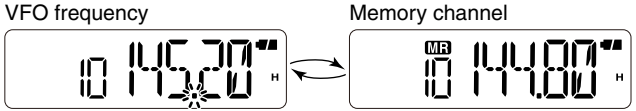
■ Priority watch

A priority watch checks for signals on “priority channels” while operating on a VFO frequency.

◇ Memory or Call channel watch

While operating on a VFO frequency, the memory or Call channel watch checks for signals on the selected channel every 5 sec.

①Select a desired memory channel or the Call channel.
②Push **[FUNC](∗)**, and then **[PRIO](7)** to start the watch.
- The decimal point “.”, on the frequency readout blinks.
- When a signal is detected on the channel, the watch resumes according to the scan resume setting. (p. 30)

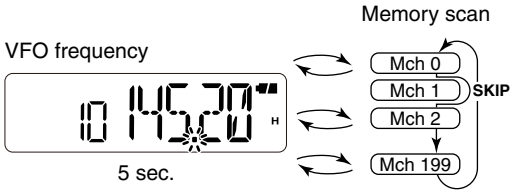


③To cancel the watch, push any key except **[⏻]**, **[▲]/[▼]**, [**MONI**], **[FUNC](∗)**, or **[PTT]**.

◇ Memory scan watch

While operating on a VFO frequency, a memory scan watch checks for signals on each memory channel in sequence, every 5 sec.

①Push **[VFO/MR/CALL]** several times to select the memory mode.
②Push **[FUNC](∗)**, and then **[SCAN](5)** to start a memory scan.
③Push **[FUNC](∗)**, and then **[PRIO](7)** to start the watch.
- The VFO mode is selected, and the decimal point “.”, on the frequency readout blinks.
- When a signal is detected on a channel, the watch resumes according to the scan resume setting. (p. 30)



④To cancel the watch, push any key except **[⏻]**, **[▲]/[▼]**, [**MONI**], **[FUNC](∗)**, or **[PTT]**.

■ Tone/DTCS squelch and pocket beep

◇ Tone squelch and DTCS squelch

The tone squelch (CTCSS) or DTCS squelch opens only when receiving a signal that includes a matched CTCSS tone or DTCS code, respectively. You can silently wait for calls using the same tone or code. Separate tone frequencies can be set for repeater and tone squelch/pocket beep operation.

◇ Pocket beep

The pocket beep function uses subaudible tones or DTCS codes for calling, and can be used as a “common pager” to inform you that someone has called while you were away from the transceiver.

• Recommended CTCSS tones (unit: Hz)

67.0	79.7	94.8	110.9	131.8	156.7	186.2	225.7
69.3	82.5	97.4	114.8	136.5	162.2	192.8	233.6
71.9	85.4	100.0	118.8	141.3	167.9	203.5	241.8
74.4	88.5	103.5	123.0	146.2	173.8	210.7	250.3
77.0	91.5	107.2	127.3	151.4	179.9	218.1	

• Recommended DTCS code

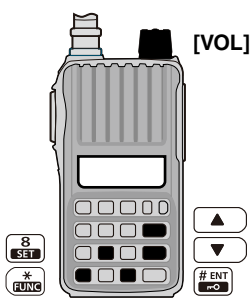
023	051	114	143	174	251	315	371	445	532	631	723
025	054	115	152	205	261	331	411	464	546	632	731
026	065	116	155	223	263	343	412	465	565	654	732
031	071	125	156	226	265	346	413	466	606	662	734
032	072	131	162	243	271	351	423	503	612	664	743
043	073	132	165	244	306	364	431	506	624	703	754
047	074	134	172	245	311	365	432	516	627	712	

◇ Setting CTCSS tone or DTCS code

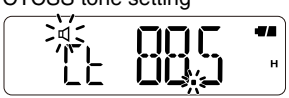
①Push **[FUNC](∗)**, and then **[SET](8)** to enter the Set mode.
②Push **[▲]** or **[▼]** to select the CTCSS tone item (Ct) or the DTCS code item (dt).
- “🔊” blinks when selecting the CTCSS tone item, and “Ⓓ” blinks when selecting the DTCS code item.

③Rotate **[VOL]** to select a desired CTCSS tone or DTCS code.
- The recommended CTCSS tone or DTCS code are shown to the left.

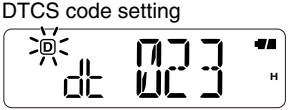
④Push **[# ENT]** to exit the Set mode.



CTCSS tone setting



DTCS code setting



◇ Setting DTCS polarity

For DTCS operation, the polarity setting is also configurable, as well as the code setting. If the polarity is different, the DTCS squelch never opens, even when receiving a signal that includes a matched DTCS code.

①Push **[FUNC](∗)**, and then **[SET](8)** to enter the Set mode.
②Push **[▲]** or **[▼]** to select the DTCS polarity item (dtP).
③Rotate **[VOL]** to select a desired polarity setting between "dtP.nn" (normal), "dtP.nR" (TX: normal, RX: reverse), "dtP.Rn" (TX: reverse, RX: normal) and "dtP.RR" (reverse).

TX/RX: Normal polarity

TX: Normal, RX: Reverse

TX: Reverse, RX: Normal

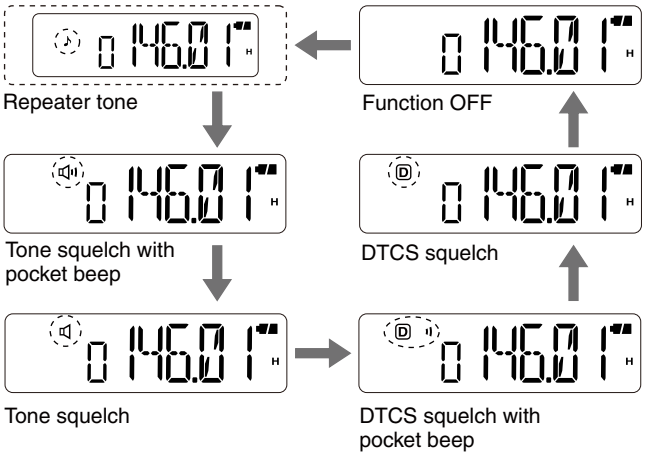
TX/RX: Reverse polarity

④Push **[# ENT]** to exit the Set mode.

◇ Operation

①Set a desired operating frequency, and then a CTCSS tone or a DTCS code.
②Push **[FUNC](∗)**, and then **[TONE](1)**.
• Repeat step ② several times to activate a desired tone function.

Push [FUNC], and then [1 TONE] to select the tone function in sequence.



③Operate the transceiver in a normal way.

