" to save the captured screens.

    MENU » | SET > Function > **Screen Capture Storage Media**

4. Touch "Screen Capture File Type" to set the screen capture file type to "PNG" or "BMP."

    MENU » | SET > Function > **Screen Capture File Type**

    TIP: You can also assign the Screen Capture function to the [Print Screen] key on the USB keyboard.

    MENU » | SET > Function > **Screen Capture Keyboard [Print Screen]**

◇ Capturing a screen

1. Display the screen that you want to capture.
2. Push **POWER**.
    • "SCREEN CAPTURE Completed" is displayed.
    ⓘIf the "Screen Capture Keyboard [Print Screen]" is set to ON, push [Print Screen] on the keyboard.

◇ Viewing a captured screen

1. Display the SCREEN CAPTURE VIEW screen.

    MENU » | SET > SD Card > **Screen Capture View**

    MENU » | SET > USB Flash Drive > **Screen Capture View**

    • The capture screen list is displayed.
    • The latest screen capture is at the top of the list.

2. Touch the screen capture to view.
    • The indicator on the **NR** key blinks while viewing a screen capture.
    ⓘYou can view the next screen capture by rotating **MULTI**.
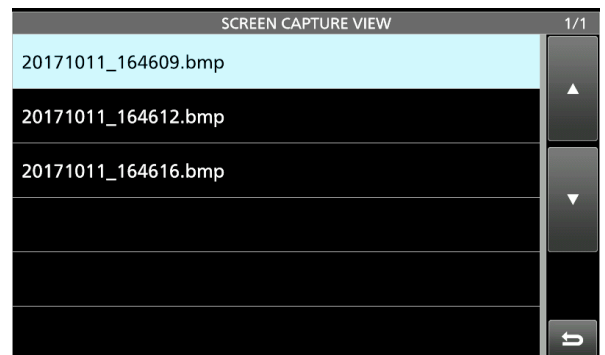
To display the file information or delete captured screens,
While selecting a file on the SCREEN CAPTURE VIEW screen, push **QUICK**.
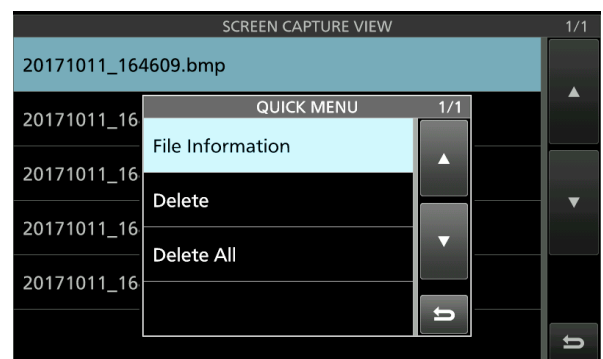
3. To close the SD CARD or USB FLASH DRIVE screen, push **EXIT** several times.

REF adjustment

You can perform a rough frequency calibration by receiving the radio station WWV, WWVH, or other frequency signals.

NOTE:
• The transceiver has been adjusted and tested at the factory before being shipped out. You should not have to recalibrate.
• Before performing a frequency calibration, you have to set "Calibration Marker" to ON.
• Spurious signal waveforms may be displayed while the Calibration Marker is ON.

ⓘBefore performing a frequency calibration, set the following items as described in the table below.

Operating mode	USB
(AF◉RF/SQL)	Decent audibility
(AF○RF/SQL)	Maximum RF gain
(TWIN PBT CLR)	Reset by holding down for 1 second.
RIT , ⊿TX	OFF (No icon)

1. Set the frequency to the standard frequency station minus 1 kHz.
   ⓘIf receiving WWV or WWVH (at 15.00000 MHz) as your standard frequency, set the operating frequency to 14.99900 MHz.
2. Set "Calibration Marker" to ON.
   MENU » SET > Function > **Calibration Marker**
3. Select the "REF Adjust" item.
   MENU » SET > Function > **REF Adjust**
4. Rotate ◉MULTI to adjust for a zero beat with the received standard signal.
   ⓘ"Zero beat" means that the exact same frequencies are set to 2 signals, resulting in a single tone being transmitted.
5. Set "Calibration Marker" to OFF.
6. Push EXIT several times until the MENU screen is closed.

