Using the Scanning Function

Tips • Turn 🔘 clockwise.: Scanning is performed toward higher memory channel numbers.

Turn 🔘 counterclockwise: Scanning is performed toward lower memory channel numbers.

• When a signal is received during scanning, scanning stops for 5 seconds and this frequency is received.

• When scanning is suspended, the decimal point blinks and the LCD stays lit.

• After receiving the frequency for 5 seconds, scanning resumes.

• To stop scanning, press 🔘.

Tips

• Even during scanning, you can adjust the squelch in the following procedure:
Press 🔘 → Press 🔘. → Turn 🔘 to adjust the squelch.

• During scanning, you can finish the squelch adjustment in the following procedure:
Press 🔘 → Press 🔘.

• When a memory channel is recalled, the regular memory channels (memory channel numbers 1-900) are scanned.

• When a memory bank is recalled, only the memory channels in the memory bank are scanned.

• For the operation to perform when scanning stops, see [Selecting a Reception Method When Scanning Stops] on page 59.

• Press and hold 🔘 over 1 second to select the Set mode option, and then select the following setting items for more convenient use:

[8 CONFIG] → [3 BEEP] → [EDGE]: Emits a beep when the frequency band edge is reached.

[8 CONFIG] → [3 BEEP] → [SELECT]: Prevents a beep from being emitted when scanning stops.

[5 SCAN] → [2 SCAN LAMP]: Prevents the LCD from being lit when scanning stops.

[5 SCAN WIDTH] → [5 SCAN]: Range for scanning can be selected.

Specifying a Skip/Selected Memory Channel

You can specify two types of memory channels, a skip memory channel and a selected memory channel, for effective memory channel scanning.

Skip memory channel: You can specify a memory channel that need not be scanned during memory channel scanning.

Selected memory channel: You can specify selected memory channels so that only the specific memory channels are scanned during memory scanning.

1 Switch to the Memory mode, and then recall the memory channel you want to specify as a skip memory channel or a selected memory channel.

2 Press and hold 🔘 over 1 second.
Enters the Set mode.

3 Turn 🔘 to select [3 MEMORY].

4 Press [ENT].

5 Turn 🔘 to select [5 MEMORY SKIP].

6 Press [ENT].

7 Turn 🔘 to select [OFF], [SKIP], or [SELECT].

8 Press 🔘 to save the setting and exit from the Set mode.
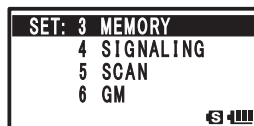
Using the Scanning Function

Tips To cancel a skip/selected memory channel, select [OFF].
When it is canceled, the ◄ icon on the LCD disappears.

Lights when a skip memory
channel is specified

```
Skip memory
channel          DIAL        Selected memory
[SKP]                           channel
                 OFF           [SELECT]
```

MR ◄ 145.500
15 ▬ HI   FM
VFO
     430.000
   ▬ HI   FM
                  ⑤ ⊪
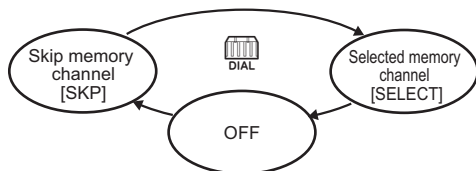
Blinks when a select
memory channel is specified

MR ☀ 145.400
25 ▬ HI   FM
VFO
     430.000
   ▬ HI   FM
                  ⑤ ⊪

▌ Scanning Only the Selected Memory Channel

1 Switch to the Memory mode, and then recall the selected
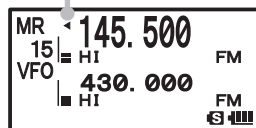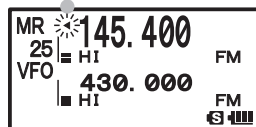memory channel.

2 Press 🔲 and then 2ABC.

MR ☀ 145.400
25 ▬ HI   FM
VFO
     430.000
   ▬ HI   FM
                  ⑤ ⊪

   Tips • Scanning (SCAN) is performed toward higher memory chan-
   nel numbers.

   • Only the selected memory channel is scanned.

