

KENWOOD

INSTRUCTION MANUAL

VHF P25 TRANSCEIVER

TK-5710 series

UHF P25 TRANSCEIVER

TK-5810 series

700/800MHz P25 TRANSCEIVER

TK-5910 series

Kenwood Corporation

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09 08 07 06 05 04 03 02 01 00

THANK YOU

We are grateful you have chosen **Kenwood** for your personal mobile applications.

MODELS COVERED BY THIS MANUAL

The models listed below are covered by this manual:

- **TK-5710 series:** VHF P25 Transceiver
- **TK-5810 series:** UHF P25 Transceiver
- **TK-5910 series:** 700/800MHz P25 Transceiver

NOTICES TO THE USER

- ◆ Government law prohibits the operation of unlicensed transmitters within the territories under government control.
- ◆ Illegal operation is punishable by fine and/or imprisonment.
- ◆ Refer service to qualified technicians only.

SAFETY: It is important that the operator is aware of, and understands, hazards common to the operation of any transceiver.



- ◆ **EXPLOSIVE ATMOSPHERES (GASES, DUST, FUMES, etc.)**
Turn OFF your transceiver while taking on fuel or while parked in gasoline service stations. Do not carry spare fuel containers in the trunk of your vehicle if your transceiver is mounted in the trunk area.
- ◆ **INJURY FROM RADIO FREQUENCY TRANSMISSIONS**
Do not operate your transceiver when somebody is either standing near to or touching the antenna, to avoid the possibility of radio frequency burns or related physical injury.
- ◆ **DYNAMITE BLASTING CAPS**
Operating the transceiver within 500 feet (150 m) of dynamite blasting caps may cause them to explode. Turn OFF your transceiver when in an area where blasting is in progress, or where "TURN OFF TWO-WAY RADIO" signs have been posted. If you are transporting blasting caps in your vehicle, make sure they are carried in a closed metal box with a padded interior. Do not transmit while the caps are being placed into or removed from the container.

The AMBE+2™ voice coding Technology embodied in this product is protected by intellectual property rights including patent rights, copyrights and trade secrets of Digital Voice Systems, Inc. This voice coding Technology is licensed solely for use within this Communications Equipment. The user of this Technology is explicitly prohibited from attempting to extract, remove, decompile, reverse engineer, or disassemble the Object Code, or in any other way convert the Object Code into a human-readable form. U.S. Patent Nos. #5,870,405, #5,826,222, #5,754,974, #5,701,390, #5,715,365, #5,649,050, #5,630,011, #5,581,656, #5,517,511, #5,491,772, #5,247,579, #5,226,084 and #5,195,166.

Firmware Copyrights

The title to and ownership of copyrights for firmware embedded in Kenwood product memories are reserved for Kenwood Corporation.

One or more of the following statements may be applicable:

FCC WARNING

This equipment generates or uses radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

INFORMATION TO THE DIGITAL DEVICE USER REQUIRED BY THE FCC

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can generate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer for technical assistance.

PRECAUTIONS

Observe the following precautions to prevent fire, personal injury, and transceiver damage.

- Do not attempt to configure the transceiver while driving; it is too dangerous.
- Do not disassemble or modify the transceiver for any reason.
- Do not expose the transceiver to long periods of direct sunlight, nor place it near heating appliances.
- If an abnormal odor or smoke is detected coming from the transceiver, switch the transceiver power off immediately, and contact your **Kenwood** dealer.
- Use of the transceiver while you are driving may be against traffic laws. Please check and observe the vehicle regulations in your area.
- Do not use options not specified by **Kenwood**.



CAUTION

- ◆ The transceiver operates in **12 V** negative ground systems only! Check the battery polarity and voltage of the vehicle before installing the transceiver.
- ◆ Use only a **Kenwood** optional DC power cable.
- ◆ Do not cut and/or remove the fuse holder on the DC power cable.



WARNING

For passenger safety, install the transceiver securely using an optional mounting bracket and screw set so the transceiver will not break loose in the event of a collision.

CONTENTS

UNPACKING AND CHECKING EQUIPMENT	1
SUPPLIED ACCESSORIES	1
PREPARATION	2
TOOLS REQUIRED	2
POWER CABLE CONNECTION	2
INSTALLING THE TRANSCEIVER	3
GETTING ACQUAINTED.....	4
KCH-14 (BASIC CONTROL PANEL).....	4
KCH-14 DISPLAY.....	5
KCH-15 (FULL-FEATURED CONTROL PANEL).....	6
KCH-15 DISPLAY.....	7
MID POWER MODEL REAR PANEL.....	8
HIGH POWER MODEL REAR PANEL.....	8
PROGRAMMABLE FUNCTIONS.....	9
BASIC OPERATIONS.....	11
SWITCHING POWER ON/ OFF	11
ADJUSTING THE VOLUME.....	11
SELECTING A ZONE AND CHANNEL	12
TRANSMITTING.....	12
RECEIVING.....	14
SCAN	15
TEMPORARY CHANNEL LOCKOUT.....	15
PRIORITY SCAN.....	16
SCAN REVERT.....	16
SCAN PROGRAMMING	17
FleetSync: ALPHANUMERIC 2-WAY PAGING FUNCTION.....	19
KEY FUNCTIONS	19
SELCALL (SELECTIVE CALLING).....	20
STATUS MESSAGE	20
SHORT MESSAGES.....	22
LONG MESSAGES	22
GPS REPORT.....	22

DTMF (DUAL TONE MULTI FREQUENCY) CALLS.....	23
MAKING A DTMF CALL	23
AUTODIAL.....	23
STUN CODE.....	23
TRUNKING CALLS.....	24
MAKING A TELEPHONE CALL	24
RECEIVING A TELEPHONE CALL	24
MAKING A STATUS CALL	24
EMERGENCY CALLS	25
SCRAMBLER (FM)/ ENCRYPTION (P25).....	26
SECURE (ENCRYPTED) TRANSMISSION.....	26
SELECTING THE SCRAMBLER CODE (FM).....	26
SELECTING THE ENCRYPTION KEY (P25)	26
DELETING THE ENCRYPTION KEY.....	27
PASSWORD PROTECTION.....	27
SIGNALING.....	28
QUIET TALK (QT)/ DIGITAL QUIET TALK (DQT)	28
OPTION SIGNALING	29
CLOCK.....	30
CLOCK ADJUSTMENT.....	30
ADVANCED OPERATIONS	31
BACKGROUND OPERATIONS	35
TIME-OUT TIMER (TOT)	35
SIGNAL STRENGTH INDICATOR	35
COMPANDER	35
BUSY CHANNEL LOCKOUT (BCL).....	36
OUT OF RANGE	36
SITE TRUNKING	36
CONTROL CHANNEL HUNT	36
PTT ID	36
VGS-1 OPTIONAL VOICE GUIDE & STORAGE UNIT.....	37
VOICE RECORDER.....	37
VOICE GUIDE	38

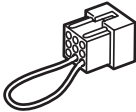
UNPACKING AND CHECKING EQUIPMENT

Note: The following unpacking instructions are for use by your **Kenwood** dealer, an authorized **Kenwood** service facility, or the factory.

Carefully unpack the transceiver. We recommend that you identify the items listed in the following table before discarding the packing material. If any items are missing or have been damaged during shipment, file a claim with the carrier immediately.

SUPPLIED ACCESSORIES

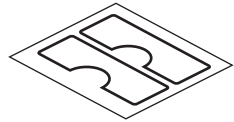
Short plug	1
Hex-headed screw with washer	1
Sheet	1
Instruction manual	1



Short plug



Hex-headed screw
with washer



Sheet

PREPARATION



WARNING

Various electronic equipment in your vehicle may malfunction if they are not properly protected from the radio frequency energy which is present while transmitting. Electronic fuel injection, anti-skid braking, and cruise control systems are typical examples of equipment that may malfunction. If your vehicle contains such equipment, consult the dealer for the make of vehicle and enlist his/her aid in determining if they will perform normally while transmitting.

Note: The following preparation instructions are for use by your **Kenwood** dealer, an authorized **Kenwood** service facility, or the factory.

TOOLS REQUIRED

Note: Before installing the transceiver, always check how far the mounting screws will extend below the mounting surface. When drilling mounting holes, be careful not to damage vehicle wiring or parts.

The following tools are required for installing the transceiver:

- 1/4 inch (6 mm) or larger electric drill
- 5/32 inch (4.2 mm) drill bit for the self-tapping screws used to mount the optional mounting bracket
- Circle cutters

POWER CABLE CONNECTION



CAUTION

- ◆ The transceiver operates in **12 V** negative ground systems only! Check the battery polarity and voltage of the vehicle before installing the transceiver.
- ◆ Use only a **Kenwood** optional DC power cable.
- ◆ Do not cut and/or remove the fuse holder on the DC power cable.

- 1 Check for an existing hole, conveniently located in the firewall, where a power cable can be passed through. If no hole exists, use a circle cutter to drill the firewall, then install a rubber grommet.
- 2 Run the two power cable leads through the firewall and into the engine compartment, from the passenger compartment.
- 3 Connect the red lead to the positive (+) battery terminal and the black lead to the negative (-) battery terminal.
 - Locate the fuse as close to the battery as possible.
- 4 Coil and secure the surplus cable with a retaining band.
 - Be sure to leave enough slack in the cables so the transceiver can be removed for servicing while keeping the power applied.