④ When receiving a signal that includes a matched tone or code, the squelch opens and the signal can be heard. When the pocket beep function is activated.
- Beep tones sound and "" blinks. To stop the beeps and blinking, push any key.
- When the received signal's tone/code does not match, the squelch does not open. However, the signal indicator shows the signal strength.
- To open the squelch manually, push and hold **[MONI]**.

⑤ Push **[PTT]** to answer.

■ Tone scan

By monitoring a signal from a repeater, pocket beep or squelch function operation, you can determine the subaudible tone required to access the repeater or open the squelch.

① Set a frequency to be checked for a tone frequency or DTCS code.

② Push **[FUNC](∗)**, and then **[TONE](1)**.
- Repeat step ② several times to activate a desired tone function.
- The tone scan can be made even if the tone function is not selected.

③ Push **[FUNC](∗)**, and then **[T.SCAN](3)** to start a tone scan.
- To change the scan direction, push **[▲]** or **[▼]**.

④ When a tone frequency or DTCS code is matched, the squelch opens and the tone frequency or code is temporarily programmed into the selected mode.
- When a tone frequency or DTCS code is detected, the tone scan pauses according to the scan resume setting (p. 30)
- The decoded CTCSS tone frequency or DTCS code is used according to the selected tone function type in step ②.
  - No indication : Cannot be used for operation.
  - "" : CTCSS tone encoder (repeater tone)
  - "" : CTCSS tone encoder/decoder
  - "" : DTCS tone encoder/decoder

⑤ To cancel the scan, push any key except **[⏻]**, **[▲]/[▼]**, [**MONI**] or **[FUNC](∗)**.

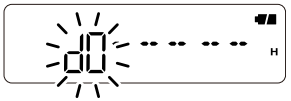
9 DTMF MEMORY

■ Programming a DTMF code sequence

The DTMF codes are used for autopatching, accessing repeaters, controlling other equipment, and other operations. The transceiver has 16 DTMF memory channels (d0–d9, dA, db, dC, dd, dE, dF) for storage of often-used DTMF code sequence of up to 24 digits.

①Push **[FUNC](∗)**, and then **[DTMF.M](0)** to enter the DTMF memory mode.

Push [FUNC], and then [0 DTMF.M].



②Push **[▲]** or **[▼]** to select a desired DTMF memory channel.

- If programmed, the previously programmed DTMF code is displayed.

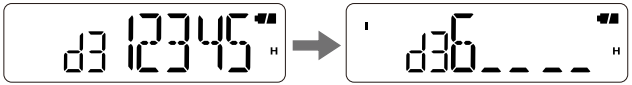
③Push **[FUNC](∗)**, and then push and hold **[DTMF.M](0)** for 1 sec. to enter the programming mode.

- "_ _ _ _ _" appears.
- Programmed memories will be cleared by this operation.

Push [FUNC], and then push and hold [0 DTMF.M] for 1 sec.

④Push keys to input a desired DTMF code sequence of up to 24 digits.

- **[0]**–**[9]** inputs "0"–"9," **[MONI]** inputs "A," **[▲]** inputs "B," **[▼]** inputs "C," **[VFO/MR/CALL]** inputs "D," **[∗]** inputs "∗ (E)" and **[# ENT]** inputs "# (F)."
- If a digit is mistakenly input, push **[PTT]** momentarily, then repeat from step ③.



The next page appears when the 6th digit has been input.

⑤Repeat step ④ until the desired code is input.

⑥Push **[PTT]** to store the DTMF code sequence and exit the programming mode.

- After the 24th digit is input, the transceiver automatically stores the code sequence and returns to step ②.

⑦Push **[VFO/MR/CALL]** to exit the DTMF memory.

• Programming mode indication

The programming mode consists of 5 pages.

Page	Digits	Indication
1st	1st to 5th	No indication.
2nd	6th to 10th	"▁" appears.
3rd	11th to 15th	"▁▂" appears.
4th	16th to 20th	"▁▂▃" appears.
5th	21st to 24th	"▁▂▃" blinks.

■ Transmitting a DTMF code sequence

The transceiver has 3 methods of transmitting a DTMF code sequence. Select a desired option in the Set mode.

① Push **[FUNC](∗)**, and then **[SET](8)** to enter the Set mode.
② Push **[▲]** or **[▼]** to select the DTMF TX key item (dmt).
③ Rotate **[VOL]** to select a desired option.

- dmt.k : Transmits the appropriate DTMF code assigned to the pushed key.
- dmt.m : Transmits the programmed DTMF code sequence in the DTMF memory channel assigned to the pushed key.
- dmt.t : No DTMF code can be transmitted. However, while pushing and holding **[PTT]**, pushing either the **[▲]** or **[▼]** transmits a 1750 Hz tone burst signal.

④ Push **[# ENT]** to exit the Set mode.

◇ Manual DTMF code transmission

First, set the DTMF TX key to “dmt.k” in the Set mode.

➥ While pushing and holding **[PTT]**, push the desired keys to transmit a DTMF code sequence manually.
- Push **[0]–[9]** for “0”–“9,” **[MONI]** for “A,” **[▲]** for “B,” **[▼]** for “C,” **[VFO/MR/CALL]** for “D,” **[∗]** for “∗,” and **[# ENT]** for “#.”

◇ Using a DTMF memory channel

First, set the DTMF TX key to “dmt.m” in the Set mode.

➥ While pushing and holding **[PTT]**, push one of the keys to transmit the programmed DTMF code sequence in the DTMF memory.
- Pushing **[0]** to **[9]**, **[MONI]**(A), **[▲]**(B), **[▼]**(C), **[VFO/MR/CALL]** (D), **[∗]**(E), or **[# ENT]**(F) transmits a DTMF code channel (d0–d9, dA, dB, dC, dD, dE or dF) respectively.

◇ 1750 Hz tone

To access some European repeaters, the transceiver must transmit a 1750 Hz tone burst signal.
- This tone can be used as a ‘Call signal’ in countries out of Europe.

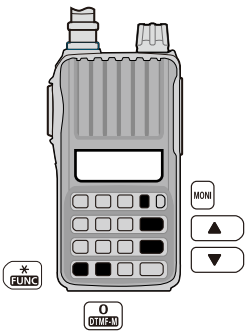
First, set the DTMF TX key to “dmt.t” in the Set mode.

➥ While pushing and holding **[PTT]**, push and hold either the [▲] or [▼] for 1 or 2 sec. to transmit a 1750 Hz tone burst signal.
- While pushing and holding the key, the tone is transmitted.

■ Confirming a DTMF memory

A DTMF memory can be confirmed with a DTMF tone.

①Push **[FUNC](∗)**, and then **[DTMF.M](0)** to enter the DTMF memory mode.
②Push **[▲]** or **[▼]** to select a desired DTMF memory channel.
③Push **[MONI]** to confirm the DTMF memory contents.
- The programmed DTMF code sequence sounds.
- After sounding, the transceiver exits the DTMF memory mode.