12. MAINTENANCE (ADVANCED)

Cleaning
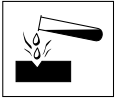
DO NOT use harsh solvents such as benzine or alcohol when cleaning, because they will damage the transceiver surfaces.

If the transceiver becomes dusty or dirty, wipe it clean with a dry, soft cloth.

Replacing fuse

If a fuse blows, or the transceiver stops functioning, find and repair the cause of the problem. Then replace the damaged fuse with a new, adequately rated fuse.

ⓘ Spare fuses are supplied with the transceiver.

The fuses are installed in the DC power cable and in the inside circuitry, to protect the transceiver.

• DC power cable fuses ....ATC 32 V 30 A
• Circuitry fuse ....APS 58 V 5 A

⚠**WARNING!**
• Disconnect the DC power cable from the transceiver before replacing the fuse.
• **NEVER** use fuses that are not specified.

◇ DC power cable fuses
See the following illustration to replace the DC power cable fuses.
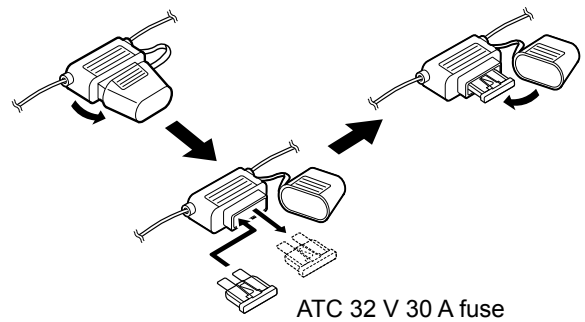
ATC 32 V 30 A fuse

Fuse Coding explanation

Fuse Coding: FUSE 32 V 30 A
Fuse Voltage Rating: 32 Volts
Fuse Current Rating: 30 Amperes

◇ **Circuitry fuse**

1. Unscrew 2 screws to remove the carrying handle, if attached.

Carrying handle
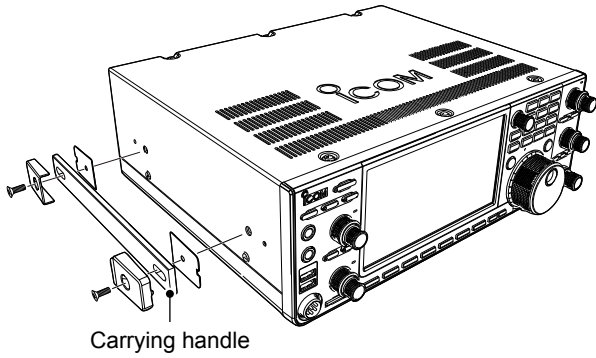
2. Remove the 10 top cover screws, then remove the cover.
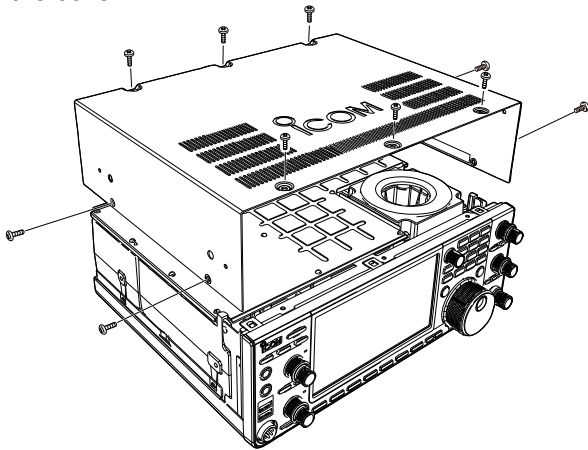
3. Remove the 15 shield screws, then remove the shield cover.