INSTALLING THE TRANSCEIVER



WARNING

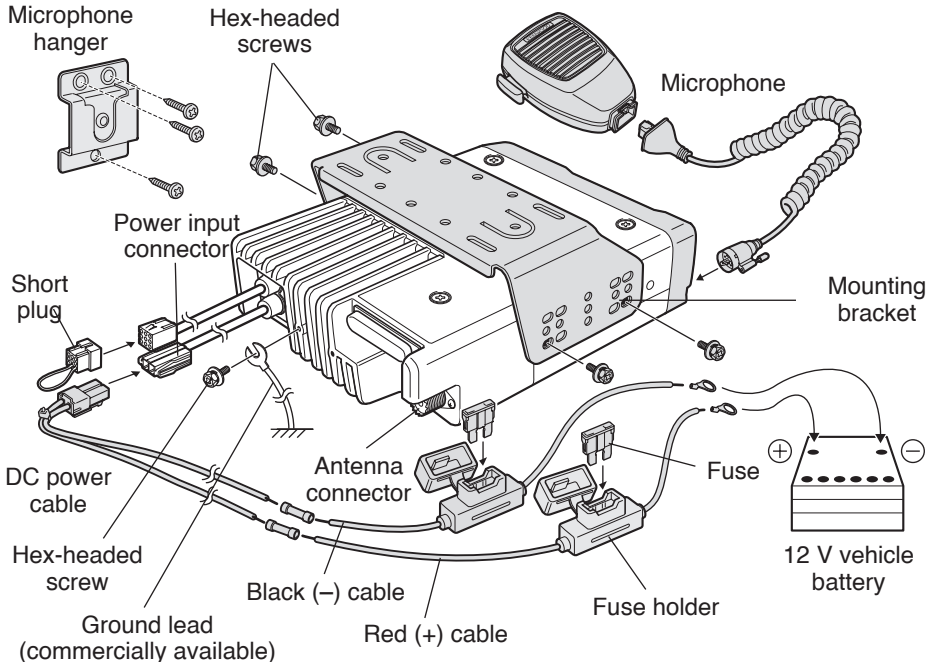
For passenger safety, install the transceiver securely using an optional mounting bracket and screw set so the transceiver will not break loose in the event of a collision.

- 1 Mark the position of the holes in the dash by using the mounting bracket as a template. Drill the holes, then attach the mounting bracket using self-tapping screws.
 - Be sure to mount the transceiver in a location where the controls are within easy reach of the user and where there is sufficient space at the rear of the transceiver for cable connections.
- 2 Connect the antenna and power cable to the transceiver.
- 3 Slide the transceiver into the mounting bracket and secure it using hex-headed screws.
- 4 Mount a microphone hanger in a location where it will be within easy reach of the user yet not interfere with the safe operation of the vehicle.



CAUTION

When replacing the fuse in the DC power cable, be sure to replace it with a fuse of the same value. Never replace a fuse with a fuse that has a higher value.

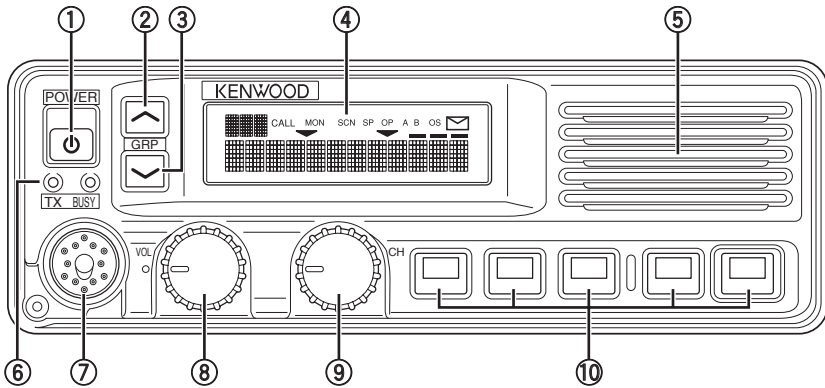







* The mid power model is shown in the above diagram.

Note: The items above shown in gray are optional accessories.

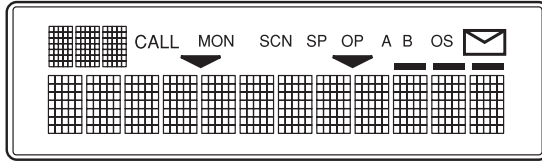
GETTING ACQUAINTED

KCH-14 (BASIC CONTROL PANEL)



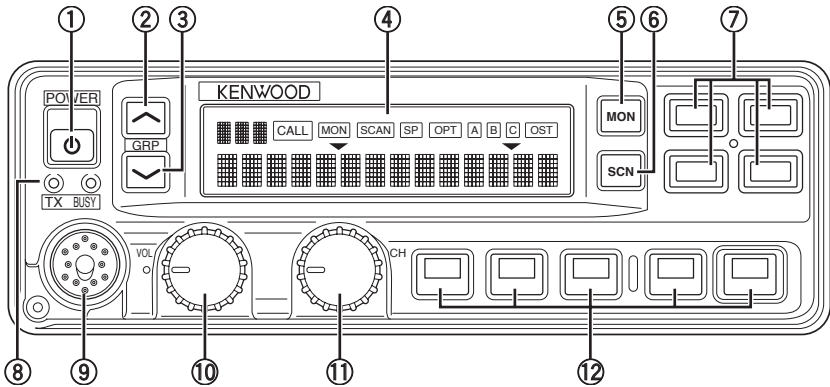
- ① **Power**  **switch**
Press to switch the transceiver ON. Press and hold for approximately 1 second to switch the transceiver OFF.
- ② **GRP**  **key**
Press to increase the zone number. Also press to increase setting adjustments.
- ③ **GRP**  **key**
Press to decrease the zone number. Also press to decrease setting adjustments.
- ④ **Display**
Refer to page 5.
- ⑤ **Speaker**
Internal speaker.
- ⑥ **TX and BUSY indicators**
The **TX** indicator lights red while transmitting. The **BUSY** indicator lights green while receiving.
- ⑦ **Microphone jack**
Insert the microphone plug into this jack.
- ⑧ **VOL (Volume) control**
Rotate clockwise to increase the volume level. Rotate counterclockwise to decrease the volume level.
- ⑨ **CH (Channel) control**
Rotate clockwise to increase the channel number. Rotate counterclockwise to decrease the channel number. Your dealer can also enable the **CH** control to be used when making setting adjustments, as an optional method for using the **GRP**  and **GRP**  keys.
- ⑩ **PF 1 ~ PF 5 (Programmable Function) keys**
Press to activate their programmable functions {page 9}.






KCH-14 DISPLAY



Indicator	Description
	Displays the operating zone and channel numbers or zone and channel names. Also displays various text messages depending on the function being used.
	Displays various characters depending on dealer settings.
CALL	Appears when a received call is using optional signaling.
MON	Appears when the Monitor function is active and when the transceiver squelch is open.
SCN	Appears when you are using Scan mode.
SP	Appears when the external speaker function is activated.
OP	Appears when the Scrambler or Encryption function is activated.
A	Appears when the AUX A function has been activated.
B	Appears when the AUX B function has been activated.
OS	Appears when using the Operator Selectable Tone function.
	Appears when there is a message stored in the transceiver memory. Flashes when a new message has arrived.
	Appears when the selected zone is added to the scanning sequence.
	Appears when the selected channel is added to the scanning sequence.
	Appears when the AUX C function has been activated.
	Appears when the Auto Recording function on the VGS-1 option is activated.
	Appears when the Auto Reply Message on the VGS-1 option is activated.

KCH-15 (FULL-FEATURED CONTROL PANEL)

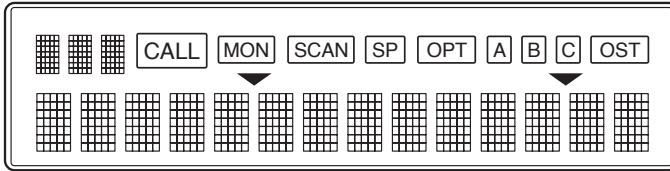


- ① **Power  switch**
Press to switch the transceiver ON. Press and hold for approximately 1 second to switch the transceiver OFF.
- ② **GRP  key**
Press to increase the zone number. Also press to increase setting adjustments.
- ③ **GRP  key**
Press to decrease the zone number. Also press to decrease setting adjustments.
- ④ **Display**
Refer to page 7.
- ⑤ **MON (Monitor) key**
Press to activate the Monitor function. Press and hold to turn the transceiver Squelch OFF {page 32}.
- ⑥ **SCN (Scan) key**
Press to activate the Scan function {page 15}.
- ⑦ **Programmable Function keys**
Press to activate their programmable functions {page 9}.
- ⑧ **TX and BUSY indicators**
The **TX** indicator lights red while transmitting. The **BUSY** indicator lights green while receiving.
- ⑨ **Microphone jack**
Insert the microphone plug into this jack.
- ⑩ **VOL (Volume) control**
Rotate clockwise to increase the volume level. Rotate counterclockwise to decrease the volume level.
- ⑪ **CH (Channel) control**
Rotate clockwise to increase the channel number. Rotate counterclockwise to decrease the channel number. Your dealer can also enable the **CH** control to be used when making setting adjustments, as an optional method for using the **GRP ** and **GRP ** keys.