The programmed DTMF code sequence sounds.

Exits the DTMF memory mode.

■ Setting DTMF transfer speed

When slow DTMF transmission speeds are required with DTMF memory transmission (as for some repeaters), the transceiver's rate of DTMF transmission can be adjusted in the Initial Set mode.

①While pushing and holding **[▲]** and **[▼]**, turn the power ON to enter the Initial Set mode.
②Push **[▲]** or **[▼]** to select the DTMF speed item. (dtd)
③Rotate **[VOL]** to select a desired speed.
- dtd. 1 : 100 msec. interval; 5.0 cps rate
- dtd. 2 : 200 msec. interval; 2.5 cps rate
- dtd. 3 : 300 msec. interval; 1.6 cps rate
- dtd. 5 : 500 msec. interval; 1.0 cps rate
(cps=characters per second)

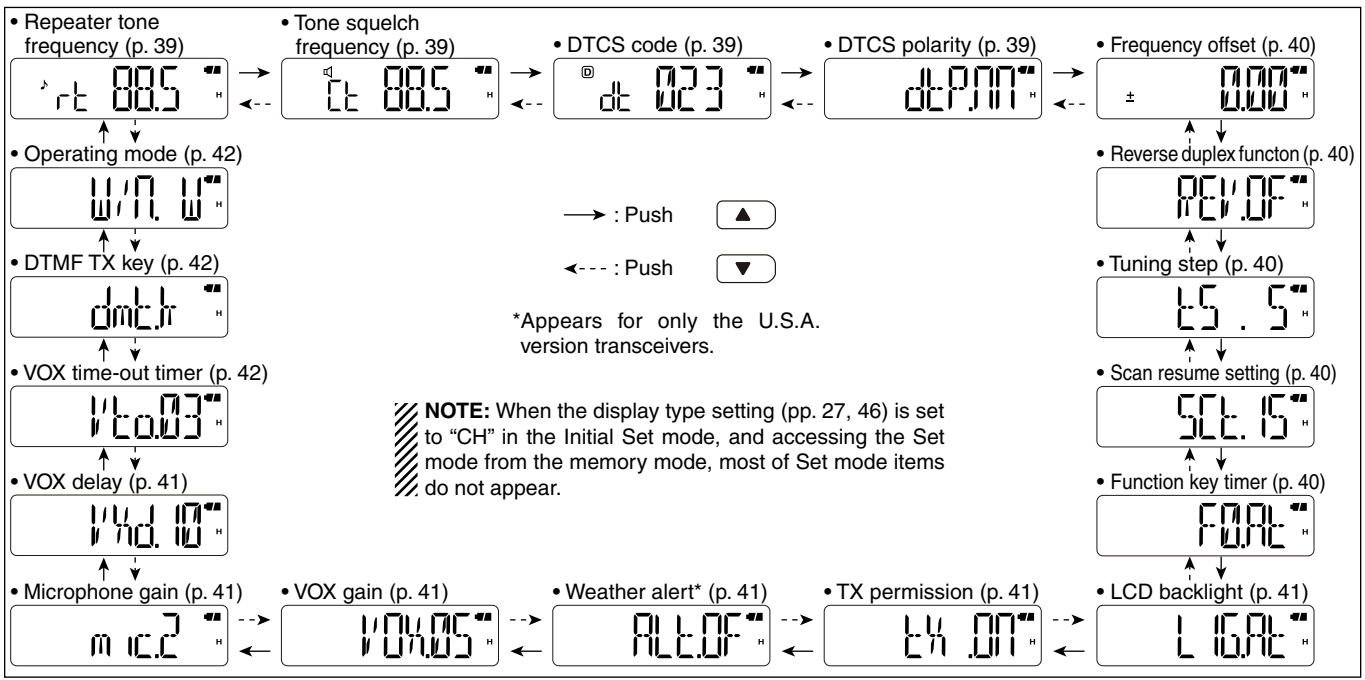
④ Push **[# ENT]** to exit the Initial Set mode.

■ Set mode programming

The Set mode is used to change the settings of the transceiver's functions.

◇ Set mode operation

①Push **[FUNC](∗)**, and then **[SET](8)** to enter the Set mode.
②Push **[▲]** or **[▼]** to select the desired item.
③Rotate **[VOL]** to select the option or value.
④To exit the Set mode, push **[# ENT]**.



■ Set mode items

◇ Repeater tone frequency

Selects one of 50 subaudible tone frequencies used to access the repeaters.

• 67.0–254.1 Hz (default: 88.5 Hz)

◇ Tone squelch frequency

Selects one of tone frequencies for tone squelch or pocket beep operation.

• 67.0–254.1 Hz (default: 88.5 Hz)

• Usable subaudible tone frequencies (unit: Hz)

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

The transceiver has 50 tone frequencies and consequently their spacing is narrow compared with units having 38 tones. Therefore, some tone frequencies may receive interference from adjacent tone frequencies.

◇ DTCS Code

Selects one of 104 DTCS (both encoder/decoder) codes.

• 023–754 (default: 023)

• Available DTCS codes

023	054	125	165	245	274	356	445	506	627	732
025	065	131	172	246	306	364	446	516	631	734
026	071	132	174	251	311	365	452	523	632	743
031	072	134	205	252	315	371	454	526	654	754
032	073	143	212	255	325	411	455	532	662	
036	074	145	223	261	331	412	462	546	664	
043	114	152	225	263	332	413	464	565	703	
047	115	155	226	265	343	423	465	606	712	
051	116	156	243	266	346	431	466	612	723	
053	122	162	244	271	351	432	503	624	731	

◇ DTCS Polarity

Selects the DTCS polarity between “dtP.nn” (normal), “dtP.nR” (TX: normal, RX: reverse), “dtP.Rn” (TX: reverse, RX: normal) and “dtP.RR” (reverse). (default: dtP.nn)

The DTCS code’s polarity for transmitting or receiving can be independently set by this item.

TX/RX: Normal polarity

TX/RX: Reverse polarity

◇ Frequency offset

Selects the frequency offset between 0 and 20 MHz, for repeater operation.
The frequency offset means the difference between the transmit and receive frequencies.

(default: differs depending on the version)


◇ Reverse duplex function

Turns the reverse duplex function ON or OFF. (default: OFF)

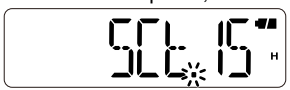

◇ Tuning step

Selects the tuning step from 5, 10, 12.5, 15, 20, 25, 30 and 50 kHz. (default: differs depending on the version)


◇ Scan resume setting

Selects the scan resume setting between SCt. 5, SCt. 10, SCt. 15, and SCP. 2.
When a signal is received during a scan, the scan pauses and then resumes, according to the scan resume setting.