Shield cover
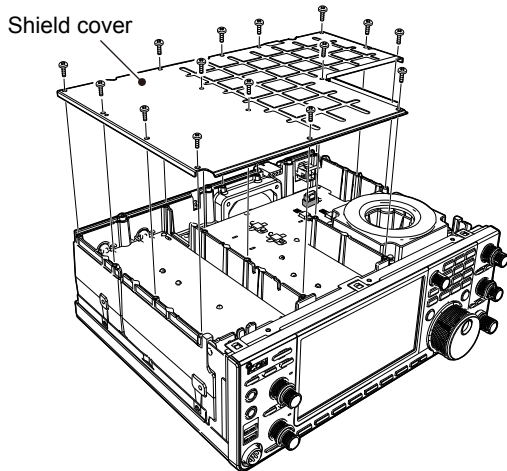
4. Replace the circuitry fuse as shown below.

CAUTION: When you remove a fuse, use longnose pliers to protect your fingers and the fuse holders.

APS 58 V 5 A fuse
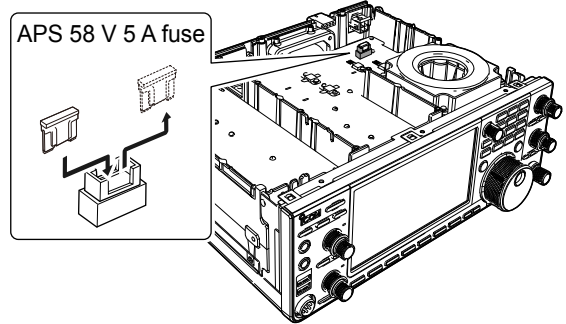
5. Replace the removed parts.

Touch screen calibration function

When no screen action occurs, or a different function is activated after touching the screen, the touched point and the detected point may be different.
In that case, the Touch screen calibration function helps to correct the touch screen sensing accuracy.

1. Display the OTHERS screen.

   MENU » Set > **Others**

2. Touch "Touch Screen Calibration."
   • A dot appears on the screen.

3. Touch the dot that is displayed on the screen.
   • A new dot appears in another position.

Touch the displayed dot

4. Repeat step 3.
   ⓘ When the calibration is complete, the transceiver returns to the OTHERS screen.

> **TIP: When the touch screen is not accurate, and you cannot access the OTHERS screen.**
>
> Do the following steps to display the "Touch Screen Calibration" screen.
>
> 1. Turn OFF the transceiver.
> 2. While holding down MENU and EXIT, push POWER to display the "Touch Screen Calibration" screen.
> 3. Repeat step 3 and 4 on the left column.
> 4. Touch the frequency readout or a key on the touch screen to confirm that the touch screen is working correctly.

13. UPDATING THE FIRMWARE

General

◇ About updating the firmware

You can update the IC-7610's firmware using an SD card or a USB flash drive. Updating the firmware adds new functions and/or improves performance parameters.

You can download the latest firmware from the Icom website.

https://www.icomjapan.com/support/

◇ Checking the firmware version

Check the firmware version when you turn ON the transceiver.

The firmware version is displayed

TIP: You can also check the firmware version on the INFORMATION screen.

[MENU] » SET > Others > **Information**

General (Continued)

◇ Preparation

Access the following URL and download the firmware file.

https://www.icomjapan.com/support/

ⓘ These instructions are based on Microsoft® Windows® 10.

1. Click the **"Firmware/Software"** link.

Firmware / Software >	Instruction Manual / Guides >	← Click
EU Declaration of Conformity >	Catalogs / Brochures >	

2. Enter "IC-7610" into the Search box, and then click **[Search]**.

Please fill the model name or part of the model name, and click the "Search" button

IC-7610 ←❶Enter

Search > ←❷Click
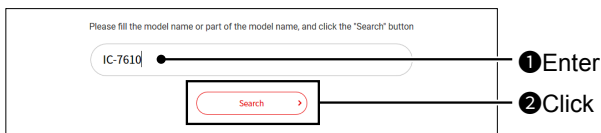
3. Click the desired firmware file link.
4. Read "Regarding this Download Service" carefully. Click **"Agree,"** and then click **[Download]**.