⑫ **PF 1 ~ PF 5 (Programmable Function) keys**

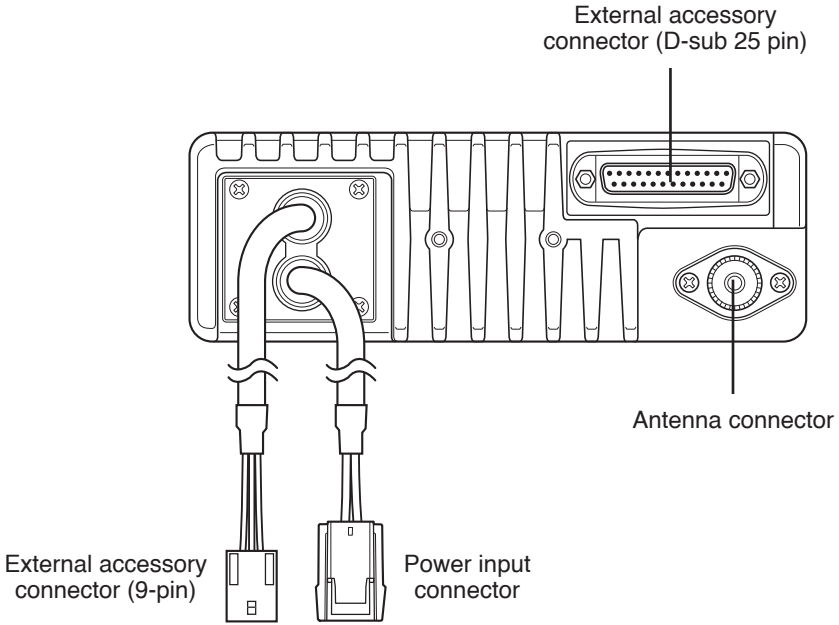
Press to activate their programmable functions {page 9}.

KCH-15 DISPLAY

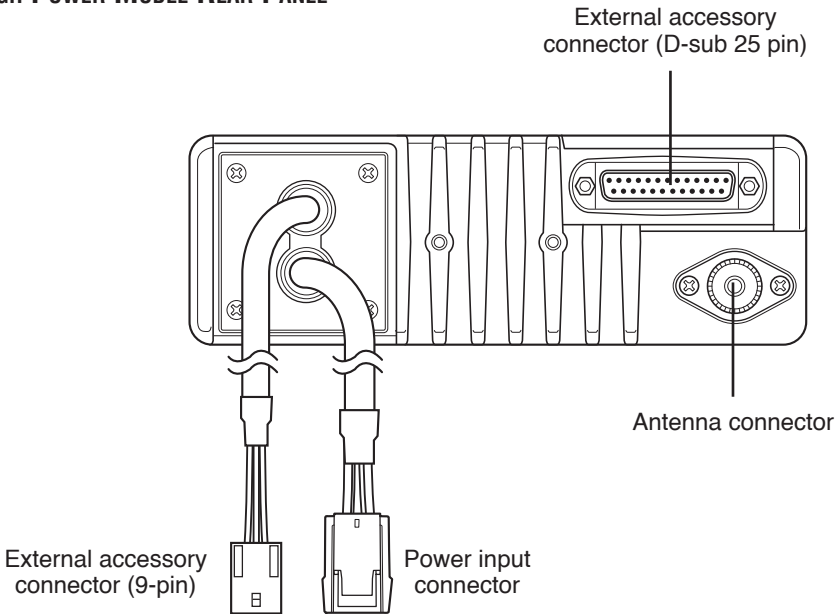


Indicator	Description
	Displays the operating zone and channel numbers or zone and channel names. Also displays various text messages depending on the function being used.
	Displays various characters depending on dealer settings.
	Appears when a received call is using optional signaling.
	Appears when the Monitor function is active and when the transceiver squelch is open.
	Appears when you are using Scan mode.
	Appears when the external speaker function is activated.
	Appears when the Scrambler or Encryption function is activated.
	Appears when the AUX A function has been activated.
	Appears when the AUX B function has been activated.
	Appears when the AUX C function has been activated.
	Appears when using the Operator Selectable Tone function.
	Appears when the selected zone is added to the scanning sequence.
	Appears when the selected channel is added to the scanning sequence.
	Appears when there is a message stored in the transceiver memory. Flashes when a new message has arrived.
	Appears when the Auto Recording function on the VGS-1 option is activated.
	Appears when the Auto Reply Message on the VGS-1 option is activated.

MID POWER MODEL REAR PANEL



HIGH POWER MODEL REAR PANEL



PROGRAMMABLE FUNCTIONS

The PF (Programmable Function) keys can be programmed with the functions listed below. Function descriptions start on page 31. Please contact your dealer for further details on these functions.

Con FM: Channels set up for Conventional FM Operation

Con P25: Channels set up for Conventional P25 Operation

Trunk P25: Channels set up for Trunking P25 Operation

✓: Available

Mix: Mixed Mode (Con FM and Con P25) only

N/A: Not Available

Programmable Function	Con FM	Con P25	Trunk P25
2-tone	✓	Mix	N/A
Auto Reply Message ¹	✓	N/A	N/A
Autodial	✓	N/A	✓
AUX A	✓	✓	✓
AUX B	✓	✓	✓
AUX C	✓	✓	✓
Channel Down	✓	✓	✓
Channel Recall	✓	✓	✓
Channel Select ²	✓	✓	✓
Channel Up	✓	✓	✓
Clock	✓	✓	✓
Direct Channel 1 ~ 5	✓	✓	✓
Display Character	✓	✓	✓
Emergency ³	✓	✓	✓
External Speaker	✓	✓	✓
Function	✓	✓	✓
GPS Position Display	✓	✓	✓
Home Channel	✓	✓	✓
Horn Alert	✓	✓	✓
Individual	N/A	✓	✓
Intercom	✓	✓	✓
Key Delete	N/A	✓	✓
LCD Brightness	✓	✓	✓
Monitor	✓	✓	N/A
None	✓	✓	✓
Operator Selectable Tone	✓	Mix	N/A

Programmable Function	Con FM	Con P25	Trunk P25
OST Down	✓	Mix	N/A
OST Up	✓	Mix	N/A
Playback ¹	✓	✓	✓
Public Address	✓	✓	✓
Regroup Request	N/A	N/A	✓
Scan	✓	✓	✓
Scan Delete	✓	✓	✓
Scan Program	✓	✓	✓
Scrambler/ Encryption	✓	✓	✓
Scrambler/ Encryption Code	✓	✓	✓
Selcall ⁴	✓	Mix	N/A
Selcall + Status ⁴	✓	Mix	N/A
Send the GPS Data ⁴	✓	Mix	N/A
Site Lock	N/A	N/A	✓
Speaker 1 ~ 2 Mute	✓	✓	✓
Squelch Level	✓	Mix	N/A
Status ⁴	✓	Mix	✓
System Search	N/A	N/A	✓
Tactical Group	✓	✓	N/A
Talk Around	✓	✓	✓
Talkgroup	Mix	✓	N/A
Tone	✓	✓	✓
Zeroize	✓	✓	✓
Zone Down	✓	✓	✓
Zone Select ²	✓	✓	✓
Zone Up	✓	✓	✓

¹ Auto Reply Message and Playback are available only if the VGS-1 optional board has been installed.

² Channel Select and Zone Select can be programmed only on the **CH** control.

³ Emergency can be programmed only on the **PF 5** key.


⁴ Selcall, Selcall + Status, Send the GPS data, and Status cannot be used when the transmit mode is set as Conventional P25.

BASIC OPERATIONS

SWITCHING POWER ON/ OFF


Press the  switch to switch the transceiver ON.

- A beep sounds and the display momentarily lights up.
- If the Transceiver Password function is programmed, “PASSWORD” appears on the display. You must enter the password to unlock the transceiver. Refer to “Transceiver Password”, below.

Press and hold the  switch for approximately 1 second to switch the transceiver OFF.

■ Transceiver Password

To enter the password:

- 1 Rotate the **CH** control to select a digit.
- 2 Press the **GRP**  key to accept the entered digit and move to the next digit.
- 3 Repeat steps 1 and 2 to enter the entire password.
 - The password can contain a maximum of 6 digits.
 - Press the **PF 3** key to delete an incorrectly entered character. Press and hold the **PF 3** key to delete all characters.
- 4 Press the **PF 2** key to confirm the password.
 - If you enter an incorrect password, an error tone sounds and the transceiver remains locked.

To enter the password using a DTMF keypad:

- 1 Press the DTMF keys corresponding to the password digits.
 - The password can contain a maximum of 6 digits.
 - Press the **PF 3** or DTMF # key to delete an incorrectly entered character. Press and hold the **PF 3** or DTMF # key to delete all characters.
- 2 Press the **PF 2** or DTMF * key to confirm the password.
 - If you enter an incorrect password, an error tone sounds and the transceiver remains locked.

ADJUSTING THE VOLUME

Rotate the **VOL** control clockwise to increase the volume and counterclockwise to decrease the volume.

SELECTING A ZONE AND CHANNEL

Select the desired zone using the **GRP**  and  keys. Each zone contains a group of channels.

Select the desired channel using the **CH** control. Each channel is programmed with settings for transmitting and receiving.

- If programmed by your dealer, the transceiver will announce the zone and channel numbers as you change them.



Names can be programmed for zones and personalities. Your dealer can set the zone name to a length of 0 to 14 digits. To fit on the display, personality names will shorten appropriately. (KCH-14 models display only 12 digits). For example, if the channel name is “-CHANNEL1-” and the zone name is “Kenwood”, and your dealer sets the zone name to 4-digits, the following display will appear:

KCH-14 (12-digit display): KENW-CHANNEL

KCH-15 (14-digit display): KENW-CHANNEL1-

TRANSMITTING

For Trunking channels, refer to “Making Group Calls” and “Making Individual Calls” on the following page.