- SCt. 5/10/15 : The scan pauses for 5, 10 or 15 sec., and then resumes. (default: SCt. 15)
- SCP.2 : The scan pauses until the received signal disappears, and then resumes after 2 sec.



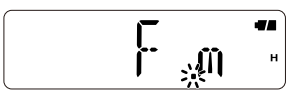

◇ Function key timer

Push **[FUNC](∗)** to enter the Function mode, and then push a keypad key to activate it's second function.

- During the Function mode, "F" is displayed on the LCD.

Set the time between when Function mode is entered, and how long it remains activated after you push the keypad key to activate it's second function.

- F0.At : Exits the Function mode immediately after a key is pushed to activate it's second function. (default)
- F1/2/3.At : The Function mode remains activated for the selected period after a key is pushed to activate it's second function.
- F .m : The Function mode remains activated until **[FUNC](∗)** is pushed again, even after a key is pushed to activate it's second function.

◇ LCD backlight

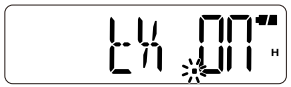
Selects the LCD backlight function.

- LIG.OF : Turns the backlight function OFF.
- LIG.ON : Lights continuously while the transceiver is ON.
- LIG.At : Turns ON when an operation occurs, and turns OFF after 5 sec. (default)


◇ TX permission

Selects whether or not to allow transmitting.

- tX .OF: Inhibits transmitting. (Receive only)
- tX .ON : Allows transmitting. (default)




◇ Weather alert

U.S.A. version only

Turns the Weather Alert function ON or OFF. (p. 19)

(default: OFF)


◇ VOX gain

Sets the VOX gain to between 1 and 10. Higher values make the VOX function more sensitive to your voice.
To turn the VOX function OFF, select "VOX.OF."

(default: VOX.05)


NOTE: Set the microphone gain before setting the VOX gain. See page 52 for details of the VOX function.

◇ Microphone gain

Sets the microphone gain to between 1 and 4 to suit your preference. Higher values make the microphone more sensitive to your voice.

(default: mic.2)


NOTE: When using the VOX function, we recommend setting the microphone gain to 3. However, you can adjust it to suit your operating environment (including your headset performance).

◇ VOX delay

Sets the VOX Delay to between “VXd.05” (0.5 sec.), “VXd.10” (1 sec.), “VXd.15” (1.5 sec.), “VXd.20” (2 sec.), “VXd.25” (2.5 sec.) and “VXd.30” (3 sec.).
The VOX Delay is the amount of time the transmitter stays ON after you stop speaking. (default: VXd.10)


◇ VOX time-out timer

Sets the VOX time-out timer to between 1, 2, 3, 4, 5, 10 and 15 min. to prevent accidental prolonged transmission for the VOX function.
To turn the function OFF, select “Vto.OF.” (default: Vto.03)


◇ DTMF TX key

Selects the method to transmit a DTMF code sequence. While pushing and holding **[PTT]**, push one of the keys, **[0]** to **[9]**, **[MONI]**(A), **[▲]**(B), **[▼]**(C), **[VFO/MR/CALL]**(D), **[∗]**(E),and **[# ENT]**(F).

- dmt.k : Transmits the appropriate DTMF code assigned to the key. (default)
- dmt.m : Transmits the programmed DTMF code sequence in the DTMF memory channel assigned to the key.
- dmt.t : No DTMF code can be transmitted. However, while pushing and holding **[PTT]**, push either the **[▲]** or **[▼]** to transmit a 1750 Hz tone burst signal.


◇ Operating mode

Set the operating mode to FM or FM-N. The operating mode is determined by the modulation of the radio signals.
(default: W/n. W)


FM mode

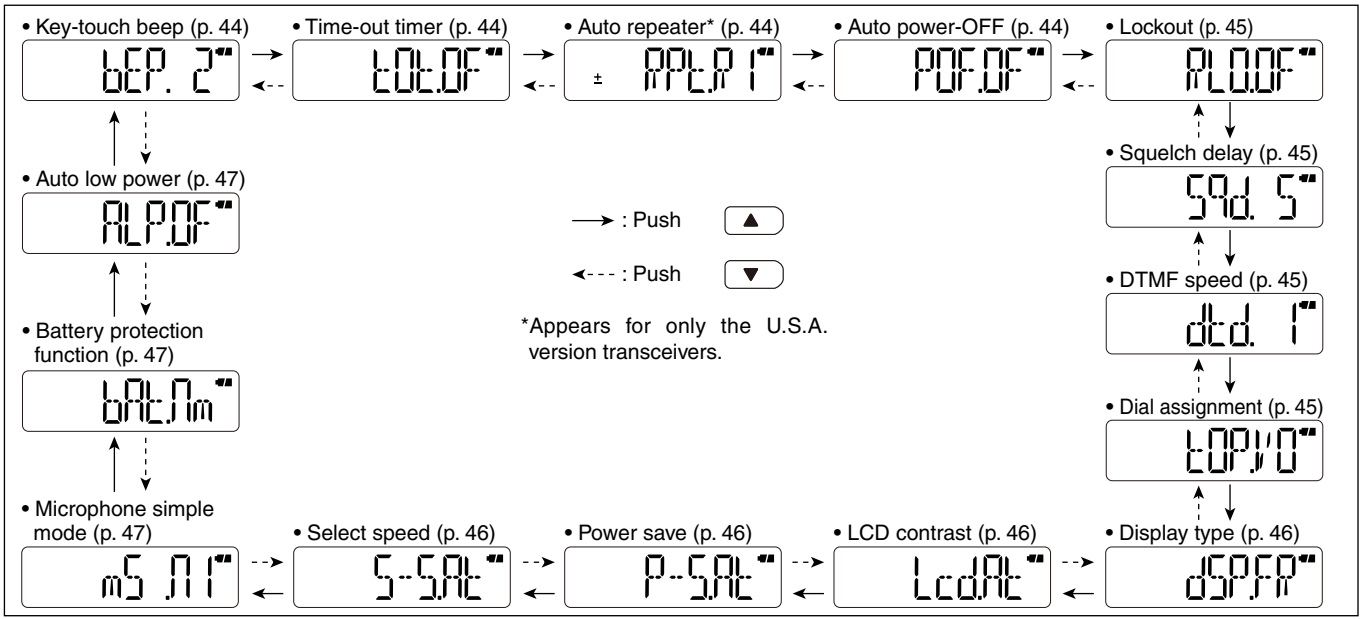

FM-N mode

■ Initial Set mode programming

The Initial Set mode can be accessed at power ON and allows you to set seldom-changed settings, to suit your preference and operating style.