Regarding this Download Service.

When using this download service, the implementation, use and/or results of use are the sole responsibility of the person making the download.

Firmware is important data for the basic system control of your equipment. An interruption during downloading or a malfunction may cause a failure in the data re-writing, and your equipment may stop functioning normally. If such a failure of the firmware re-writing results in your equipment not functioning normally, Icom Inc. expressly denies and is free from any and all responsibility arising from the result of damage from such an event.

I fully understand the above, and agree not to hold Icom Inc. responsible for any damage to my equipment operation or loss of data as a result of this download.

☑ Agree ←❶Click

Download (MB) > ←❷Click

5. Click **"Save as"** in the displayed File Download dialog.

What do you want to do with 7610_ .zip (MB)? From: icomjapan.com | Save as | ← Click
Open | Save ∧ | Cancel | ✕
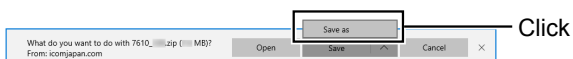
6. Select the location where you want to save the firmware, and then click **[Save]** in the displayed File Download dialog.
   • The file starts downloading.
   • The firmware and the firm utility are compressed in a "zip" format folder. Unzip it before use.
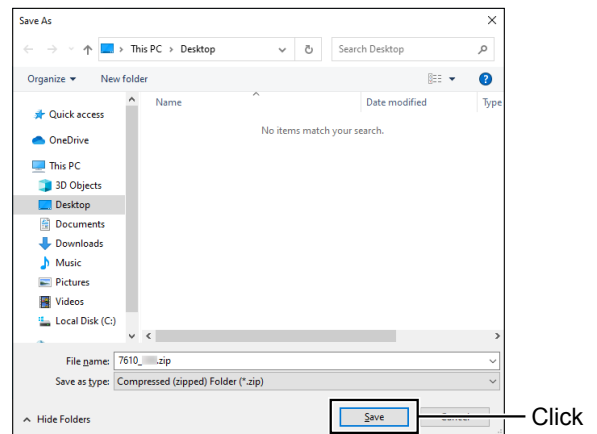
← Click

◇ Unzipping the firmware folder

1. Right-click the downloaded firmware folder (zip format).
   • Right-click menu is displayed.
2. Click "Extract All..."
   • After unzipping, a folder is created in the same location as the downloaded folder.
   ⓘ In the "7610_*" folder, "7610_*.dat" is created.
      * Represents the release number.

Open
Extract All... ← Click
Pin to Start
Share
Open with >
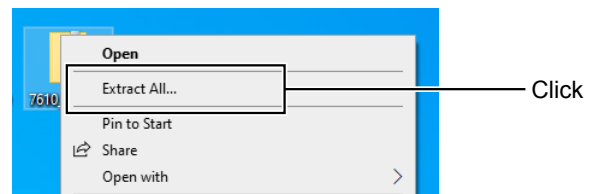
Updating the firmware

IMPORTANT: To update the firmware, first format your SD card or USB flash drive using the IC-7610. Then copy the downloaded firmware data from your PC into the IC-7610 folder on the card or flashdrive.

CAUTION: NEVER turn OFF the transceiver while updating the firmware. If you turn OFF the transceiver, or if a power failure occurs while updating, the transceiver firmware will be damaged and you will have to send the transceiver back to the nearest Icom distributor for repair. This type of repair is out of warranty, even if the transceiver warranty period is still valid.

TIP: BE SURE to unzip the downloaded file. See the previous page for details.