- 1 Select the desired zone and channel using the **GRP**  and  keys and the **CH** control.
- 2 Press (or press and hold) the key programmed as **Monitor** to check whether or not the channel is free.
 - If the channel is busy, wait until it becomes free.
- 3 Press the microphone **PTT** switch and speak into the microphone. Release the **PTT** switch to receive.
 - The TX indicator lights red while transmitting. The BUSY indicator lights green while receiving a signal. This indicator can be disabled by your dealer.
 - For best sound quality at the receiving station, hold the microphone approximately 1.5 inches (3 ~ 4 cm) from your mouth.

■ Making Group Calls (P25)

Channels programmed for Conventional P25 and Trunking P25 operation already have a Group ID assigned. For these channels, simply press and hold the **PTT** switch to make the call.

- On Trunking channels, if the traffic channel is busy, a busy message appears and the busy tone sounds. Release the **PTT** switch and wait for the channel to become free. When the traffic channel becomes free, a proceed tone sounds.

Otherwise, if a key has been programmed with **Talkgroup** (Conventional P25 only), you can select a group ID from the list to make a call to those parties. To select a group ID:



- 1 Press the key programmed as **Talkgroup**.
- 2 Press the **GRP** **^** and **v** keys or rotate the **CH** control to select a group ID/name from the list that has been pre-entered into your transceiver.
 - The target group ID/name appears on the display.
- 3 Press the **PF 1** key to accept the group ID/name.
- 4 Press and hold the microphone **PTT** switch to make the call.
 - Speak into the transceiver as you would during a normal transmission.

■ Making Individual Calls (P25)

If a key has been programmed with **Individual**, you can make calls to specified persons.

- 1 Press the key programmed as **Individual**.
- 2 Press the **GRP** **^** and **v** keys or rotate the **CH** control to select a unit ID from the list that has been pre-entered into your transceiver.
 - Alternatively, you can directly enter a unit ID by using a DTMF keypad.
 - The target unit ID/name appears on the display.
- 3 Press and hold the microphone **PTT** switch to make the call.
 - Speak into the transceiver as you would during a normal transmission.
 - On Trunking channels, a ringing tone will sound and the display will alternate between the called unit ID/name and "CALLING".
- 4 On Trunking channels, to end the call, press the **PF 1** key or the DTMF **#** key.

RECEIVING

- 1 Select the desired zone and channel using the **GRP**  and  keys and the **CH** control.
- 2 When you hear a caller's voice, readjust the volume as necessary.
 - If signaling has been programmed on the selected channel, you will hear a call only if the signal tone matches the tone set up on your transceiver.

Note: Signaling allows your transceiver to code your calls. This will prevent you from listening to unwanted calls. It does not make calls private, it only prevents them from being heard by transceivers set with a different signaling code. Refer to "SIGNALING" on page 28 for details.

■ Receiving Group Calls (P25)

When you receive a group call on a Conventional channel and the received group ID matches the ID set up on your transceiver, you can hear the caller's voice.

When you receive a group call on a Trunking channel, the transceiver automatically switches to the traffic channel to receive the call.

- Readjust the volume as necessary.

■ Receiving Individual Calls (P25)




When you receive an individual call on a Conventional channel, a ringing tone will sound and the display will show the caller's ID. To respond to the call, press and hold the microphone **PTT** switch and speak into the transceiver as you would during a normal transmission.

When you receive an individual call on a Trunking channel, a ringing tone will sound and the display will alternate between the caller's ID and "RECEIVING". To receive the call, press the **PTT** switch. To deny the call, press and hold the **PF 1** key or the **DTMF #** key. After receiving the call, you can respond to the call by pressing and holding the **PTT** switch and speaking into the microphone as you would during a normal transmission. After the call is finished, press the **PF 1** key or the **DTMF #** key to end the call.

SCAN

Scan is useful for monitoring signals on the transceiver channels. While scanning, the transceiver checks for a signal on each channel and only stops on a channel if a signal is present.

To begin scanning, press the key programmed as **Scan**.

- The SCN (KCH-14) or  (KCH-15) icon appears on the display.
- The channel add indicator (KCH-14:  / KCH-15: ) will appear on the display when the selected channel is added to the scan sequence.
- The channels included in the scan list are scanned.
- When a signal is detected on a channel, Scan pauses on that channel. The transceiver will remain on the busy channel until the signal is no longer present. When the signal “drops out”, the transceiver will remain on the channel momentarily before Scan resumes. This delay time is programmed by your dealer. If a signal is received during the delay time, the transceiver will remain on the same channel.

To stop scanning, press the **Scan** key again.



Note:

- ◆ If the currently selected channel is not added to the scanning sequence, Scan will not function when pressing the key programmed as **Scan**. Be sure that the selected channel is added to the scanning sequence before operating Scan.
 - ◆ In order for Scan to function, there must be at least 2 channels added to the scanning sequence. If there are less channels than this, Scan will not operate.
-

TEMPORARY CHANNEL LOCKOUT

If a key is programmed with the **Scan Delete** function, each channel can be locked out of the scan sequence manually.

During scan, you can temporarily remove specific channels from the scanning sequence by selecting them and pressing the **Scan Delete** key.

- The channel add indicator (KCH-14:  / KCH-15: ) no longer appears on the display for that channel.
- The channel is no longer scanned. However, when scanning is ended and restarted, the channels will reset and the channel will again be in the scanning sequence.

PRIORITY SCAN

A Priority channel must be programmed in order for Priority Scan to function.

When using a single Priority channel, the transceiver will automatically change to the Priority channel when a call is received on it, even if a call is being received on a normal channel.

When using dual Priority channels, Priority channel 1 is given precedence over Priority channel 2. So, if a call is received on Priority channel 1 while a call is already on Priority channel 2, the transceiver will automatically change to Priority channel 1.

- “P1” appears on the sub-display when the displayed channel is Priority channel 1, “P2” appears when the displayed channel is Priority channel 2, and “PP” appears when the displayed channel is both Priority channel 1 and Priority channel 2.

SCAN REVERT

The Scan Revert channel is the channel selected when you press the **PTT** switch to transmit during Scan. Your dealer can program one of the following Scan Revert channels:








- **Selected:** The last zone and channel selected are assigned as the new revert zone and channel.
- **Selected + Talkback:** If the zone and channel have been changed during Scan, the newly selected zone and channel are assigned as the new revert zone and channel. The transceiver “talks back” on the current receive channel.
- **Priority 1:** If your dealer has programmed a Priority 1 channel, this channel is the revert zone and channel.
- **Priority 1 + Talkback:** If your dealer has programmed a Priority 1 channel, this channel is the revert zone and channel. The transceiver “talks back” on the current receive channel.
- **Priority 2:** If your dealer has programmed a Priority 2 channel, this channel is the revert zone and channel.
- **Priority 2 + Talkback:** If your dealer has programmed a Priority 2 channel, this channel is the revert zone and channel. The transceiver “talks back” on the current receive channel.
- **Last Called:** The last channel on which you made a call is assigned as the new revert channel.

SCAN PROGRAMMING




Note: Scan programming is only available when using Conventional operation.

■ Conventional Operation

If Scan Type has been programmed for Conventional operation, you are able to reprogram your scan list.



- 1 Press the key programmed as **Scan Program**.
 - The SCN (KCH-14) or  (KCH-15) icon appears on the display and blinks.
- 2 Press the **GRP**  and  keys or rotate the **CH** control to select the zone and channel you will add to or remove from the Scan list.
 - Press the **PF 2** key to toggle between Zone Select and Channel Select.
- 3 Press the **PF 4** key to add or remove the selected zone or channel to/ from the scan list.
 - The zone add indicator (KCH-14:  / KCH-15: ) / channel add indicator (KCH-14:  / KCH-15: ) will appear on the display when the selected channel is added to the scan sequence.
- 4 Press the **PF 1** key to exit scan programming.

If the Priority channel has been set as Operator Selectable by your dealer, you are able to reprogram the Priority mode as well.

- 1 Press the key programmed as **Scan Program**.
 - The SCN (KCH-14) or  (KCH-15) icon appears on the display and blinks.
- 2 Press and hold the **PF 3** key to edit the Priority channel.
- 3 Press the **GRP**  and  keys or rotate the **CH** control to select the channel you will set or unset as Priority.
- 4 Press the **PF 4** key to toggle the selected channel between Priority and Normal.
 - “P1”, “P2”, or “PP” appears on the sub-display when Priority mode is selected.
- 5 Press the **PF 3** key again to set the new channel setting.
- 6 Press the **PF 1** key to exit scan programming.

■ Conventional Operation (Single Zone/ Multi-Zone)

If Scan Type has been programmed for Conventional Single Zone or Conventional Multi-Zone operation, you are able to reprogram the Priority mode.

- 1 Press the key programmed as **Scan Program**.
 - The SCN (KCH-14) or SCAN (KCH-15) icon appears on the display and blinks.
- 2 Press the **GRP**  and  keys or rotate the **CH** control to select the zone and channel you will set or unset as Priority.
 - Press the **PF 2** key to toggle between Zone Select and Channel Select.
- 3 Press the **PF 4** key to toggle the selected channel between Priority and Normal.
 - “P1”, “P2”, or “PP” appears on the sub-display when Priority mode is selected.
- 4 Press the **PF 1** or **PF 3** key to exit scan programming.