   • If a signal is received during scanning, a beep is emitted and scanning stops for 5 seconds to
   receive the current frequency.

   • When scanning is suspended, the decimal point blinks and the LCD stays lit.

   • After receiving the frequency for 5 seconds, scanning resumes.

   • To cancel scanning, press ⑳.

   • You can select the range for scanning by selecting [5 SCAN] → [5 SCAN WIDTH] in the Set
   mode.

Scanning a Memory Bank

Only the memory channels in the recalled memory bank can be scanned.

1 Press (V/M) to enter the Memory mode.

2 Press (BAND) to enter Recall a memory bank.
Pressing (BAND) each time toggles between [MEMORY NO] and [BANK (No.)].
Tips To recall another memory bank, press 🔲 and then (BAND).

3 Turn 🎛 to select a memory bank.
Select a memory bank from BANK1 through BANK 24.

4 Press (BAND).
The selected memory bank is determined.

5 Press 🔲 and then 2ABC.
Scanning (SCAN) is performed toward higher memory channel numbers.

Scanning Function

61

Using the Scanning Function

Tips • Turn ⫿ clockwise: Scanning is performed toward higher memory channel numbers.

Turn ⫿ counterclockwise: Scanning is performed toward lower memory channel numbers.

• When a signal is received during scanning, scanning stops for 5 seconds and this frequency is received.

• When scanning is suspended, the decimal point blinks and the LCD stays lit.

• After receiving the frequency for 5 seconds, scanning resumes.

• To stop scanning, press 🔘.

• You can select the range for scanning by selecting [5 SCAN] → [5 SCAN WIDTH] in the Set mode.

Memory Bank Link Scan

During regular memory bank scanning, only the memory channels assigned to the recalled memory bank are scanned. During memory bank link scanning, memory channels registered in two or more previously specified banks can be scanned.

BANK1 ⟶ BANK10 ⟶ BANK24 ⟶

1 Press (V/M) to enter the Memory mode.

2 Press (BAND) to enter Recall a memory bank.

3 Press 🔘 and then (BAND).

4 Turn ⫿ to select a memory bank.

Select a memory bank subject to memory bank link scanning.

5 Press (V/M) to select a Memory bank link.

The memory bank number changes from [B] to [b], indicating that the bank link has been activated

The memory bank number changes from [B] to [b].

6 Repeat steps 4 to 5 to select another memory bank.

7 Press (BAND).

The memory banks subject to memory bank link scanning are determined.

```
b  2  B-LINK ON
    2 ▌ HI          FM
VFO
     ▌  430.000
    ▌ HI            FM
                    S ▪▥
```

8 Press 🔘 and then [2].

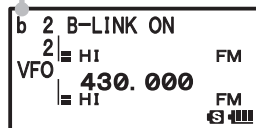Scanning (SCAN) is performed toward higher memory channel numbers.

Tips • Turn ⫿ clockwise.: Scanning is performed toward higher memory channel numbers.

Turn ⫿ counterclockwise: Scanning is performed toward lower memory channel numbers.

• When a signal is received during scanning, scanning stops for 5 seconds and this frequency is received.

• When scanning is suspended, the decimal point blinks and the LCD stays lit.

• After receiving the frequency for 5 seconds, scanning resumes.

• To stop scanning, press 🔘.

• You can select the range for scanning by selecting [5 SCAN] → [5 SCAN WIDTH] in the Set mode.

●**Canceling Bank Link Scanning**

1 Press 🄵 and then ᴮᴬᴺᴰ .

2 Recall the memory bank for which bank link scanning was specified.

3 Press ⱽ⁄ₘ.

The memory bank number changes from [b] to [B], indicating that the bank link has been deactivated.

Programmable Memory Channel Scan (PMS)

Registering to a Programmable Memory Channel

50 sets of PMS memory channels (L1/U1 to L50/U50) are available.

Specify the lower limit frequency of the frequency range you want to scan for memory channel [L∗], and the upper limit frequency for [U∗].

Enter a number between 1 and 50 for ∗. Use the same number for the lower and upper limit memory channels.

