RITRON®
WIRELESS SOLUTIONS

Professional Two-Way Radio

NT Series User Manual

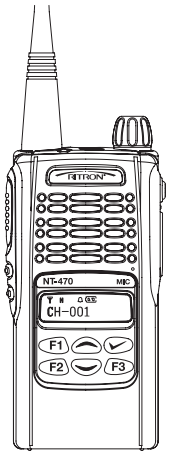
FIELD PROGRAMMING INSTRUCTIONS

Covers Models NT-174 VHF / NT-470 UHF

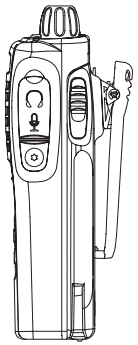
Thank you for buying the Ritron **NT Series** business band radio. For over 40 years, Ritron has been a leader in providing cost effective, on-site communication equipment for businesses. The **NT Series** radio will provide cost-effective communication for schools, retail stores, manufacturing, warehousing, construction sites, property management, hotel and motel management and many more. Ritron radio communication products improve efficiency and safety in virtually any workplace environment. Ritron is the wireless connection for your on-site communication needs.

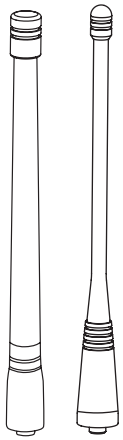
NOTE: Please read all instructions in this manual.

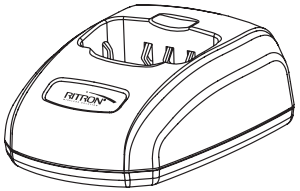
Included Items



Two-way Radio


1800mAh Li-Ion Battery Pack with attached Belt Clip


VHF or UHF Antenna



2.5 Hour Charging Stand with 110/22V AC Power Supply

Contents

Have questions? Call 317-846-1201, then Press #1 or visit our website at www.ritron.com

505 W. Carmel Drive, Carmel, IN 46032 • Phone: 317.846.1201 • Email: sales_info@ritron.com

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FCC Regulations

LICENSING —The FCC requires the owners of NT Series radios to obtain a station license before using them.
The station licensee is responsible for ensuring that transmitter power, frequency and deviation are within the limits specified by the station license. The station licensee is also responsible for proper operation and maintenance of the radio equipment. This includes checking the transmitter frequency and deviation periodically, using appropriate methods.

To get a FCC license for VHF or UHF frequencies, submit FCC application Form 600 as indicated in the block at right. Your Ritron dealer can help you with this process.

SAFETY STANDARDS —The FCC has adopted a safety standard for RF energy exposure awareness and control information, and operational instructions for FCC occupational use require- ments. Refer to page 20 for complete details.

SERVICE — Federal law prohibits you from making any internal adjustments to the transmitter, and/ or from changing transmit frequencies unless you are specifically designated by the licensee.

If your radio equipment fails to operate properly, or you wish to have the radio programmed, contact your authorized dealer or Ritron.

RITRON, INC., Repair Department
505 West Carmel Dr.
Carmel, IN 46082-1998 USA
Phone: 317-846-1201
FAX: 317-846-4978

HOW TO OBTAIN AN FCC RADIO LICENSE

Federal Communications Commission (FCC) Licensing Information

Because your Ritron radio operates on Private Land Mobile frequencies, it is subject to the Rules and Regulations of the FCC, which requires all operators of these frequencies to obtain a station license before operating their equipment. Make application for your FCC license on FCC Forms 600 and 159.

Download your FCC license form at **www.fcc.gov**

For help with questions concerning the license application, contact the FCC at 888-CALL-FCC (888-225-5322).

You must decide which radio frequency(ies) you can operate on before filling out your application; refer to Table 1 on page 9 &10 of this manual.

About This User Guide

This user guide covers two NT Series, FCC license-required model radios.
Your model number is shown on the inside of the radio.

Model	NT-174	NT-470
Frequency Band	VHF	UHF
Transmit Pwr Out Hi/Lo (Watt)	5/2 *	4/2 *
Channel Capacity	up to 255	up to 255
Selectable Frequency Codes	26	77
Interference Eliminator Codes	158 possible	158 possible
NOAA Weather Channel	7 possible	N/A
Programble Function Buttons	3 assignable PFB's	3 assignable PFB's
Emergency Call Feature	Yes	Yes
Voice Scrambler	Yes	Yes
VOX Capability	Yes	Yes

* Per FCC regulations certain frequencies (see frequency listing) are pre-set to operate at 2 Watt maximum

NOAA Weather Radio (NWR) Feature

As an added benefit, your VHF NT Series radio is capable of receiving broadcasts from the National Weather Service. Use this extremely useful feature during times of hazardous weather or simply to better schedule activities that are weather dependent.