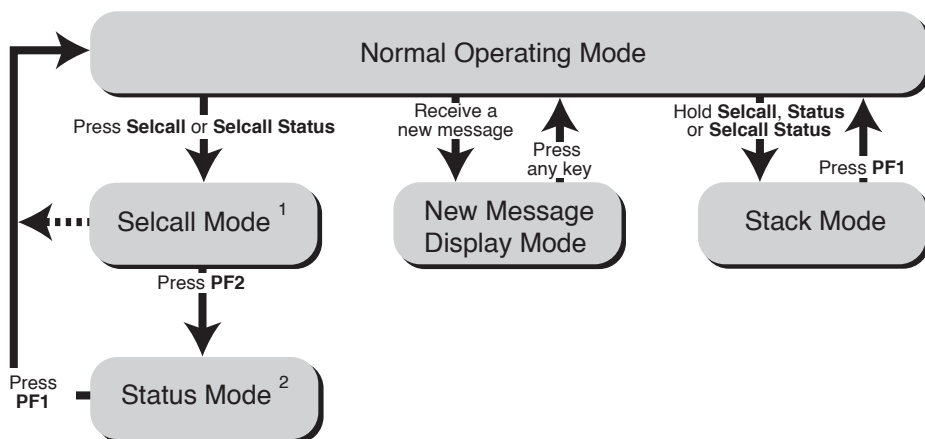
FleetSync: ALPHANUMERIC 2-WAY PAGING FUNCTION

FleetSync is an Alphanumeric 2-way Paging Function, and is a protocol owned by **Kenwood** Corporation. FleetSync enables a variety of paging functions on your transceiver, some of which depend on dealer programming.

Note: This function is available only in Conventional FM Operation.

KEY FUNCTIONS

Key	Function
Selcall or Selcall + Status	Press to change the transceiver mode as shown in the diagram below.
CH control	Rotate to select an ID from the pre-programmed ID list or Status list.
PTT switch or PF 4 key	Press to initiate a call.
Keypad 0 ~ 9	Use the DTMF keypad to enter Selcall or Status numbers.
PF 3 or DTMF # key	When dialing a number manually, press to delete a character or press and hold to delete all characters.
PF 2 or DTMF * key	Press to exit Selcall or Status mode. Press and hold to toggle between list selection and manual entry (if enabled). In Stack mode, press to toggle the display between ID/message, receive channel, and time stamp, or to delete the selection.
PF 1 key	Press to exit Selcall or Status mode.





¹ Depending on how your dealer programmed the transceiver, Selcall mode may be skipped or the transceiver may exit Selcall mode automatically (as shown by the dash arrow).

² After entering Selcall mode by pressing the **Selcall + Status** key, you can enter Status mode by pressing the **PF2** key.

SELCALL (SELECTIVE CALLING)

A Selcall is a voice call to a particular station or to a group of stations.

■ Transmitting

- 1 Select your desired zone and channel.
- 2 Press the key programmed as **Selcall** or **Selcall + Status** to enter Selcall mode.
- 3 Press the **GRP**  and  keys or rotate the **CH** control to select the ID of the station you want to call.
 - Alternatively, you can enter a station ID using a DTMF keypad.
- 4 Press the microphone **PTT** switch and begin your conversation.
 - Alternatively, you can press the **PF 4** key to page the selected station, rather than making a voice call.

■ Receiving

An alert tone will sound, the transceiver will automatically enter Selcall mode, and the calling station's ID will appear when a Selcall is received.

To respond to the call, press the microphone **PTT** switch and speak into the microphone.

■ Identification Codes

An ID code is a combination of a 3-digit Fleet number and a 4-digit ID number. Each transceiver must have its own Fleet and ID number.

- Enter a Fleet number (100 ~ 349) to make a group call.
- Enter an ID number (1000 ~ 4999) to make an individual call in your fleet.
- Enter a Fleet number make a call to all units in the selected fleet (Fleet call).
- Enter an ID number to make a call to the selected ID in all fleets (Supervisor call).
- Select "ALL" Fleet and "ALL" ID to make a call to all units (Broadcast call).

Note: The ID range may be limited by programming.





STATUS MESSAGE

You can send and receive 2-digit Status messages which may be decided in your talk group. Messages can contain up to 16 alphanumeric characters. Status messages range from 10 to 99 (80 ~ 99 are reserved for special messages).

A maximum of 15 received messages can be stored in the Stack memory of your transceiver. These saved messages can be reviewed after reception. Depending on your dealer settings, when the Stack memory is full, either the oldest message will be erased when a new message is received or the new message will not be stored in the Stack memory.

- The  (KCH-14) or  (KCH-15) icon appears when a message is stored in the Stack memory.

■ Transmitting



- 1 Select your desired zone and channel.
- 2 Press the key programmed as **Status** to enter Status mode or **Selcall + Status** to enter Selcall mode.
 - When using the **Status** key to enter Status mode, the target Fleet/ ID is fixed and cannot be selected. Skip to step 5 to continue.
- 3 In Selcall mode, press the **GRP**  and  keys or rotate the **CH** control to select the ID of the station you want to call.
 - Alternatively, you can enter a station ID using a DTMF keypad.
- 4 Press the **PF 2** key, to enter Status mode.
- 5 Press the **GRP**  and  keys or rotate the **CH** control to select the status ID you want to transmit.
 - Alternatively, you can enter a station ID using a DTMF keypad.
- 6 Press the microphone **PTT** switch or the **PF 4** key to initiate the Status call.
 - “<COMPLETE>” is displayed when the call has been successfully transmitted.

■ Receiving

The  (KCH-14) or  (KCH-15) icon will flash and a calling ID or text message will appear when a Status call is received.

Press any key to return to normal operation.

■ Reviewing Messages in the Stack Memory

- 1 Press and hold the key programmed as **Selcall**, **Status**, or **Selcall + Status** for 1 second to enter Stack mode.
 - The last received message is displayed with the message number.
- 2 Press the **GRP**  and  keys or rotate the **CH** control to select the desired message.
- 3 Press the **PF 1** key to return to normal operation.
 - To delete the selected message, press the **PF 3** or DTMF # key. To confirm the deletion, press the **PF 2** or DTMF * key.
 - To delete all messages, press and hold the **PF 3** or DTMF # key for 1 second. To confirm the deletion, press the **PF 2** or DTMF * key.

SHORT MESSAGES

To send a short message, you must connect the transceiver to a PC. Ask your dealer for details.

- Short messages can contain a maximum of 48 characters.
- Received short messages are displayed the same as Status messages and are stored in the same stack memory. A combined maximum of 15 Status calls and short messages can be stored in the stack memory.

LONG MESSAGES

To send and receive long messages, you must connect the transceiver to a PC. Ask your dealer for details.

- Long messages can contain a maximum of 4096 characters.

GPS REPORT

To send your location data, you must first install a GPS unit (NMEA-0183) onto the transceiver. GPS data can be transmitted using 1 of 5 methods: auto transmission, upon request, manual transmission, upon pressing/releasing the PTT switch, and during emergency mode. Ask your dealer for details.

DTMF (DUAL TONE MULTI FREQUENCY) CALLS

Note: DTMF calls can be made only in Conventional FM Operation.

MAKING A DTMF CALL

■ Manual Dialing

Note: To make a DTMF call using manual dialing, you must use an optional microphone with a DTMF keypad.

- 1 Press and hold the microphone **PTT** switch.
- 2 Enter the desired digits using the DTMF keypad.
 - If you release the **PTT** switch, transmit mode will end even if the complete number has not been sent.

■ Keypad Auto PTT

If your dealer has activated the Keypad Auto PTT function, simply press the keys on the keypad to make the call.

- The DTMF code will be sent automatically when you press a key.



■ Store & Send

- 1 Enter the desired digits using the DTMF keypad.
 - The digits appear on the display as you enter them.
 - You can enter up to 31 digits before transmitting.
- 2 After entering the complete number, press the microphone **PTT** switch to transmit.

Note: If you switch the power OFF before transmitting the number, the number will be cleared.

AUTODIAL

Autodial allows you to quickly call DTMF numbers that have been programmed onto your transceiver.

- 1 Press the key programmed as **Autodial**.
 - “CODE?” or the first entry in the Autodial list appears on the display.
- 2 Press the **GRP**  and  keys, rotate the **CH** control, or enter the appropriate DTMF number (01 ~ 32) to select your desired Autodial list number.
- 3 Press the microphone **PTT** switch or the **PF 4** key to make the call.


STUN CODE

This function is used when a transceiver is stolen or lost. When the transceiver receives a call containing a stun code, either transmit mode will be disabled, or both receive mode and transmit mode will be disabled. The stun code is cancelled when the transceiver receives a call with a revive code.

TRUNKING CALLS

MAKING A TELEPHONE CALL

■ Manual Dialing

- 1 Press the key programmed as **Autodial**.
 - The last called unit appears on the display.
 - Press the **PF 2** key to switch the display between the unit name and the list number.
- 2 Press and hold the **PF 2** key to enter Store & Send mode.
- 3 Enter the desired digits using the DTMF keypad.
 - Alternatively, you can select a digit by rotating the **CH** control, and then set the selected digits by pressing the **GRP**  key. Repeat this process to enter the entire number.
- 4 Press the **PTT** switch to make the call.
 - Alternatively, you can press the **PF 4** key to page the selected unit, rather than making a call.