Specify the lower limit frequency and upper limit frequency for the PMS memory channel (See page 43).

PMS memory channels are located next to the last memory channel.

Pressing ᴅɪsᴘ scans PMS memory channels quickly in steps of 100 memory channels.

Example: When registering the lower limit frequency 145.160 MHz and the upper limit frequency 145.460 MHz to a PMS memory channel.

Lower limit frequency L1 **Upper limit frequency U1**

```
MR         145. 160          MR         145. 460
L  1 ∟HI         FM          U  1 ∟HI         FM
VFO                          VFO
    ∟ 430. 000                   ∟ 430. 000
     HI         FM                HI         FM
              S▪◀◫◫                        S▪◀◫◫
```
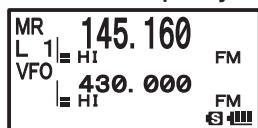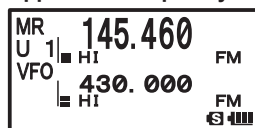
Caution

When the upper and lower limit frequencies have been set in different step, be sure to set 100 kHz or more in between.

Scanning Function

Using the Scanning Function

▌ Performing Programmable Memory Channel Scan

The programmable memory channel scan allows you to scan a specified frequency range within the same frequency band.

1 Switch to the Memory mode.

Recall a PMS memory channel to which the lower limit frequency or upper limit frequency is registered.

2 Press 🖃 and then ²ᴬᴮᶜ.

Programmable memory channel scanning starts.

> **Tips** • Turn 🎛 clockwise: Scanning is performed toward higher frequencies.
>
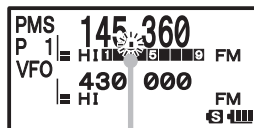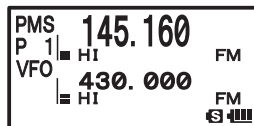> Turn 🎛 counterclockwise: Scanning is performed toward lower frequencies.
>
> • When a signal is received during scanning, scanning stops for 5 seconds and this frequency is received.
>
> • When scanning is suspended, the decimal point blinks and the LCD stays lit.
>
> • After receiving the frequency for 5 seconds, scanning resumes.
>
> • To stop scanning, press 🎙.

Decimal point blinks.

Tips ═══

• When a skip memory channel is specified for [L✻] or [U✻] or when the lower/upper limit frequency is not properly specified, program memory channel scanning is not performed properly.

• Press and hold ᴅɪꜱᴾ over 1 second to select the Set mode option and then select the following setting items for more convenient use:

[8 CONFIG] → [3 BEEP] →[EDGE]: Emits a beep when the frequency band edge is reached.

[5 SCAN] → [2 SCAN LAMP]: Prevents the LCD from being lit when scanning stops.

• Even during scanning, you can adjust the squelch in the following procedure:

Press 🖃 → Press 🎛ᴹᴼᴺᴵ → Turn 🎛 to adjust the squelch.

• During scanning, you can finish the squelch adjustment in the following procedure:

Press 🖃 → Press 🎛ᴹᴼᴺᴵ.

What is the GM function?

The Digital GM (Group Monitor) Function automatically checks if there is another transceiver operating on the same frequency with the GM function within transmission range, and displays the direction, distance and other information for each detected callsign on the LCD. This convenient function not only lets you know if a friend is within transmission range, but also enables instant confirmation of position information between group members. Furthermore, by using this function, you can send messages and images between group members.

Caution

The GM function does not function in the analog mode. Using the $\boxed{\text{WIRES-X}}$ key, switch the communication mode to AMS (Auto Mode Select Function) or digital mode.

Tip

When transmitting image data while GM function is active, the transmission mode automatically switches to FR mode (High Speed Data Communication Mode).The transmission mode will automatically return to the previous V/D mode (Voice/Data Simultaneous Communication Mode).

Standard Operation of the GM Function

Using the GM Function

There are 2 ways of using the Digital GM Function.

(1) Show all stations (up to 24 stations) operating with the GM function.
(2) Register IDs of friends in a group and use it only between registered members.

•Displaying all stations (up to 24 stations) operating with the GM function.