The National Weather Service (NWR) broadcasts are transmitted 24 hours a day, 7 days a week. Your area has a specific NOAA weather frequency. To find the frequency for your area go to:

https://www.weather.gov/NWR/station_listing

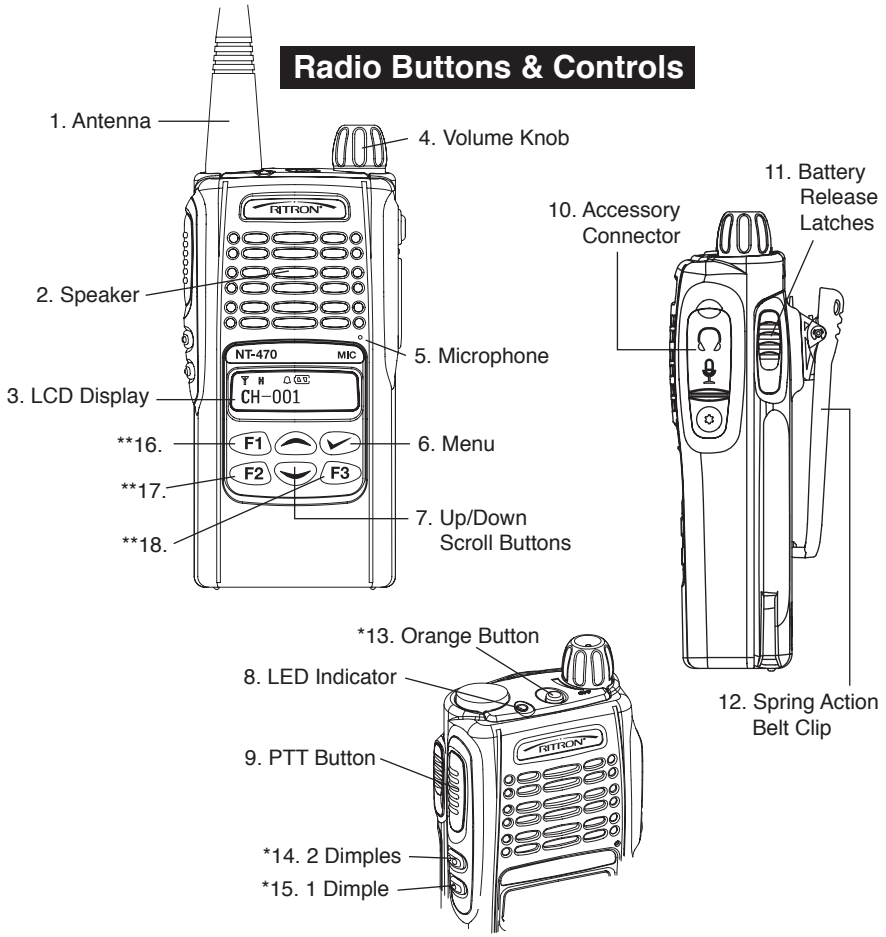
Click on your state. Then click on the county closest to you. You will see a frequency listed. Match the frequency for your area with 1 of the 7 listed in the table on this page.
Refer to page 12 [NOAA WX] How To Program Radio-Wide Features for details on how to program your VHF NT Series radio to a National Weather Service frequency.

NOAA WEATHER BROADCAST FREQUENCY TABLE

You may select from the National Weather Service frequencies listed at right:

Code	Frequency
W1	162.400
W2	162.425
W3	162.450
W4	162.475
W5	162.500
W6	162.525
W7	162.550

Radio Buttons & Controls



1. **Antenna**
2. **Speaker**
3. **LCD Display**
4. **On-Off / Volume Knob**
5. **Microphone**
6. **Menu** Serves as Menu Button in Field Programming Mode.
7. **Up/ Down Scroll Buttons**
8. **LED Indicator** —Lights RED while transmitting. Lights Green while receiving a call.
9. **Push to Talk Button (PTT)** —Push and hold to transmit; release to listen.
10. **Accessory Connector** —Connects head sets, remote speaker/microphones and other accessories. Replace attached dust cap when not in use.
11. **Battery Release Latches** (right and left sides)
12. **Spring Action Belt Clip**

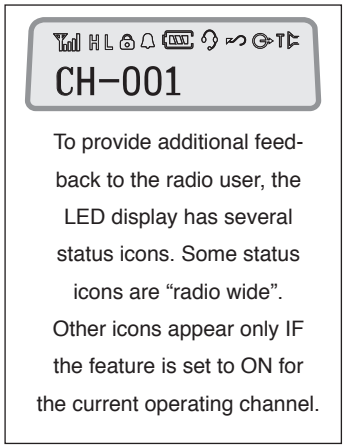
Programmable Function Buttons (PFB)

* These buttons can be re-programmed for one of several functions using only the optional PC Programming Software.

**These buttons can be re-programmed for one of several functions using Field Programming. (refer to page 12&13)

Button	Default Feature Setting
13. *Orange	Emergency Call
14. *2 Dimples	Monitor (press momentary)
15. *1 Dimple	Backlight
16. **F1	High/Low TX Power
17. **F2	2 Tone Send
18. **F3	Scan

Display Icons



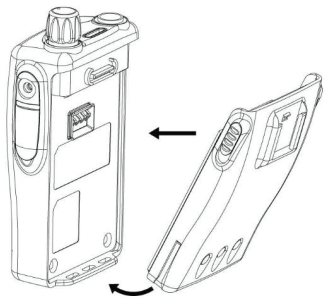
To provide additional feed-back to the radio user, the LED display has several status icons. Some status icons are “radio wide”. Other icons appear only IF the feature is set to ON for the current operating channel.