1. Copy the downloaded firmware data into the IC-7610 folder on an SD card or a USB flash drive.
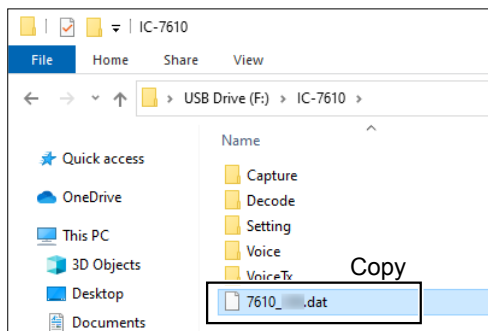
2. Insert the SD card or USB flash drive into the transceiver.
3. Display the SD CARD or USB FLASH DRIVE screen.

    MENU » SET > **SD Card**

    MENU » SET > **USB Flash Drive**

4. Touch "Firmware Update," and then after you read and agree with all the precautions, touch [YES].
    • The file selecting screen is displayed.
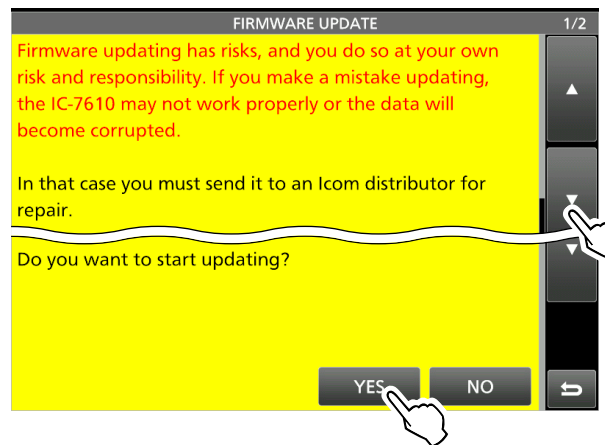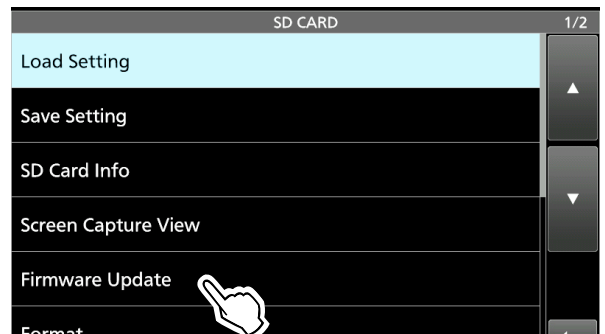
5. Touch the Firmware (Example: 7610_101).
    • The final confirmation screen is displayed.
    ⓘ Carefully read all the displayed precautions.
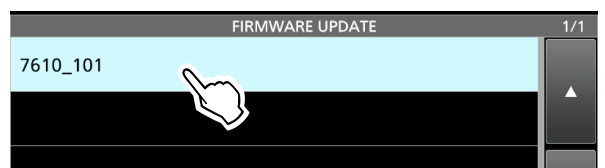
Updating the firmware (Continued)

6. After you read and agree with all the precautions, touch [YES] for 1 second.
    • The updating starts.
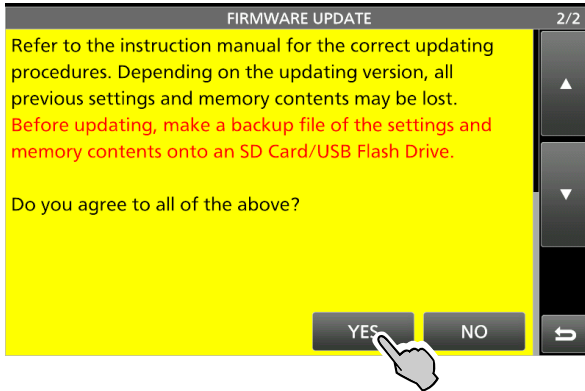
7. Follow the instructions on the transceiver screen.
    ⓘ The IC-7610 reads the firmware file from the SD card or USB flash drive and writes it to the main CPU, sub CPU, front CPU, and FPGA.
    ⓘ Downloading and loading status are displayed in the dialogs.
8. When the update is completed, "Firmware updating has completed." is displayed in the dialog.
    • The IC-7610 will automatically restart.
    ⓘ After the updating finishes, the operating screen is displayed.

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Count on us!

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