◇ Initial Set mode operation

①While pushing and holding **[▲]** and **[▼]**, turn the power ON to enter the Initial Set mode.
②Push **[▲]** or **[▼]** to select the desired item.
③Rotate **[VOL]** to select the option or value.
④To exit the Initial Set mode, push **[# ENT]**.



■ Initial Set mode items

◇ Key-touch beep

Turns the key-touch beep ON (the beep level 1 to 3) or OFF.

• When changing the beep level, beeps sound at the level.

(default: bEP. 2)

◇ Time-out timer

To prevent accidental prolonged transmission, the transceiver has a time-out timer. This function cuts transmission OFF after 1–30 min. of continuous transmission.

To turn the function OFF, select “tot.OF.”

• tot.OF : Turns the function OFF. (default)
• tot. 1–30 : If continuous transmission exceeds the selected period, the transmission will be cut off.

◇ Auto repeater

U.S.A. version only

The Auto Repeater function automatically turns ON or OFF the duplex operation and the tone encoder. The offset and the repeater tone are not changed by the function. Reset these settings, if necessary.

• RPt.OF : Turns the function OFF.
• RPt.R1 : Activates for only duplex. (default)
• RPt.R2 : Activates for both duplex and tone.

◇ Auto power-OFF

The transceiver can be set to beep and automatically turn OFF, when no key operation occurs during a specified period.

• POF.OF : Turns the function OFF. (default)
• POF.30/1H/2H : The transceiver is automatically turned OFF when no operation occurs during the selected period.

NOTE: The setting is maintained even after the transceiver is turned OFF by the auto power-OFF function. To cancel the function, select “POF.OF.”

◇ Lockout

Selects the lockout type between repeater, busy and OFF.

- RLO.OF : Turns the function OFF (default).
- RLO.RP : The repeater lockout function inhibits transmitting when the channel is busy, except while receiving a signal that includes a matched tone.
- RLO.bU : The busy lockout function inhibits transmitting while receiving a signal.


◇ Squelch delay

Sets the squelch delay between short and long. The delay prevents the squelch from repeatedly opening and closing while receiving the same signal.

- Sqd. S : Sets the squelch delay to short (default).
- Sqd. L : Sets the squelch delay to long.


◇ DTMF speed

Selects a desired DTMF transfer speed.

- dtd. 1 : 100 msec. interval; 5.0 cps rate (default)
- dtd. 2 : 200 msec. interval; 2.5 cps rate
- dtd. 3 : 300 msec. interval; 1.6 cps rate
- dtd. 5 : 500 msec. interval; 1.0 cps rate

(cps=characters per second)


◇ Dial assignment

Selects whether or not to use **[VOL]** as a tuning control instead of **[▲]** and **[▼]**. When **[VOL]** functions as a tuning control, **[▲]** and **[▼]** function as volume controls.

- tOP.VO : Audio volume control (default)
- tOP.dI : Tuning dial


[VOL] and **[▲]**/**[▼]** function as described below, depending on the option.

Option	[VOL]	[▲]/[▼]
tOP.VO	Volume control	Tuning controls
tOP.di	Tuning control	Volume controls

◇ Display type

Selects the display type for memory mode operation.

- dSP.FR : Displays the programmed frequency. (default)
- dSP.CH : Displays the memory channel number. Operable functions, configurable items in the Set mode, and selectable modes will be restricted.
- dSP.nm : Displays the channel name. If no memory name is programmed, the programmed frequency will be displayed.

◇ LCD contrast

Selects the LCD contrast.

- Lcd.LO : Sets the contrast to low.
- Lcd.At : Sets the contrast to high. However, if the transceiver is exposed to high temperatures, it automatically sets the contrast to low. (default)

◇ Power save

The power save function allows you conserve battery life by selecting the duty cycle of the receiver. Select the ratio of the power save time to the standby time.

To turn the function OFF, select “P–S.OF.”

- P–S.OF : Turns the function OFF.
- P–S. 2 : Sets the duty cycle to 1:2.
- P–S. 8 : Sets the duty cycle to 1:8.
- P–S.16 : Sets the duty cycle to 1:16.
- P–S.At : Automatically sets the duty cycle. (default)

◇ Select speed

The tuning speed acceleration automatically speeds up the tuning speed when rotating **[VOL]** rapidly.

- S–S. m : Turns the tuning speed acceleration OFF.
- S–S. At : Turns the tuning speed acceleration ON. (default)

◇ Microphone simple mode

Microphone simple mode is used to assign the essential operations to the four switches (S1 to S4) on the remote control unit.

• mS .Sm

S1	Selects the Call channel.
S2	Turns the monitor function ON or OFF.
S3	Selects memory channel 0.
S4	Selects memory channel 1.

• mS .n1 (default)

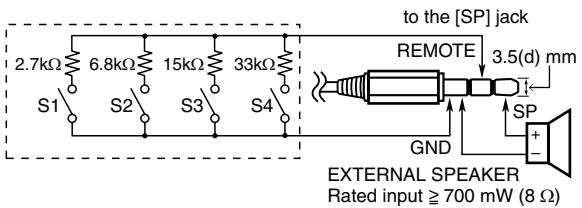
S1	Toggles the VFO mode and the memory mode.
S2	Selects the Call channel.
S3	Frequency or memory channel “UP.”
S4	Frequency or memory channel “DOWN.”

• mS .n2

S1	Toggles the VFO mode and the memory mode.
S2	Turns the monitor function ON or OFF.
S3	Frequency or memory channel “UP.”
S4	Frequency or memory channel “DOWN.”

• User remote control unit

The below circuit is for reference only.



◇ Battery protection

When the battery voltage decreases, the battery protection function automatically turns the transceiver OFF. Select the function according to your battery type.

(default: differs depending on the version)

• bAt.OF : Turns the function OFF. Select when you use the BP-263 battery case.
• bAt.nm : Select when you use the BP-264 Ni-MH battery pack.
• bAt.LI : Select when you use the BP-265 Li-Ion battery pack.

NOTE: BE SURE to select an appropriate option according to your battery type.

◇ Auto low power

Turns the auto low power function ON or OFF.

When the temperature goes below 0°C (+32°F), the function automatically sets the output power to low.

In that case, the transmit power selections (Hi/Mid) are also disabled.

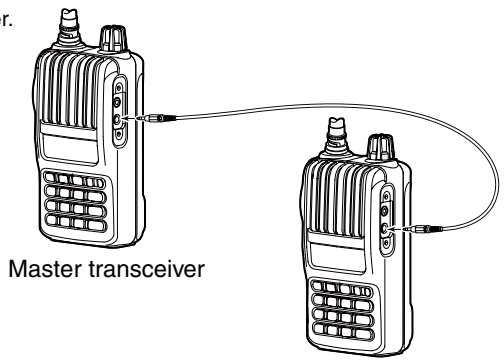
(default: ALP.OF)

■ Cloning operation

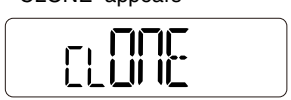
Cloning allows you to quickly and easily transfer the programmed contents from one transceiver to another.