Icons / Function

	Signal Strength Indicator—shows received signal strength of an incoming transmission. 4 Bar = Strong Signal 3 Bar = Moderate Signal 2 Bar = Acceptable Signal 1 Bar = Very Weak Signal
H L	H/L—Indicates Power (high or low) setting of individual channel.
	Keypad Lock—Appears when keypad tones lock is ON.
	Bell—Appears when keypad tones are ON.
	Battery Level Indicator 3 Bars = Full Charge 2 Bars = 66% 1 Bar = 33%
	“Hands-Free” VOX Indicator—Appears when Hands-Free feature is ON.
	Scan Indicator—Appears when Channel Scan is ON.
	Scramble Indicator—Appears when Voice Scrambler is ON.
T	CTCSS or DCS Tone Programmed.

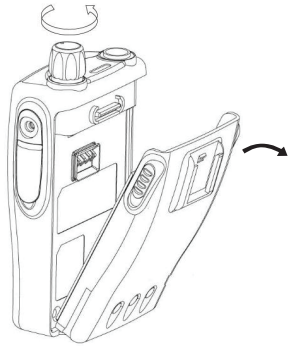
Attaching the Battery

1. Fit the tabs at the bottom of the battery into the slots at the bottom of the radio’s body.
2. Press the top part of the battery towards the radio until both latches firmly attach to the radio.



Removing the Battery

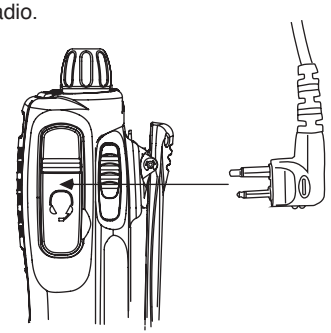
1. Turn off the radio.
2. Slide the latches located on both sides of the battery downwards at the same time.
3. Pull the top part of the battery away from the radio’s body, and remove the battery.



NT Series Audio Accessories

Ritron offers a wide range of audio accessories and headsets to help customize your NT Series radio for your application. All NT Series audio accessories include a durable, 2-Pin Plug. The 2-Pin Plug keeps the audio accessory firmly attached to the NT Series radio during use.

1. To attach audio accessory to the NT Series radio- first pull the rubber dust cover down away from the radio. The dust cover remains attached to radio.
2. Attach audio accessory to the NT Series radio. (see diagram for proper position of the 2-Pin Plug). Cord leading to the headset or speaker mic of the accessory must be directed toward the top of the radio.



RSM-10X—Remote Speaker Microphone with rotating spring action clip. Speaker/mic can be attached to clothing close to mouth and ears allowing easier communication without removing radio from belt.

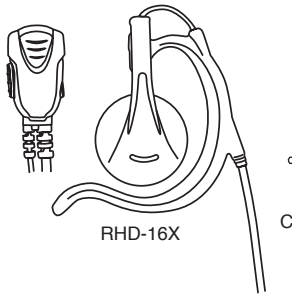
This item not VOX capable, contact factory for VOX capable item.

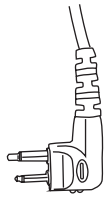
RHD-16X—Earbud w/ pendant PTT with built-in microphone and clip. Enables private listening and great for noisy environments. Mic with PTT can be attached to clothing for easy activation.

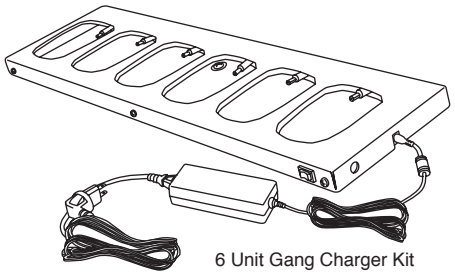
This item not VOX capable, contact factory for VOX capable item.

NH-PT—Nylon Carry Holster with Fixed Metal Belt Clip

Charger Kit—6-unit 110/220 VAC, 12 VDC Charger. (Does not include 6 individual charging trays. Trays included as standard with each NT radio).





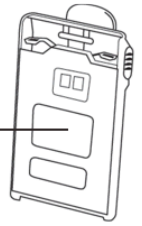


Fast Rate Drop-in Charger (BC-PT)

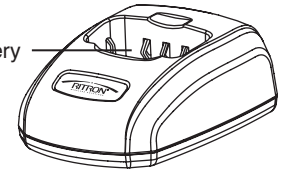
The enclosed single slot charger can charge a radio, or a battery removed from the radio.
Note: Charge battery completely before use!

A completely discharged pack will be recharged in approximately 2.5 hours

Place spare battery pack in slot with label facing forward.



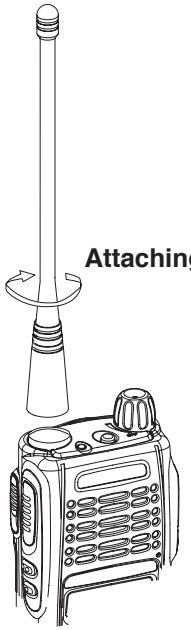
Place radio with attached battery pack or battery pack only.