1 Adjust frequency to A band.

2 Press $\boxed{\text{GM}}$ to open the group list.

3 Turn $\boxed{\text{DIAL}}$ to select [ALL].

4 Press $\boxed{\text{ENT}}$.
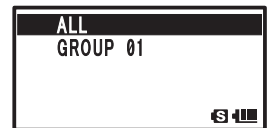
The ID, distance, and direction of all stations (up to 24) within communication range operating with the GM function on the same frequency are displayed.

```
   ALL
 GROUP 01

            🔋
```

Group List Screen

If there are more than 3 stations, turn $\boxed{\text{DIAL}}$ to scroll through the display.

When the GM function is active, not only can you verify if a station is in or out of communication range but the position (direction and distance) information as well.

```
 GM 145.780  DN
►JH1YPC-123  17kmNNE
 JQ1YBF-01   28km SW
 JQ1YBG-1
            🔋
```

In range → (JH1YPC-123)
Out of range → (JQ1YBG-1)
Direction → (17kmNNE)
Distance → (28km)
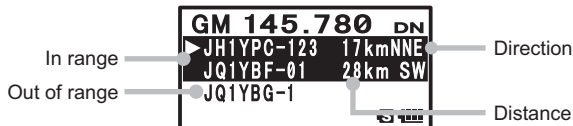
Example of display when ALL is selected

65

Using the Digital GM Function

Standard Operation of the GM Function

● **Registering IDs of friends in a group and using GM function only between regis-
tered members**

Set a group with a name such as [Touring] or [Camp], and only show members registered
to that group.

```
01:Touring ●──────────── Group Name
 JQ1YBF-01
 JA3ZCL/1
 ----------
              S ▄▄
```
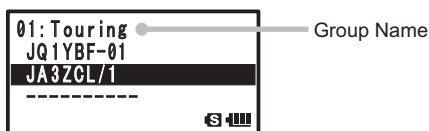
Example of display when Group is set

For group setting and instruction on how to register members to a group, refer to the GM
function instruction manual (please download it from our company website).

● **Turning the GPS Function OFF**

Press [GM].

The GM function is deactivated and the transceiver returns to the state previous to when
GM function was activated.

Tip

With the GM function, data such as messages and images can be transmitted between members.
For details, refer to the GM function instruction manual (please download it from our company website).

What is the APRS (Automatic Packet Reporting System)?

Although there are several functions that display position information using GPS in amateur radios, the APRS is data communication system that transmits data such as position information and messages using a format proposed by Bob Bruninga of WB4APR.
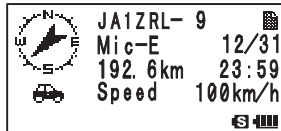
Upon receiving an APRS signal from the remote station, information such as direction and distance to the remote station from your station and speed of the remote station appear on the LCD of your transceiver.

```
        JA1ZRL- 9      ▓
        Mic-E      12/31
        192.6km    23:59
  🚗    Speed    100km/h
                      📶▥
```

Example of display when APRS signal is received

The settings (initial settings) such as callsign and symbol for your station must be applied before using the APRS function.

For details, refer to the APRS function instruction manual (please download it from our company website).

What is GPS?

GPS (Global Positioning System) is a space-based satellite navigation system that provides location and time information anywhere on the earth. It was developed by the U.S. Department of Defense as a military system. It receives signals from three or more of about 30 GPS satellites flying at an altitude of about 20,000 km, and displays the current position (latitude, longitude, and altitude) within a tolerance of several meters. In addition, GPS can receive the exact time from the satellite's onboard atomic clock.
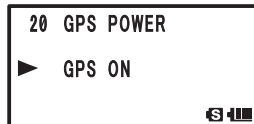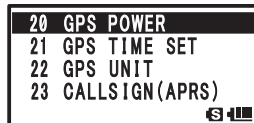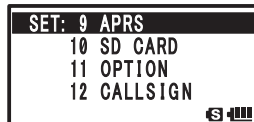
Activating the GPS Function

To activate the GPS function, select [9 APROS] → [23GPS POWER], and then select [GPS ON] in the Set mode.