◇ Transceiver-to-transceiver cloning

①Turn the transceiver's power OFF, and then connect an optional OPC-474 cloning cable to the **[SP]** jacks of the master transceiver and the sub transceiver.
- The master transceiver is used to send data to the sub transceiver.



②While pushing **[FUNC](∗)** and **[▲]**, turn the master transceiver ON to enter the cloning mode.
- "CLONE" appears



③Turn the sub transceiver ON.

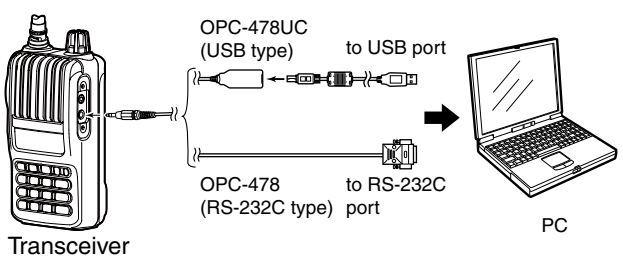
④Push **[PTT]** on the master transceiver.
- "CL Out" appears on the master transceiver's display, and the signal indicator shows the data is being transferred to the sub transceiver.
- "CL In" appears on the sub transceiver's display, and the signal indicator shows the data is being received from the master transceiver.

⑤When cloning is finished, turn both the transceivers OFF. Then turn them ON again to exit the cloning mode.

NOTE: DO NOT push **[PTT]** on the sub transceiver during cloning. This will cause a cloning error.

◇ Cloning using a PC

The CS-V80 cloning software is also used to clone/edit contents with a PC (for Microsoft® Windows® 2000/XP or Windows Vista®) using ICF format files.
Refer to the INSTRUCTIONS and the Help file that come with the CS-V80, for details.



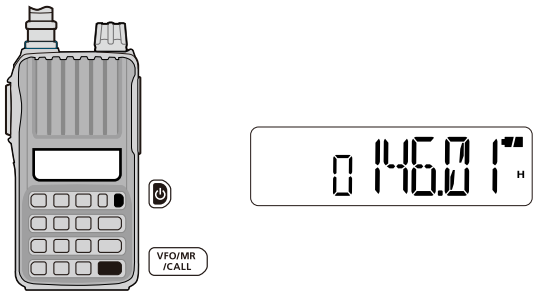
■ Resetting

The LCD may occasionally display erroneous information (e.g. when first applying power). This may be caused externally by static electricity or by other factors. If this problem occurs, turn power OFF. After waiting a few seconds, turn power ON again. If the problem persists, perform either or both of the procedures below.

◇ Partial reset

If you want to reset the operating conditions (VFO frequency, VFO settings, and Set modes contents) without clearing the memory contents, use the partial reset.

①Push and hold **[⏻]** for 1 sec. to turn the power OFF.
②While pushing and holding **[VFO/MR/CALL]**, push and hold **[⏻]** for 1 sec. to turn the power ON.

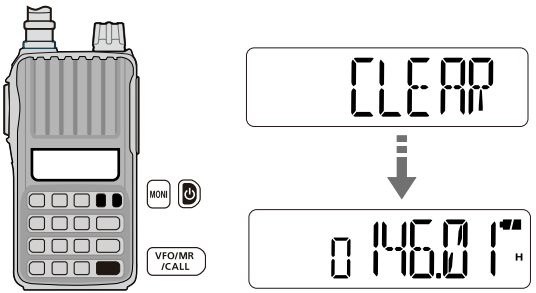


NOTE: No message appears on the display after the partial reset is done.

◇ All reset

The all reset clears all programming and returns all settings to their factory defaults.

①Push and hold **[⏻]** for 1 sec. to turn the power OFF.
②While pushing and holding **[MONI]** and **[VFO/MR/CALL]**, push and hold **[⏻]** for 1 sec. to turn the power ON.
• "CLEAR" appears when resetting the CPU.



CAUTION: The all reset returns all programmed contents to their default settings.

If your transceiver seems to be malfunctioning, please check the following points before sending it to a service center.

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
The transceiver does not turn ON.	• The battery is exhausted. • The battery polarity is reversed. • Loose connection of a battery pack/case.	• Charge the battery pack, or replace the batteries. • Check the battery polarity. • Clean battery terminals.	pp. 11–13 p. 13 p. 13
No sound comes from the speaker.	• Volume is too low. • An external speaker or a cloning cable is connected to the **[SP]** jack.	• Rotate **[VOL]** to adjust to a desired level. • Check the external speaker connection or remove the cloning cable.	p. 14 –
Transmitting is impossible.	• The battery is exhausted. • TX permission is inhibited.	• Charge the battery pack, or replace the batteries. • Set the TX permission setting to “ON” in the Set mode.	pp. 11–13 p. 41
Transmitting using the VOX function is impossible.	• The VOX gain is set to OFF or too low. • The microphone gain is too low.	• Set the VOX gain to a suitable level. • Set the microphone gain to a suitable level.	pp. 41, 53 p. 41
Contacting with another station is impossible.	• A different tone or code is used for the tone/DTCS squelch.	• Check the tone/DTCS by performing a tone scan.	p. 34
Frequency cannot be set.	• The key lock function is activated. • The memory mode, Call channel mode, or weather channel mode is selected.	• Push **[FUNC](∗),** then push and hold **[⊶O]** (# ENT) for 1 sec. to cancel the key lock function. • Push **[VFO/MR/CALL]** several times to select the VFO mode.	p. 18 p. 15
A programmed scan does not start.	• The memory mode, Call channel mode, or weather channel mode is selected. • The same frequency has been programmed in the scan edge channels, “XA”–“Xb.”	• Push **[VFO/MR/CALL]** several times to select the VFO mode. • Program different frequencies in the scan edge channels.	p. 15 p. 25
A memory scan does not start.	• The VFO mode or Call channel mode is selected. • Only one or no memory channel has been programmed.	• Push **[VFO/MR/CALL]** several times to select the memory mode. • Program 2 or more memory channels.	p. 15 p. 25
The displayed frequency is erroneous.	• The CPU has malfunctioned. • External factors have caused a fault.	• Reset the transceiver. • Remove and re-attach the battery pack/case.	p. 49 p. 2