- Use only a Ritron approved 110 VAC adapter.
- Do not attempt to repair.
- Do not attempt to charge any other brand of battery!
- Do not expose to rain, snow, or moisture
- Do not use an extension cord to run power to the charger.

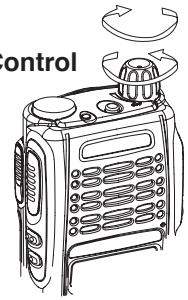
LED	STATUS
Red.....	Charging
Green.....	Complete
Amber.....	Waiting

Attaching The Antenna



1. Align the threaded end of the antenna with the radio's antenna connector.
2. Turn the antenna clockwise to attach to the radio.

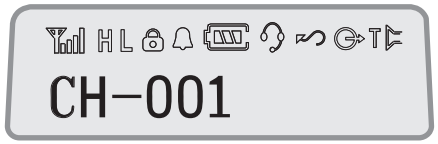
On/OFF/Volume Control



1. To turn the radio ON, turn the knob clockwise. To turn the radio OFF, turn the knob fully counter clockwise.
2. To adjust volume UP, turn the knob clockwise.To turn the volume DOWN, turn the knob counter clockwise.

NOTE: 1. Do not use radio or activate transmitter unless antenna is securely fastened to radio.
2. Do not use any portable radio that has a damaged antenna.

Operating the Radio



This radio offers up to 255 channels.

- Select the desired channel by using the Up/ Down button. When held down, channels change continuously.
- To check channel activity, press the monitor button.
- To talk, press and hold the PTT button and speak into the microphone on the radio. Release to listen.

Note: For maximum clarity hold the radio 2-3 inches away from your mouth and speak in a normal tone of voice.

Emergency Call Feature (Orange Button)

The Emergency Call feature allows the radio user to immediately notify all other radios on the same channel. For example, if the radio user should become injured, trapped or is in danger, a simple push of the orange button (factory default) will activate the Emergency Call feature.

The Emergency Call feature operates as follows:

1. Press and hold for 2 seconds the programmed button to activate the Emergency Call feature (factory default is the orange button on top of the radio).
2. The radio then sends an alert tone to all other radios on the same channel. Alert tone also sounds in the speaker of the radio.
3. Transmitter on sending radio will automatically key up and transmit for 5 seconds after the alert tone ends.
4. This allows any audio present at the initiating radio to be transmitted hands free to all other radios on the system; e.g. a call for help.

Default Setting: The Emergency Call will repeat 2 times and can be cancelled at anytime by momentarily pressing the orange button.

How To Read-Out Frequency and Tone Code Settings

This step allows you to read-out on a per-channel-basis what the frequency code and interference eliminator tone code settings are in your radio.

Step 1. With radio ON, select the channel # you want to read-out.

Step 2. Turn radio OFF,

Step 3. HOLD the ✓ button and Turn radio ON.

Note: Continue to HOLD the ✓ button until the following appears on the display:

	Ch #	Frequency Code #	Tone Code #	2-Tone* Code #
Display will read for 3 seconds...	[CH_ _ _	F _ _ _]		
Then display rolls over to read...			[T _ _ _	2T _]

Step 4. Radio will then display [READY] and return to normal operation.

Step 5. To read-out a different channel repeat steps 1-4 for each channel.

Step 6. Turn radio OFF then ON again to return to normal operation.

Note: If no Tone Code is programmed, the display will read: [T **XX** 2T **X**]
* If no 2-Tone Code is programmed, display will read: [2T **X**]

Per-Channel Features

To match other radios, the owner can select from Table #1 of frequency codes and Table #5 and #6 for interference eliminator codes. In order to talk to other radios, the channel must be programmed to the same frequency and the same tone code. The following list of features can be programmed on a **Per-Channel** basis.

Features	Description of Feature
[Frequency] Codes	Select a Frequency code for a channel. Choose from 26 VHF frequencies or 77 UHF frequencies. (Table #1)
[Tone] Codes	Select a Tone code for channel. Choose from 158 interference eliminator codes. Tone codes screen-out other users not in your group. All radios must be the same code to talk. (Table #5 or #6)
[CH Scan]	Select ON to mark a channel to be included in the scan list. Select OFF (default) to delete a channel from the scan list. Marked channels will be scanned when Scan feature is activated. You must assign Scan function to a programmable function button (PFB) to activate. See Radio-Wide and PFB Programming.
[Scramble]	Select ON to activate Voice Scrambling for a specific channel. If ON, icon will be displayed and radio will operate in Scramble mode on this channel. To be heard, all radios must have Scramble ON.
[TX Power]	Select HIGH for 5W(NT-174) and 4W(NT-470), or select LOW for 2W(NT-174 and NT-470).
[VOX]	Select ON to activate Hands-Free VOX for a specific channel. No accessory required. If ON, radio will operate "Hands-Free" on this channel and icon will be displayed. To adjust level of audio required to trigger radio transmitter refer to page 12 [VOX LEV] How To Program Radio-Wide Features. **Note:** Standard NT series audio accessories are not compatible with VOX function. VOX function requires special VOX capable audio accessories. Contact factory for availability.
[2-Tone] Codes	Select a 2-Tone code for a channel. Chose from (9) 2-Tone encode pairs (Table #2). See How To Assign a Function To An F Key.
[DTMF]	Select a DTMF Code for a Channel. Chose from (9) encode codes (Table #3). See How to Assign an Function To An F Key.
[Selcall]	Select a Selcall Code for a Channel. Chose from (9) encode codes (Table #4). See How to Assign an Function To An F Key.