Tips

• Default: ON

When the GPS function on the transceiver is turned ON, internal clock settings and position settings for your station are automatically obtained from the GPS data.

1 Press and hold $\overset{SET}{\boxed{DISP}}$ for over 1 second to enter the Set mode.

2 Turn $\overset{\text{DIAL}}{\boxplus}$ to select [9 APRS].

3 Press $\boxed{ENT}$.

4 Turn $\overset{\text{DIAL}}{\boxplus}$ to select [20 GPS POWER].

5 Press $\boxed{ENT}$.

6 Turn $\overset{\text{DIAL}}{\boxplus}$ to select [GPS ON].

7 Press $\overset{PTT}{\circledast}$ to set the GPS Function to ON, and exit the Set mode.

```
SET: 9 APRS
     10 SD CARD
     11 OPTION
     12 CALLSIGN
                    S
```

```
20 GPS POWER
21 GPS TIME SET
22 GPS UNIT
23 CALLSIGN(APRS)
                    S
```

```
20 GPS POWER

►    GPS ON

                    S
```

Tips

• Tip Information about the current positions of radio stations provided by GPS can be registered to 10 memory channels (P1 to P10). Registered position information can be used to set the position of your station.

• When the GPS function is active, the power consumption increases by about 40 mA. As a result, the battery life is reduced by about 20% compared to when the GPS function is deactivated.

• To use the GPS function during APRS operation, be sure to select [9 APRS] → [24MY POSITION], and then select [GPS] in the Set mode.

Method of Positioning by GPS

Displaying Current Position Information of Your Station

1 Turn on the transceiver.

2 Press and hold $\overset{SET}{\text{DISP}}$ for over 1 second to enter the Set mode.

3 Turn $\overset{}{\text{DIAL}}$ to select [1 DISPLAY].

4 Press [ENT].

5 Turn $\overset{}{\text{DIAL}}$ to select [1 GPS POWER].

**6** Press [ENT].

7 GPS data appears on the LCD.

An arrow icon (the direction in which you are heading), your current position, number of satellites, longitude, latitude, and altitude appear on the LCD.

```
N   35°37.233'
E  139°45.024'
SPD      4km/h
3  ALT-   14m
```
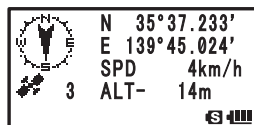
> **Tips** • The arrow icon (the direction in which you are heading) will not appear and the latitude/altitude blinks until GPS satellite data is acquired.
>
> • When GPS satellite data has been acquired, the arrow icon (the direction in which you are heading) will appear, the latitude/altitude will change from blinking to lit, and your current position will be displayed.
>
> • If acquisition of GPS satellite data is interrupted due to an obstacle, such as a building or tunnel, only the arrow icon (the direction in which you are heading) disappears.

8 Press $\overset{}{\text{DIAL}}$ to scroll the screen, and display the current time. Pressing $\overset{}{\text{DIAL}}$ again displays GPS data.

The GPS screens will transition each time [ENT] is pressed.

```
E  139°45.024'
SPD      0km/h
ALT       -m
3  TIM 16:10:39
```
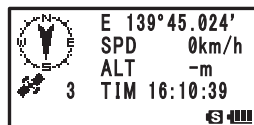
9. Press $\overset{PTT}{\text{⊙}}$.

The screen returns from the GPS screen to the normal frequency display. (Not return to the transmission state)

```
40
30
20
3D 0 0 2 1 0 0 0 2 1 1
10 2 5 6 0 4 8 7 9 5 3
```
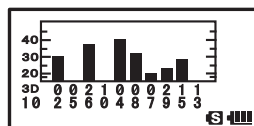
Displaying Position Information of Remote Station in Digital Mode

With the V/D mode C4FM digital, because GPS position information is transmitted simultaneously with voice signals, the direction and position of the remote station can be displayed in real-time even while communicating.

For details, see "Real-Time Navigation Function" on page 73.

Tip
• Even if the GPS function of your station is set to OFF, position information of the remote station can be displayed in V/D mode.

Caution
• If the GPS function is not active, the remote station will not be able to acquire position information for your station.