14 OPTIONS

- **BP-263** BATTERY CASE
  Battery case for LR6 (AA) × 6 alkaline batteries.
- **BP-264** NI-MH BATTERY PACK
  7.2 V/1400 mAh (Typ.) Ni-MH battery pack. Battery life: 13 hrs. (approx.; FM, high power, Tx : Rx : Standby = 5:5:90)
- **BP-265** LI-ION BATTERY PACK
  7.4 V/1900 mAh (Min.)/2000 mAh (Typ.) Lithium Ion battery pack. Battery life: 19 hrs. (approx.; FM, high power, Tx : Rx : Standby = 5:5:90)
- **BC-191** DESKTOP CHARGER**+BC-123S** AC ADAPTER
  For rapid charging of the Ni-MH battery pack. An AC adapter may be supplied with the charger, depending on the version. Charging time: approx. 2 hours for the BP-264.
- **BC-192** DESKTOP CHARGER**+BC-147S** AC ADAPTER
  For regular charging of the Ni-MH battery pack. An AC adapter may be supplied with the charger, depending on the version. Charging time: approx. 16 hours for the BP-264.
- **BC-193** DESKTOP CHARGER**+BC-123S** AC ADAPTER
  For rapid charging of the Li-Ion battery pack. An AC adapter may be supplied with the charger, depending on the version. Charging time: approx. 2.5 hours for the BP-265.
- **CP-23L** CIGARETTE LIGHTER CABLE
  Allows charging of the battery packs through a 12 V cigarette lighter socket. (For only BC-191/BC-193)
- **OPC-515L** DC POWER CABLE
  Allows charging of the battery packs using a 12 V DC power source instead of the AC adapter. (For all chargers)
- **MB-124** BELT CLIP
  Exclusive alligator-type belt clip.
- **FA-B2E** VHF ANTENNA
  The same antenna that is supplied with the transceiver.
- **HM-153L** EARPHONE-MIROPHONE
  Ideal for hands-free operation: clip the HM-153L (with integrated PTT switch) to your lapel or breast pocket.
- **HM-158L/HM-159L** SPEAKER-MIROPHONE
  Combination speaker-microphone that provides convenient operation while hanging the transceiver on your belt.
- **HS-94/HS-95/HS-97** HEADSET**+OPC-2004** PLUG ADAPTER CABLE
  HS-94 : Ear hook type
  HS-95 : Neck & arm type
  HS-97 : Throat microphone
  OPC-2004 : Allows you to connect the HS-94/HS-95/HS-97 to the transceiver. After connecting, the VOX function can be used.
- **CS-V80** CLONING SOFTWARE**+OPC-478/OPC-478UC** CLONING CABLE
  Provides quick and easy programming of such settings as memory channels and Set modes contents.
- **OPC-474** CLONING CABLE
  For transceiver-to-transceiver cloning.

Some options may not be available in some countries. Please ask your dealer for details.

■ VOX function

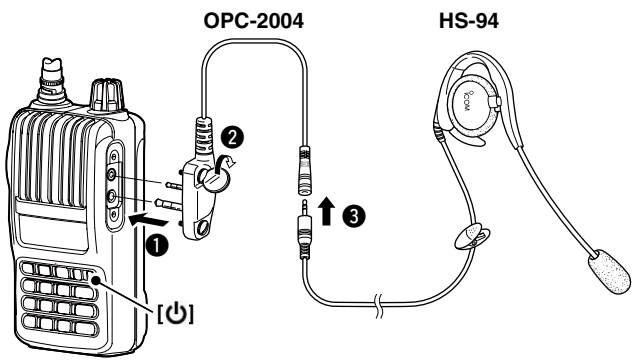
The transceiver has a VOX function, which allows hands-free operation.

An optional HS-94, HS-95 or HS-97 headset and the OPC-2004 plug adapter cable are also required for operation.

• The VOX (voice operated transmission) function starts transmission when you speak into the microphone, without needing to push **[PTT]**; then, automatically returns to reception when you stop speaking.

◇ Optional unit connection

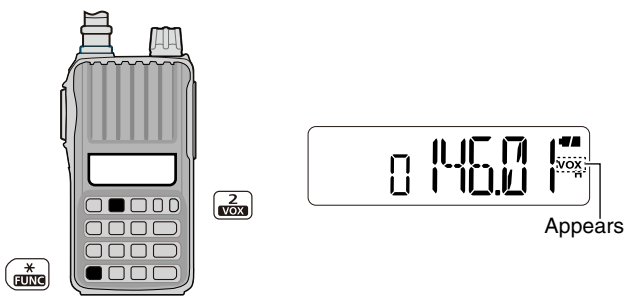
①Push and hold **[⏻]** for 1 sec. to turn the power OFF.
②Remove the jack cover. (p. 2)
③Connect the optional HS-94, HS-95 or HS-97 and OPC-2004, as illustrated below.



◇ Turning the VOX function ON or OFF

①Connect an optional headset and plug adapter cable to the transceiver, and then turn the power ON.
②Push **[FUNC](∗)**, and then **[VOX](2)** to turn the VOX function ON or OFF.
• "VOX" appears when the VOX function is ON.

NOTE:
• When using the VOX function, adjust the microphone gain and the VOX-related settings (p. 53) to suit your operating environment (including your headset performance).
• Set the microphone gain before setting the VOX gain in the Set mode (p. 41). We recommend setting the microphone gain to 3.
• When the TX permission is set to "OFF" in the Set mode, you cannot transmit using the VOX function. (p. 41)



◇ VOX-related settings

The VOX gain, the VOX delay, and the VOX time-out timer can be set in the Set mode.

①Connect an optional headset and plug adapter cable to the transceiver, and then turn the power ON.
②Push **[FUNC](∗)**, and then **[VOX](2)** to turn the VOX function ON.
③Push **[FUNC](∗)**, and then **[SET](8)** to enter the Set mode.
④Push **[▲]** or **[▼]** to select the VOX gain (VOX), the VOX delay (VXd), or the VOX time-out timer (Vto) item.
⑤Rotate **[VOL]** to select a desired option.
⑥Push **[# ENT]** to exit the Set mode.

The VOX function does not activate transmission while in the Set mode.

• VOX gain

The VOX gain level can be adjusted between 1 (minimum) and 10 (maximum), or turned OFF. Higher values make the VOX function more sensitive to your voice. (default: VOX.05)

The VOX function is turned OFF.

The VOX gain is set to 10 (maximum).

➥ While speaking into the headset microphone, adjust the VOX gain until “On” continuously appears on the LCD.

If “On” is intermittent, be sure the VOX delay is set long enough to allow normal pauses in speech, but keep the VOX ON until you finish speaking.

✔ CONVENIENT!

While transmitting using the VOX function, you can adjust the VOX gain simply by rotating **[DIAL]**.

• VOX delay

Sets the VOX delay to between 0.5 and 3.0 sec. (in 0.5 sec. steps). The VOX delay is the amount of time the transmitter stays ON after you stop speaking. (default: VXd.10)

The VOX delay is set to 1 sec.