How To Program Per-Channel Features

Important: If a Frequency Code is changed you must also reprogram the Tone Code.

Step 1. PRESS & HOLD Push-To-Talk button and turn radio ON.

Step 2 Radio will sound triple beep, then [CH Program] will be displayed for 3 sec. Then [CH – 001] will be displayed.

Step 3 Use ▲▼ to select the desired channel [CH -_ _ _],

Step 4 Press ✓ for Per Channel option (see list above).

Step 5 Use ▲▼ to go to a specific option; e.g. [Frequency], [Tone], [2-Tone], [CH Scan], [Scramble], [VOX].

Step 6 Press ✓ to select a desired option e.g. [FREQ]. Display will then show current setting of the selected option.

Step 7 Use ▲▼ Buttons to scroll option sub-list; e.g. [FREQ] codes or [TONE] code lists.

Step 8 Press F1 button to SAVE selection. Display will show selected feature. Example: [FREQ].

Step 9 Use ▲▼ to select a different Per-Channel Feature for the channel; e.g. [TONE]– and Repeat Steps 7–8 or...

Step 10 To select a different channel to program, PRESS the Orange button on top of the radio. Display will show the last channel programmed; e.g. [CH – 001]. Repeat Steps 3 – 8/ or...

Step 11 To return to normal operation turn radio OFF and then ON.

Table #1: Programmable Frequency Codes

UHF Business Band Models

Code	Frequency	Color Dot	BW
09	469.2625		12.5 †
10	*Not Used		
11	*Not Used		
12	*Not Used		
13	464.3250		12.5 †
14	464.8250		12.5 †
15	469.5000		12.5 †
16	469.5500		12.5 †
17	463.2625		12.5 †
18	464.9125		12.5 †
19	464.6000		12.5 †
20	464.7000		12.5 †
21	*Not Used		
22	464.5000	Brown Dot	12.5
23	464.5500	Yellow Dot	12.5
24^	467.7625	J	12.5
25^	467.8125	K	12.5
26^	467.8500	Silver Star	12.5
27^	467.8750	Gold Star	12.5
28^	467.9000	Red Star	12.5
29^	467.9250	Blue Star	12.5
30^	461.0375		12.5
31^	461.0625		12.5
32^	461.0875		12.5
33^	461.1125		12.5
34^	461.1375		12.5
35^	461.1625		12.5
36^	461.1875		12.5
37^	461.2125		12.5
38^	461.2375		12.5
39^	461.2625		12.5
40^	461.2875		12.5
41^	461.3125		12.5
42^	461.3375		12.5
43^	461.3625		12.5
44^	462.7625		12.5
45^	462.7875		12.5
46^	462.8125		12.5
47^	462.8375		12.5
48^	462.8625		12.5
49^	462.8875		12.5
50^	462.9125		12.5
51^	464.4875		12.5
52^	464.5125		12.5
53^	464.5375		12.5
54^	464.5625		12.5
55^	466.0375		12.5
56^	466.0625		12.5
57^	466.0875		12.5
58^	466.1125		12.5
59^	466.1375		12.5
60^	466.1625		12.5
61^	466.1875		12.5
62^	466.2125		12.5
63^	466.2375		12.5
64^	466.2625		12.5
65^	466.2875		12.5

UHF Business Band Models

Code	Frequency	Color Dot	BW
66^	466.3125		12.5
67^	466.3375		12.5
68^	466.3625		12.5
69^	467.7875		12.5
70^	467.8375		12.5
71^	467.8625		12.5
72^	467.8875		12.5
73^	467.9125		12.5
74^	469.4875		12.5
75^	469.5125		12.5
76^	469.5375		12.5
77^	469.5625		12.5
78^	462.1875		12.5
79^	462.4625		12.5
80^	462.4875		12.5
81^	462.5125		12.5
82	467.1875		12.5
83	467.4625		12.5
84	467.4875		12.5
85	467.5125		12.5
86^	451.1875		12.5
87^	451.2375		12.5
88^	451.2875		12.5
89^	451.3375		12.5
90^	451.4375		12.5
91^	451.5375		12.5
92^	451.6375		12.5
93^	452.3125		12.5
94^	452.5375		12.5
95^	452.4125		12.5
96^	452.5125		12.5
97^	452.7625		12.5
98^	452.8625		12.5
99^	456.1875		12.5
100^	456.2375		12.5
101^	456.2875		12.5
102	468.2125		12.5
103	468.2625		12.5
104	468.3125		12.5
105	468.3625		12.5
106	468.4125		12.5
107	468.4625		12.5
108	468.5125		12.5
109	468.5625		12.5
110	468.6125		12.5
111	468.6625		12.5
112^	456.3375		12.5
113^	456.4375		12.5
114^	456.5375		12.5
115^	456.6375		12.5
116^	457.3125		12.5
117^	457.4125		12.5
118^	457.5125		12.5
119	457.7625		12.5
120^	457.8625		12.5
121	*Not Used		
122	464.8375		12.5