■ Selecting a Number from the List

- 1 Press the key programmed as **Autodial**.
 - The last called unit appears on the display.
 - Press the **PF 2** key to switch the display between the unit name and the list number.
- 2 Rotate the **CH** control to select your desired list number.
- 3 Press the **PTT** switch to make the call.
 - Alternatively, you can press the **PF 4** key to page the selected unit, rather than making a call.

RECEIVING A TELEPHONE CALL

- 1 When a call is received, a ringing tone will sound and “PHONE CALL” will appear on the display.
- 2 Press and hold the **PTT** switch to speak, and release it to receive.
 - Only one person can speak at a time.

MAKING A STATUS CALL

- 1 Select your desired zone and channel.
- 2 Press the key programmed as **Status** to enter status mode.
- 3 Rotate the **CH** control to select the status ID you want to transmit.
- 4 Press the **PTT** switch or the **PF 4** key to initiate the Status call.
 - After the status call has been successfully received by the called unit, “COMPLETE” appears on the display.

EMERGENCY CALLS

If your transceiver has been programmed with the Emergency function, you can make emergency calls.

Note: Emergency can be programmed only on the **PF 5** key.

1 Press and hold the key programmed as **Emergency**.

- Depending on the delay time programmed into your transceiver, the length of time you must hold the **Emergency** key will vary.
- When the transceiver enters Emergency mode, the transceiver will change to the Emergency channel and begin transmitting based on how the transceiver is set up by your dealer. Transmit periods are also set by your dealer.

2 To exit Emergency mode, press and hold the **Emergency** key again.

- If the Emergency mode completes the preset number of cycles, Emergency mode will automatically end and the transceiver will return to the channel that was in use before Emergency mode was entered.

Note:

- ◆ Your dealer can set a beginning of transmit and end of transmit tone for the transceiver.
 - ◆ Your dealer can set the transceiver to emit tones and received signals as normal or mute the speaker during Emergency operation.
-

SCRAMBLER (FM)/ ENCRYPTION (P25)

Note:



- ◆ The Scrambler function can be used only in Conventional FM Operation. Additionally, the Voice Scrambler board must be installed before this function can be activated.
 - ◆ Ask your dealer for details concerning the Voice Scrambler board and the Encryption DES/AES settings.
-

SECURE (ENCRYPTED) TRANSMISSION



Press the key programmed as **Scrambler/ Encryption** to switch the transceiver to secure (encrypted) transmission.

- The OP (KCH-14) or OPT (KCH-15) icon appears on the display.
- Pressing the microphone **PTT** switch after the Scrambler or Encryption function has been turned ON encrypts the transmitted signal.
- Each group member must activate their respective Scrambler/ Encryption functions to descramble the received signals.

SELECTING THE SCRAMBLER CODE (FM)



- 1 Press the key programmed as **Scrambler/ Encryption Code** or press and hold the key programmed as **Scrambler/ Encryption** for 1 second, to enter Code Selection mode.
- 2 Press the **GRP**  and  keys or rotate the **CH** control to increase or decrease the Scrambler code.
 - There are 16 available Scrambler codes (1 ~ 16).
 - Each group member must use the same code in order for the transceivers to descramble the received signals.
- 3 Press the **PF 1**, **PF 2**, or **PF 3** key to exit Code Selection mode.

SELECTING THE ENCRYPTION KEY (P25)

- 1 Press the key programmed as **Scrambler/ Encryption Code** or press and hold the key programmed as **Scrambler/ Encryption** for 1 second, to enter Key Selection mode.
- 2 Press the **GRP**  and  keys or rotate the **CH** control to select the new Encryption key.
 - There are 16 available Encryption keys (1 ~ 16).
 - When a call is received, the transceiver will descramble the call as long as the received code is in the encryption list.
- 3 Press the **PF 1**, **PF 2**, or **PF 3** key to exit Key Selection mode.

Note: To return the transceiver to the default programmed Encryption key, select "PRESET". However, if you delete the Encryption key {page 27}, it will not be recovered.

DELETING THE ENCRYPTION KEY

- 1 Press the key programmed as **Key Delete** to enter Encryption Key Delete mode.
- 2 Select the current Encryption key using the **GRP**  and  keys or the **CH** control .
- 3 Press the **PF 3** key to delete the Encryption key.
- 4 Press the **PF 1** or **PF 2** key to exit Encryption Key Delete mode.

Note: To delete all Encryption keys (when more than one key has been set up), select "ALL".

PASSWORD PROTECTION

If the transceiver is password protected, entering an incorrect password successively 15 times will automatically delete all the Encryption keys.

- Turning the transceiver power OFF and the ON again will not reset the number of attempts for entering an incorrect password.

SIGNALING

Note: Signaling can be used only in Conventional FM Operation.

QUIET TALK (QT)/ DIGITAL QUIET TALK (DQT)




Your dealer may have programmed QT or DQT signaling on your transceiver channels. A QT tone/ DQT code is a sub-audible tone/code which allows you to ignore (not hear) calls from other parties who are using the same channel.

When a channel is set up with a QT tone or DQT code, squelch will only open when a call containing a matching tone or code is received. Likewise, signals that you transmit will only be heard by parties whose QT/ DQT signaling matches your transceiver.

If a call containing a different tone or code is made on the same channel you are using, squelch will not open and you will not hear the call. Although it may seem like you have your own private channel while using QT/ DQT, other parties can still hear your calls if they set up their transceiver with the same tone or code.

■ Operator Selectable Tone (OST)

If a key has been programmed with **Operator Selectable Tone**, you can reprogram the QT tone or DQT code on each of your channels.

- 1 Select your desired zone and channel.
- 2 Press and hold the key programmed as **Operator Selectable Tone** for 1 second.
 - The OS (KCH-14) or  (KCH-15) icon appears on the display when this function is activated.
- 3 Press the **GRP**  and  keys, rotate the **CH** control, or enter the list number directly using a DTMF keypad to select your desired tone or code from 1 to 40.
- 4 Press the **PF 1** or DTMF * key to exit OST Selection mode.
 - OST is activated after selecting a list number and exiting OST Selection mode.

After selecting and setting up your desired tone or code, press the **Operator Selectable Tone** key to toggle the OST function ON and OFF.

OPTIONAL SIGNALING

Your dealer may also program several types of option signaling for your transceiver channels.

■ 2-tone Signaling

2-tone Signaling opens the squelch only when your transceiver receives a call containing matching 2 tones.

■ DTMF Signaling

DTMF Signaling opens the squelch only when the transceiver receives a call containing a matching DTMF code.

Refer to “DTMF (DUAL TONE MULTI FREQUENCY) CALLS” on page 23.

■ FleetSync Signaling

Refer to “SELCALL (SELECTIVE CALLING)” on page 20.

CLOCK

If activated by your dealer, your transceiver can track the time with its built-in clock. The time will display momentarily when the transceiver power is turned ON. Additionally, you can view the clock any time by pressing the key programmed as **Clock**.

CLOCK ADJUSTMENT

To set the time:

- 1 With the transceiver power OFF, press and hold the **PF 4** key while turning the transceiver power ON.
 - The current time setting appears.
- 2 Rotate the **CH** control or press the **GRP** **^** and **∨** keys to increase or decrease the year setting.







KCH-14 Display: A digital display showing the word 'YEAR' followed by three blank boxes and the number '2009'.




KCH-15 Display: A digital display showing the word 'YEAR' followed by three blank boxes and the number '2009'.


- 3 Press the **PF 2** key to set the year.
 - The transceiver cycles to the month setting.
- 4 Repeat steps 2 and 3 to set the month, day, hour, and minute.
- 5 Press the **PF 2** key to return to the year setting, after setting the minute.
- 6 Turn the transceiver power OFF and then back ON to return to normal operation.

ADVANCED OPERATIONS



Your transceiver operations vary according to the functions that your dealer has programmed onto the transceiver keys. Following is a brief overview of the programmable functions. Refer to those functions which have been programmed onto your transceiver.

- **2-tone**
Press this key to display the list of 2-tone codes that has been pre-stored in your transceiver memory. While viewing the 2-tone list, press the **GRP**  and  keys or rotate the **CH** control to select your desired code, then press the **PTT** switch to make the call.
- **Auto Reply Message**
Refer to “VGS-1 OPTIONAL VOICE GUIDE & STORAGE UNIT” on page 37.
- **Autodial**
Refer to “AUTODIAL” on page 23 or “MAKING A TELEPHONE CALL” on page 24.
- **AUX A**
Press this key to activate the Auxiliary A port on the transceiver. When activated, the A (KCH-14) or  (KCH-15) icon appears on the display.
- **AUX B**
Press this key to activate the Auxiliary B port on the transceiver. When activated, the B (KCH-14) or  (KCH-15) icon appears on the display.
- **AUX C**
Press this key to activate the Auxiliary C port on the transceiver. When activated, the  (KCH-14) or  (KCH-15) icon appears on the display.
- **Channel Down**
Press this key to decrease the channel number {page 12}.
- **Channel Recall**
Press this key during Scan to return to the last called zone and channel.
- **Channel Select**
Using the **CH** control, turn clockwise to increase the channel number and counterclockwise to decrease the channel number {page 12}.
- **Channel Up**
Press this key to increase the channel number {page 12}.
- **Clock**
Refer to “CLOCK” on page 30.
- **Direct Channel 1 ~ 5**
Press 1 of these 5 keys to jump to a frequently used zone and channel (pre-programmed by your dealer). If activated by your dealer, you can set your own Direct Channels by selecting your desired zone and channel, then pressing and holding the **Direct Channel 1 ~ Direct Channel 5** key for 3 seconds.
- **Display Character**
Press this key to switch the display between the zone and channel number and the zone and channel name (if names have been programmed).