The VOX delay is set to 3 sec.

• VOX time-out timer

Sets the VOX time-out timer to between 1, 2, 3, 4, 5, 10 and 15 min. to prevent accidental prolonged transmission for the VOX function.
To turn the function OFF, select “Vto.OF.” (default: Vto.03)

◇ General

• Frequency coverage : (unit: MHz)

Version	TX	RX
U.S.A. AUS	144–148	136–174
CHN EXP	136–174	136–174
EUR UK KOR	144–146	144–146

- Mode : FM, FM-N
- Number of memory channels : 207 (incl. 6 scan edges and 1 Call channel)
- Usable temperature range : –20°C to +60°C; –4°F to +140°F
- Tuning steps : 5, 10, 12.5, 15, 20, 25, 30 and 50 kHz
- Frequency stability : ±2.5 ppm (–20°C to +60°C; –4°F to +140°F)
- Power supply : Icom specified battery pack/case
- Current drain (at 7.2 V DC: typical)
  - Transmit at 5.5 W (High) : 1.4 A
  - at 2.5 W (Mid.) 0.9 A
  - at 0.5 W (Low) 0.6 A
  - Receive standby : 65 mA
  - power save 20 mA
  - max. audio 310 mA (internal speaker)
  - 180mA (external speaker)
- Antenna connector : BNC (50 Ω)
- Dimensions (projections not included) : 58(W)×112(H)×30(D) mm; $2\frac{9}{32}$(W)×$4\frac{13}{32}$(H)×$1\frac{3}{16}$(D) in
- Weight (approx.) (without battery pack/case and ant.) : 140 g; 4.9 oz

◇ Transmitter

- Modulation system : Variable reactance freq. modulation
- Output power (at 7.2 V DC) : High 5.5 W, Mid. 2.5 W, Low 0.5 W.
- Max. frequency deviation : FM (wide) ±5.0 kHz
  FM (narrow) ±2.5 kHz
- Spurious emissions : Less than –60 dBc
- External mic. connector : 3-conductor 2.5 (d) mm ($\frac{1}{10}$″)/2.2 kΩ

◇ Receiver

- Receive system : Double-conversion superheterodyne
- Intermediate frequencies : 1st: 21.7 MHz, 2nd: 450 kHz
- Sensitivity (at 12 dB SINAD) : –0.14 µV typ.
- Squelch sensitivity (threshold) : –0.1 µV typ.
- Selectivity : FM (wide) 70 dB typ.
  FM (narrow) 50 dB typ.
- Spurious and image rejection : 75 dB typ.
- Intermodulation : FM (wide) 70 dB typ.
  FM (narrow) 65 dB typ.
- Audio output power (at 10% distortion)
  - Internal speaker : 0.75 W typ. with a 16 Ω load
  - External speaker : 0.45 W typ. with a 8 Ω load
- External speaker connector : 3-conductor 3.5(d) mm; ($\frac{1}{8}$″)/8 Ω

All stated specifications are subject to change without notice or obligation.

IMPORTANT

- When transmitting with a portable radio, hold the radio in a vertical position with its microphone 2.5 to 5 centimetres from your head and body.
- If you wear a portable two-way radio on your body, ensure that the antenna is at least 2.5 centimetres from your body when transmitting.

CE Versions of the IC-V80E which display the 'CE' symbol on the serial number label, comply with the essential requirements of the European Radio and Telecommunication Terminal Directive 1999/5/EC.

This warning symbol indicates that this equipment operates in non-harmonised frequency bands and/or may be subject to licensing conditions in the country of use. Be sure to check that you have the correct version of this radio or the correct programming of this radio, to comply with national licensing requirements.

• List of Country codes (ISO 3166-1)

	Country	Codes		Country	Codes
1	Austria	AT	18	Liechtenstein	LI
2	Belgium	BE	19	Lithuania	LT
3	Bulgaria	BG	20	Luxembourg	LU
4	Croatia	HR	21	Malta	MT
5	Czech Republic	CZ	22	Netherlands	NL
6	Cyprus	CY	23	Norway	NO
7	Denmark	DK	24	Poland	PL
8	Estonia	EE	25	Portugal	PT
9	Finland	FI	26	Romania	RO
10	France	FR	27	Slovakia	SK
11	Germany	DE	28	Slovenia	SI
12	Greece	GR	29	Spain	EP
13	Hungary	HU	30	Sweden	SE
14	Iceland	IS	31	Switzerland	CH
15	Ireland	IE	32	Turkey	TR
16	Italy	IT	33	United Kingdom	GB
17	Latvia	LV			

ICOM

DECLARATION OF CONFORMITY

We Icom Inc. Japan
1-1-32, Kamiminami, Hirano-ku
Osaka 547-0003, Japan

Declare on our sole responsibility that this equipment complies with the essential requirements of the Radio and Telecommunications Terminal Equipment Directive, 1999/5/EC, and that any applicable Essential Test Suite measurements have been performed.

Kind of equipment: **VHF TRANSCEIVER**

Type-designation: **IC-V80E**

Version (where applicable):

This compliance is based on conformity with the following harmonised standards, specifications or documents:

i) EN 301 489-1 v1.8.1 (Apr. 2008)
ii) EN 301 489-15 v1.2.1 (Aug. 2002)
iii) EN 301 783-2 v1.1.1 (Sep. 2000)
iv) EN 60950-1 (2001): A11: 2004

CE ①

Düsseldorf 16th Oct. 2009
Place and date of issue

Icom (Europe) GmbH
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Authorized representative name

Y. Furukawa
General Manager

Signature

Icom Inc.

Count on us!

#02 Europe
#12 Europe-21
#22 Europe-22
#32 Europe-23

<Intended Country of Use>

■ AT	■ BE	■ CY	■ CZ	■ DK	■ EE
■ FI	■ FR	■ DE	■ GR	■ HU	■ IE
■ IT	□ LV	■ LT	■ LU	■ MT	■ NL
■ PL	■ PT	■ SK	■ SI	■ ES	■ SE
□ GB	□ IS	■ LI	□ NO	□ CH	■ BG
■ RO	□ TR	□ HR			

#13 U.K.-01
#23 U.K.-02
#33 U.K.-03

<Intended Country of Use>

□ AT	□ BE	□ CY	□ CZ	□ DK	□ EE
□ FI	□ FR	□ DE	□ GR	□ HU	□ IE
□ IT	□ LV	□ LT	□ LU	□ MT	□ NL
□ PL	□ PT	□ SK	□ SI	□ ES	□ SE
■ GB	□ IS	□ LI	□ NO	□ CH	□ BG
□ RO	□ TR	□ HR			

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