Table #1 (continued)

VHF Business Band Models

Code	Frequency	Color Dot	BW
03	151.6250	Red Dot	12.5 †
04	151.9550	Purple Dot	12.5 †
05	151.9250		12.5 †
06	154.5400		12.5 †
07	154.5150		12.5 †
08	*Not Used		
09	151.6850		12.5 †
10	151.7150		12.5 †
11	151.7750		12.5 †
12	151.8050		12.5 †
13	151.8350		12.5 †
14	151.8950		12.5 †
15	154.4900		12.5 †
16	151.6550		12.5 †
17	151.7450		12.5 †
18	151.8650		12.5 †
24	151.7000		12.5
25	151.7600		12.5
26	*Not Used		
27	152.8850		12.5
28	152.9150		12.5
29	152.9450		12.5
30	151.5125		12.5
31	154.5275		12.5
32	153.0050		12.5
33	158.4000		12.5
34	158.4075		12.5
35	154.5475		12.5
36	152.9000		12.5

VHF MURS Models (NT-152M Only)

Code	Frequency	Color Dot	BW
01^	154.600	Green Dot	25.0
02^	154.570	Blue Dot	25.0
19^	151.820	MURS	12.5
20^	151.880	MURS	12.5
21^	151.940	MURS	12.5
22^	154.600	MURS	12.5
23^	154.570	MURS	12.5

Table #2 2-Tone Page Codes

Code		Tone 1	Tone 2
2T	NONE	----	----
2T	1	330.5 Hz	569.1 Hz
2T	2	349.0 Hz	600.9 Hz
2T	3	368.5 Hz	634.5 Hz
2T	4	389.0 Hz	669.9 Hz
2T	5	410.8 Hz	707.3 Hz
2T	6	433.7 Hz	746.8 Hz
2T	7	457.9 Hz	788.5 Hz
2T	8	483.5 Hz	832.5 Hz
2T	9	330.5 Hz	600.9 Hz

Table #3 DTMF Tone Codes

NONE	
1	5051
2	1057
3	3928
4	4958
5	1977
6	5996
7	7468
8	2995
9	8721

Table #4 Selcall Tone Codes

NONE	
1	12345
2	13579
3	24680
4	09876
5	B1029
6	162738C
7	019385D
8	0516942
9	D4C9B37

NOTES:

* Removed due to FCC Rules. List revised 2019.

** MURS models do not require an FCC license. All other models require an FCC license.

† Frequency code was 25 KHz bandwidth prior to the 2013 FCC Narrowband Mandate.

^ By FCC Rules these frequencies are limited to 2 watts maximum power output.

- BW is the bandwidth in kHz.
- 12.5 kHz indicates a narrow band channel, 25 kHz indicates a wide band channel.

Tone Code Tables

CTCSS (Continuous Tone Coded Squelch System) **Frequency Chart**

Display Code	Freq	Display Code	Freq	Display Code	Freq	Display Code	Freq
001	67.0	**015**	110.9	**029**	179.9	**043**	177.3
002	71.9	**016**	114.8	**030**	186.2	**044**	No Tone
003	74.4	**017**	118.8	**031**	192.8	**045**	183.5
004	77.0	**018**	123.0	**032**	203.5	**046**	189.9
005	79.7	**019**	127.3	**033**	210.7	**047**	196.6
006	82.5	**020**	131.8	**034**	218.1	**048**	199.5
007	85.4	**021**	136.5	**035**	225.7	**049**	206.5
008	88.5	**022**	141.3	**036**	233.6	**050**	229.1
009	91.5	**023**	146.2	**037**	241.8	**051**	254.1
010	94.8	**024**	151.4	**038**	250.3	**052**	71.0 New
011	97.4	**025**	156.7	**039**	69.4	**053**	198 New
012	100.0	**026**	162.2	**040**	159.8	**054**	202.7 New
013	103.5	**027**	167.9	**041**	165.5	**00**	No Tone
014	107.2	**028**	173.8	**042**	171.3		