- **Emergency**
Refer to “EMERGENCY CALLS” on page 25.
- **External Speaker**
Press this key to switch the speaker from the transceiver’s built-in speaker to an optional external speaker. When using an external speaker, the SP (KCH-14) or  (KCH-15) icon appears on the display.
- **Function**
Press this key, then press a programmable key to activate its secondary function.
- **GPS Position Display**
Press this key when the GPS unit has been installed to display your location data.
- **Home Channel**
Press this key to jump to your home zone and channel (pre-programmed by your dealer). If activated by your dealer, you can set your own Home Channel by selecting your desired zone and channel, then pressing and holding the **Home Channel** key for 3 seconds.
- **Horn Alert**
Press this key to toggle the Horn Alert function ON and OFF. “HORN ALERT” appears on the display when Horn Alert is activated. When a call is received that has a correct DTMF code or 2-tone signaling, Horn Alert causes the vehicle horn or some other external alert to sound.
- **Individual**
Refer to “Making Individual Calls (P25)” on page 13.
- **Intercom**
Press this key to toggle the Intercom function ON and OFF. “INTERCOM” appears on the display when Intercom is activated. To use the Intercom function, your dealer must first install a dual-head (microphone and speaker) system. When making a call, your voice will be transmitted over the speaker system.
- **Key Delete**
Refer to “DELETING THE ENCRYPTION KEY” on page 27.
- **LCD Brightness**
Press this key to change the brightness level of the LCD. Each time this key is pressed, the brightness levels cycle as follows:

- **Monitor**
Press this key to turn the transceiver signaling off, to listen to all calls that are received on the channel. While monitor is activated, the MON (KCH-14) or  (KCH-15) icon appears on the display. Press the **Monitor** key again to turn the transceiver signaling back on.

Press and hold this key for 2 seconds to turn the transceiver squelch off, to listen to weak signals on the channel. While squelch is off, the MON (KCH-14) or  (KCH-15) icon appears on the display. Press the **Monitor** key again to turn the transceiver squelch back on.

- **None**
No function has been programmed on the key.
- **Operator Selectable Tone**
Refer to “QUIET TALK (QT)/ DIGITAL QUIET TALK (DQT)” on page 28 for details.
- **OST Down**
Press this key to decrease the Operator Selectable Tone number of your selected channel.
- **OST Up**
Press this key to increase the Operator Selectable Tone number of your selected channel.
- **Playback**
Refer to “VGS-1 OPTIONAL VOICE GUIDE & STORAGE UNIT” on page 37.
- **Public Address**
Press this key to toggle the Public Address function ON and OFF. “PUBLIC ADRS” appears on the display when Public Address is activated. To use the Public Address system, your dealer must first install an external speaker. This function causes all audio input via the microphone to be amplified and output from the external speaker.
- **Regroup Request**
Press this key to send a request to the dispatcher to join the talkgroup set up by the dispatcher. While using the dynamic group, “Dyn. Regroup” appears on the display.
- **Scan**
Refer to “SCAN” on page 15.
- **Scan Delete**
Refer to “TEMPORARY CHANNEL LOCKOUT” on page 15.
- **Scan Program**
Refer to “SCAN PROGRAMMING” on page 17.
- **Scrambler/ Encryption**
Refer to “SCRAMBLER (FM)/ ENCRYPTION (P25)” on page 26.
- **Scrambler/ Encryption Code**
Refer to “SCRAMBLER (FM)/ ENCRYPTION (P25)” on page 26.
- **Selcall**
Refer to “FleetSync: ALPHANUMERIC 2-WAY PAGING FUNCTION” on page 19.
- **Selcall + Status**
Refer to “FleetSync: ALPHANUMERIC 2-WAY PAGING FUNCTION” on page 19.
- **Send the GPS data**
Press this key when the GPS unit has been installed to send your positioning data to the base station.

- **Site Lock**
Press this key to lock the current site. “SITE LOCK” appears on the display and the transceiver cannot search for alternate sites. Press and hold the **Site Lock** key for 2 seconds to unlock the transceiver to allow roaming again.
- **Speaker 1 – 2 Mute**
Press this key to mute the secondary speaker when using a dual-head system. The Head 1 speaker will mute when pressing this key from the Head 2 unit, and the Head 2 speaker will mute when pressing this key from the Head 1 unit.
- **Squelch Level**
Press this key to adjust the transceiver squelch level. When adjusting the squelch level, use the the **GRP**  and  keys or the **CH** control to increase and decrease the squelch level from 0 (open) to 9 (tight). The default setting is 5.
- **Status**
Refer to “FleetSync: ALPHANUMERIC 2-WAY PAGING FUNCTION” on page 19 and “MAKING A STATUS CALL” on page 24.
- **System Search**
Press this key to view the current Trunking site. With the site displayed, press the System Search key again to enter Search mode. “SEARCH” appears on the display and the transceiver begins searching for a new site. When a site is found, searching ends and the transceiver switches to the new site.
- **Tactical Group**
Press and hold this key for 1 second to register the selected channel as a Tactical Group channel. Press and hold this key for 3 seconds to register all channels within the current zone as Tactical Group channels.
- **Talk Around**
Press this key to toggle Talk Around ON and OFF. When activated, “TA” appears on the sub-display. Talk Around redirects the transceiver signals directly to other party members rather than relaying the signals through a repeater.
- **Talkgroup**
Refer to “Making Group Calls (P25)” on page 13.
- **Tone**
Press this key to toggle the transceiver audible tones ON and OFF.
- **Zeroize**
Press and hold this key for the pre-programmed zeroize delay time, to delete the Encryption key.
- **Zone Down**
Press this key to decrease the zone number {page 12}.
- **Zone Select**
Using the **CH** control, turn clockwise to increase the zone number and counterclockwise to decrease the zone number {page 12}.
- **Zone Up**
Press this key to increase the zone number {page 12}.

BACKGROUND OPERATIONS

Your dealer can activate a variety of transceiver functions to perform without any additional operation on your part.

TIME-OUT TIMER (TOT)





The Time-out Timer is used to prevent any caller from using a channel for an extended period of time.

If you continuously transmit for a period of time that exceeds the programmed time, the transceiver will stop transmitting and an alert tone will sound. To stop the tone, release the microphone **PTT** switch. Your dealer can program the TOT time in the range of 15 seconds to 20 minutes.

If programmed by your dealer, a pre-alert tone will sound before the timer expires. Also, if programmed by your dealer, you may have to wait for a short duration before you can continue to transmit. If you press the microphone **PTT** switch before the timer has been reset, an alert tone will sound and the transceiver will not enter transmit mode.

SIGNAL STRENGTH INDICATOR

The signal strength indicator displays the strength of received signals.

-  Strong signal
-  Sufficient signal
-  Weak signal
-  Very weak signal

On Trunking channels, the antenna indicator flashes while searching for a control channel.

COMPANDER

The compander is programmed only for specific Conventional FM channels. If it has been programmed by your dealer, transmitted signals are compressed before being sent and received signals are expanded when they arrive.

- Your dealer must set the compander for both the transmit side and the receive side in order for the compander to operate.

This background feature allows higher clarity of signals, avoiding excessive noise and interference. This feature is not used on digital channels, as they are not susceptible to noise and interference.

BUSY CHANNEL LOCKOUT (BCL)

If set up by your dealer, you will be unable to transmit on a conventional channel if it is already in use. Under these circumstances, use a different channel or wait until the channel becomes free.

However, if BCL Override has also been programmed, you can transmit overtop of the current signal:

- 1 Press and hold the microphone **PTT** switch.
 - If the channel is already in use, a warning tone will sound.
- 2 Release the microphone **PTT** switch, then press and hold the microphone **PTT** switch again within half a second.
- 3 Speak into the transceiver as you would during a normal transmission.

OUT OF RANGE

On Trunking channels, if set up by your dealer, the transceiver will indicate when it is out of range. When it can no longer communicate with any site, an out of range tone sounds and “OUT OF RANGE” appears on the display.

SITE TRUNKING

On Trunking channels, if set up by your dealer, the transceiver will indicate a network condition on the registered site. When the transceiver receives a network disabled message, “SITE TRUNK” appears on the display.

CONTROL CHANNEL HUNT

On Trunking channels, the transceiver must search for a control channel. While searching for a control channel, no signals can be received. The search begins automatically when you change to a Trunking channel.

PTT ID

PTT ID is a unique transceiver ID code which is sent each time the microphone **PTT** switch is pressed.

Note: PTT ID can be made only in FM Operation.

If Beginning of Transmit is set, the ID signal is transmitted when you press the microphone **PTT** switch.

If End of Transmit is set, the ID signal is transmitted when you release the microphone **PTT** switch.

If both are set, the ID signal is transmitted when you press and release the microphone **PTT** switch.

VGS-1 OPTIONAL VOICE GUIDE & STORAGE UNIT

When using the optional VGS-1 voice guide & storage unit, you gain access to the voice recorder and voice announcement functions. Ask your dealer for details.

VOICE RECORDER

The voice recorder provides you with an auto recorder to record your conversations and a voice memo function to create voice memos. You can also prepare automated message responses to received calls.