DCS (Digital Coded Squelch) Code Chart

Display Code	Digital #	Display Code	Digital #	Display Code	Digital #	Display Code	Digital #	Display Code	Digital #	Display Code	Digital #
101	023	**119**	131	**137**	261	**155**	431	**173**	654	**191**	252
102	025	**120**	132	**138**	263	**156**	432	**174**	662	**192**	255
103	026	**121**	134	**139**	265	**157**	445	**175**	664	**193**	266
104	031	**122**	143	**140**	271	**158**	464	**176**	703	**194**	274
105	032	**123**	152	**141**	306	**159**	465	**177**	712	**195**	325
106	043	**124**	155	**142**	311	**160**	466	**178**	723	**196**	332
107	047	**125**	156	**143**	315	**161**	503	**179**	731	**197**	356
108	051	**126**	162	**144**	331	**162**	506	**180**	732	**198**	446
109	054	**127**	165	**145**	343	**163**	516	**181**	734	**199**	452
110	065	**128**	172	**146**	346	**164**	532	**182**	743	**200**	454
111	071	**129**	174	**147**	351	**165**	546	**183**	754	**201**	455
112	072	**130**	205	**148**	364	**166**	565	**184**	053	**202**	462
113	073	**131**	223	**149**	365	**167**	606	**185**	122	**203**	523
114	074	**132**	226	**150**	371	**168**	612	**186**	036	**204**	526
115	114	**133**	243	**151**	411	**169**	624	**187**	145		
116	115	**134**	244	**152**	412	**170**	627	**188**	212		
117	116	**135**	245	**153**	413	**171**	631	**189**	225		
118	125	**136**	251	**154**	423	**172**	632	**190**	246		

NOTES:

Radio-Wide Settings

The following list of settings can be programmed on a **Radio-Wide** basis. These settings will uniformly affect radio operation on all channels.

Setting	Description of Setting
[VOX Level]	Select VOX Level. 0 to 15, Higher number = Lower level of audio required to key radio transmitter. Ex:15 = whisper trigger. Must also program channel for VOX operation. See page 8.
[Squelch]	Select Squelch Level. 0 to15, Higher number = decreases receiver sensitivity. With higher number the radio will hear only the strongest, closest signals.
[Emergency]	Factory Default = [ON] and feature is by factory default assigned to Orange Key. Can turn feature OFF or ON. If ON, must also assign this feature to one of the Programmable Function Button. See page 13.
[F1 Key]	Factory Default = **[TX Power]**. Allows access to one specific feature. See page 13.
[F2 Key]	Factory Default = **[2T Send].** Allows access to one specific feature. See page 13.
[F3 Key]	Factory Default = **[Scan]**. Allows access to one specific feature. See page 13.
[Alert]	Factory Default = **[On]**. Select ON for keypad tones when button is pressed. Icon will be displayed when ON. Keypad Tones OFF allows silent operation.
[Earphone]	Select ON if earphone only is used. When earphone only is connected to radio, microphone on radio will be active when PTT is pressed.
[Weather] **VHF models only**	Factory Default = **[W7].** Select **[None]** or choose from 7 National Weather Broadcast RX frequencies. Choose **[None]** to turn feature OFF. Go to **http://www.nws.noaa.gov/nwr/station_listing** to find frequency of NOAA Weather Broadcast for your area.

How To Program Radio-Wide Settings

Step 1. PRESS & HOLD the MONITOR button and turn radio ON. Radio will sound triple beep, then [Program] will flash on the display for 3 sec. [VOX Level] will appear first on display.

Step 2. Use buttons ▲▼ to scroll to one of the Radio- Wide features. e.g. [VOX Level], [Squelch], [Emergency], [F1 Key], [F2 Key], [F3 Key], [Alert], [Earphone], or [Weather] (**VHF only**).

Step 3. Press ✓ for the current setting of the selected Radio-Wide feature.

Step 4. Use ▲▼ buttons to scroll sub-list setting options such as; [1-15] Level Settings; ON or OFF Setting; or individual Key function options.

Step 5. Press button **F1** to SAVE the sub-list setting selection. Display will then return to selected Radio-Wide feature,

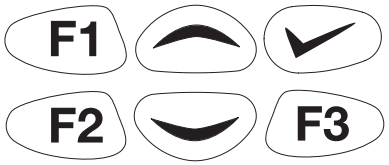
Step 6. To program another **Radio-Wide** setting repeat Steps 2 - 5 or...

Step 7. To return to normal operation turn radio OFF and then ON.

Features You Can Assign To An F KEY
(Programmable Function Button)

There are 3 Field Programmable Function Buttons on the NT Series radio (**F1, F2 and F3**). See page 3 per the illustration below for their location on the radio. You can assign each of these buttons or F keys to perform 1 specific function when pressed. The functions you may choose from are listed below:

Feature	Description of Feature
[NONE]	F KEY will perform no function when pressed.
[Scan]	When F KEY pressed, radio will scan marked channels. Icon will diplay when ON. See CH SCAN on page 8.
[Emergency]	When F KEY pressed, radio sends Emergency signal to other radios on same frequency.
[Call]	Press and hold the F KEY to send a unique Call Tone to let others know you are about to talk.
[Monitor]	When F KEY pressed, radio will monitor traffic on the channel without tone.
[TX Power]	When F KEY pressed, will toggle* transmit power of selected channel frequency, between HI and LOW power. Icon H or L will be displayed.
[2T Send]	When F Key is pressed, the radio sends programmed 2-TONE code for the channel in use.
[DTMF Send]	When F Key is pressed, the radio sends programmed DTMF code for the channel in use.
[Selcall Send]	When F Key is pressed, the radio sends programmed Selcall code for the channel in use.
[Weather] VHF Only	When F Key is pressed, the radio receives programmed NOAA Weather Channel. Press F Key again to return to last radio channel selected.