The voice recorder can store a combined maximum of 300 seconds (5 minutes) of recordings in blocks of up to 30 seconds each.

■ Auto Recording

If activated, the auto recording will continuously record all transmitted and received signals. The recording storage area retains 30 seconds of recording, so all transmitted and received signals are simultaneously recorded and erased, leaving only the last 30 seconds of recording in memory.

- The auto recording indicator (KCH-14:  / KCH-15:  *) appears when this function is activated.



■ Voice Memos

To record a voice memo, for later playback:

- 1 Press and hold the key programmed as **Playback** for 1 second.
 - The duration of recording memory will appear on the display and begin counting down.
- 2 Speak into the microphone to record your voice memo.
 - Pressing the microphone **PTT** switch at this time will transmit your message as well as record it. Do not press the microphone **PTT** switch if you do not want to transmit your message.
- 3 Press the **PF 2**, **PF 4**, or DTMF * key to end the recording at any time and store it into the transceiver memory.
 - Press the **PF 1** key to cancel the recording at any time. The recording is not stored to memory in this case.
 - If the memory becomes full, recording will stop automatically and store the voice memo to memory.
 - "WRITING" appears on the display while the recording is being stored to memory.





■ Auto Reply Message

You can set the transceiver to automatically respond to Individual Calls (while using FleetSync):

- 1 Press the key programmed as **Auto Reply Message** to enter Auto Reply Message mode.
 - The auto reply message indicator (KCH-14: /KCH-15: ) appears when this function is activated.
- 2 When you receive an Individual Call, Auto Reply will begin after waiting for 3 seconds, the transceiver will send an automatic response to the caller, and “GREETING” appears on the display.
 - If you are available to receive the call, press any key to disable the auto response.
 - If there is a channel available on your transceiver for recording, “I am not available. Leave your Message.” will be sent to the caller. The caller can then leave a recorded message on your transceiver which you can later recall and listen to. When a message is stored on your transceiver, “n Msg Rcvd” (where n is the number of new messages received) appears on the display.
 - If there is no channel available on your transceiver for recording, “I am not available.” will be sent to the caller and “MEMORY FULL” appears on the display.

■ Playback

To play back a recorded conversation, memo, or message:

- 1 Press the key programmed as **Playback** to enter Playback mode.
 - If the last action on your transceiver was to auto record your conversation, “STORE?” will appear on the display, otherwise a memory channel with the time of the recording will appear. To store the conversation record in the next available memory channel, press the **PF 4** key. To skip to the stored memory channels, press the **PF 2** or DTMF * key. To skip back 5 seconds, press the **GRP**  key. To skip ahead 5 seconds, press the **GRP**  key.
- 2 Rotate the **CH** control or press the **GRP**  and  keys to select the memory channel you want to play back.
 - “RM” represents automated reply messages.
 - “AR” represents conversation records.
 - “VM” represents voice memos.
- 3 The transceiver will announce the channel, then the recording will automatically play back.
 - When the entire recording has been played, “END OF MSG” (end of message) is displayed.
 - To delete the selected recording, press the **PF 3** or DTMF # key. To clear all the recorded data, press and hold the **PF 3** or DTMF # key. A confirmation message will appear on the display. Press the **PF 2** or DTMF * key to delete the recording(s) or the **PF 3** or DTMF # key to cancel.

VOICE GUIDE

When changing the zone and/or channel, an audio voice will announce the new zone and channel number. Additionally, when changing a function setting, an audio voice will announce the new setting. (Voice announcements vary by dealer setting.)

Accessory connector (D-sub 25Pin Connector)

NO.	Port Name	Description	Specification	I/O
1	NC	Non-Connection		-
2	RXD2	Serial Data input 2	RS-232C compatible	I
3	TXD2	Serial Data output 2	RS-232C compatible	O
4	AUX I/O 9	Auxiliary input/output 9	CMOS	I/O
5	DI	Data signal input	Standard load $\geq 10k$ ohm	I
6	MI2	External MIC input	Standard load 600 ohm	I
7	E	Earth		-
8	AUX I/O 8	Auxiliary input/output 8	CMOS	I/O
9	TXD3	Serial Data output 3	CMOS	O
10	RXD3	Serial Data input 3	CMOS	I
11	E	Earth		-
12	AUX I/O 7	Auxiliary input/output 7	CMOS	I/O
13	AUX I/O 6	Auxiliary input/output 6	CMOS	I/O
14	SB	Switched B	13.6V	O
15	AUX O 2	Auxiliary output 2	Open Collector	O
16	AUX O 1	Auxiliary output 1	Open Collector	O
17	AFO	RX audio signal output	Low Impeadance	O
18	E	Earth		-
19	DEO	Detected signal output	Low Impeadance	O
20	AUX I/O 5	Auxiliary input/output 5	CMOS	I/O
21	AUX I/O 4	Auxiliary input/output 4	CMOS	I/O
22	AUX I/O 3	Auxiliary input/output 3	CMOS	I/O
23	AUX I/O 2	Auxiliary input/output 2	CMOS	I/O
24	AUX I/O 1	Auxiliary input/output 1	CMOS	I/O
25	ME	MIC earth		-

Accessory connector (9Pin Connector)

NO.	Port Name	Description	Specification	I/O
1	IGN	Ignition sense input	High Impeadance	I
2	ES2	BTL output for external speaker A	Standard load 4ohm	O
3	RS1	Remote speaker switch		I
4	HR1	Horn alert signal output 1	1A max	O
5	HR2	Horn alert signal output 2	1A max	O
6	ES1	BTL output for external speaker A	Standard load 4ohm	O
7	OS1	BTL output for external speaker B	Standard load 4ohm	O
8	OS2	BTL output for external speaker B	Standard load 4ohm	O
9	E	Earth		-

Microphone connector (12pin Connector)

NO.	Port Name	Description	Specification	I/O
1	SB	Switched B	13.6V	O
2	HK	Hook signal input	CMOS	I
3	ME	MIC earth		-
4	MIC	MIC signal input	Standard load 600ohm	I
5	E	Earth		-
6	TRD	Serial data input / output	CMOS	I/O
7	KVL	Key loader sense input	CMOS	I
8	DM	Serial data input / output for keypad MIC	CMOS	I/O
9	BLC	MIC backlight control signal output	CMOS	O
10	PTT	PTT signal input	CMOS	I
11	NC	Non-Connection		-
12	ES2	Audio output for Handset	Standard load 4ohm	O

Antenna Connector

Impeaqdance is 50 ohm.

MANDATORY SAFETY INSTRUCTIONS TO INSTALLERS AND USERS

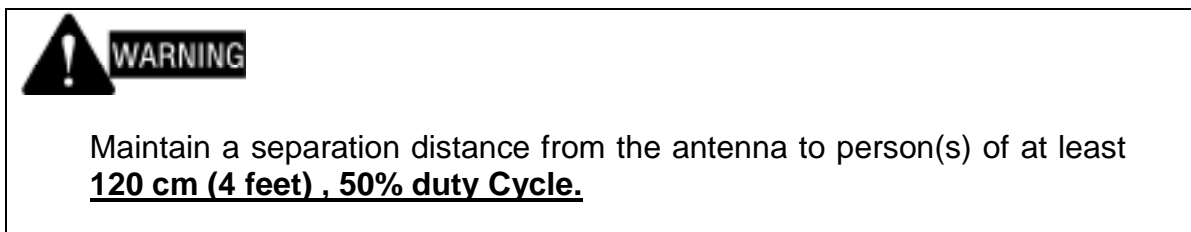
- Use only manufacturer or dealer supplied antenna.
- **Antenna Minimum Safe Distance: 120 cm (4 feet), 50% duty Cycle.**
- Antenna Gain: **0** dBd referenced to a dipole.

The Federal Communications Commission has adopted a safety standard for human exposure to RF (Radio Frequency) energy which is below the OSHA (Occupational Safety and Health Act) limits.

- **Antenna Mounting:** The antenna supplied by the manufacturer or radio dealer must not be mounted at a location such that during radio transmission, any person or persons can come closer than the above indicated minimum safe distance to the antenna, i.e. **120 cm (4 feet), 50% duty Cycle.**
- To comply with current FCC RF Exposure limits, the antenna must be installed at or exceeding the minimum safe distance shown above, and in accordance with the requirements of the antenna manufacturer or supplier.
- Vehicle installation: The antenna can be mounted at the center of a vehicle metal roof or trunk lid, if the minimum safe distance is observed.
- Base Station Installation: The antenna should be fixed-mounted on an outdoor permanent structure. RF Exposure compliance must be addressed at the time of installation.

Antenna substitution: Do not substitute any antenna for the one supplied or recommended by the manufacturer or radio dealer.

You may be exposing person or persons to excess radio frequency radiation. You may contact your radio dealer or the manufacturer for further instructions.



“This transmitter is authorized to operate with a maximum duty factor of 50%, in typical push-to-talk mode, for satisfying FCC RF exposure compliance requirements.”

You, as the qualified end-user of this radio device must control the exposure conditions of bystanders to ensure the minimum separation distance (above) is maintained between the antenna and nearby persons for satisfying RF Exposure compliance. The operation of this transmitter must satisfy the requirements of Occupational/Controlled Exposure Environment, for work-related use, transmit only when person(s) are at least the minimum distance from the properly installed, externally mounted antenna. Transmit only when people outside the vehicle are at least the recommended minimum lateral distance away from the antenna/vehicle