How To Program F KEY's

Step 1 **PRESS & HOLD** the MONITOR button and turn radio ON. Radio will sound triple beep, then **[PROGRAM]** will flash on the display for 3 sec. [VOX Level] will appear first on display.

Step 2. Use ⌃⌄ buttons to scroll to the PFB you wish to program: [F1 Key], [F2 Key] or [F3 Key].

Step 3 Press ✓ to see current setting of the specific F Key you have selected.

Step 4. Use ⌃⌄ buttons to scroll sub-list setting options listed above.

Step 5. Press the button F1 to SAVE your sub-listing option. Display will then show the last F Key programmed; e.g. [F_ Key].

Step 6. To program another [F_ Key] repeat Steps 2 - 5 or...

Step 7. To return to normal operation turn radio OFF and then ON.

***NOTE:** Certain frequencies are limited by the FCC to 2 Watt maximum output. **See pages 9 &10.**

How To Delete A Channel

To delete a channel from your channel list, follow these instructions. Deleting a channel will remove that channel number from the display. It is not necessary to delete a channel if you merely wish to change the frequency and/or tone settings. To change frequency or tone settings see How To Program Per-Channel Features on page 8.

To Program Channel Delete:

Step 1. PRESS & HOLD Push-To-Talk button and turn radio ON.

Step 2. Radio will sound triple beep, then [CH Program] will flash on display for 3 sec. Then [CH – 001] or a programmed name will appear on the display.

Step 3. Use ⌃⌄ to select the channel you want to delete [CH _ _ _], 1-255.

Step 4. Press ✓ for Per-Channel Feature list

Step 5. Display will show [Frequency].

Step 6. Press ✓ to select **[Frequency]**. Display will then show current frequency code for the channel; e.g. **[Freq:** _ _

Step 7. Use ⌃⌄ buttons to scroll to [None]

Step 8. Press F1 button to SAVE [None] selection. Display will show selected feature; e.g. [Frequency].

Step 9. To select a different channel, PRESS the **Orange Button** on the top of radio. Display will show the last channel deleted; e.g. [CH – 001]. Repeat Steps 3– 8 or…

Step 10. To return to normal operation turn radio OFF and then ON.

Step 11. The channel(s) you deleted will not appear on the display in normal operation.

NOTES:

RF ENERGY EXPOSURE AWARENESS AND CONTROL INFORMATION, AND OPERATIONAL INSTRUCTIONS FOR FCC OCCUPATIONAL USE REQUIREMENTS

BEFORE USING YOUR PORTABLE 2-WAY RADIO, READ THIS IMPORTANT RF ENERGY AWARENESS AND CONTROL INFORMATION AND OPERATIONAL INSTRUCTIONS TO ENSURE COMPLIANCE WITH THE FCC'S RF EXPOSURE GUIDELINES.

NOTICE: This radio is intended for use in occupational/controlled conditions, where users have full knowledge of their exposure and can exercise control over their exposure to meet FCC limits. This radio device is NOT authorized for general population, consumer, or any other use.

This 2-way radio uses electromagnetic energy in the radio frequency (RF) spectrum to provide communications between two or more users over a distance. It uses radio frequency (RF) energy or radio waves to send and receive calls. RF energy is one form of electromagnetic energy. Other forms include, but are not limited to, electric power, sunlight and x-rays. RF energy, however, should not be confused with these other forms of electromagnetic energy, which when used improperly can cause biological damage. Very high levels of x-rays, for example, can damage tissues and genetic material.

Experts in science, engineering, medicine, health and industry work with organizations to develop standards for exposure to RF energy. These standards provide recommended levels of RF exposure for both workers and the general public. These recommended RF exposure levels include substantial margins of protection. All 2-way radios marketed in North America are designed, manufactured and tested to ensure they meet government established RF exposure levels. In addition, manufacturers also recommend specific operating instructions to users of 2-way radios. These instructions are important because they inform users about RF energy exposure and provide simple procedures on how to control it. Please refer to the following websites for more information on what RF energy exposure is and how to control your exposure to assure compliance with established RF exposure limits.
http://www.fcc.gov/oet/rfsafety/rf-faqs.html http://www.fcc.gov/oet/rfsafety/rf-faqs.html
http://www.osha.gov/SLTC/radiofrequencyradiation/index.html
http://www.osha.gov/SLTC/radiofrequencyradiation/index.html

FEDERAL COMMUNICATIONS COMMISSION REGULATIONS -The FCC rules require manufacturers to comply with the FCC RF energy exposure limits for portable 2-way radios before they can be marketed in the U.S. When 2-way radios are used as a consequence of employment, the FCC requires users to be fully aware of and able to control their exposure to meet occupational requirements. Exposure awareness can be facilitated by the use of a product label directing users to specific user awareness information. Your Ritron PT Series 2-way radio has an RF exposure product label. Also, this user manual includes information and operating instructions required to control your RF exposure and to satisfy compliance requirements.

COMPLIANCE WITH RF EXPOSURE STANDARDS -Your Ritron 2-way radio is designed and tested to comply with a number of national and international standards and guidelines (listed below) for human exposure to radio frequency electromagnetic energy. This radio complies with the IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environment at operating duty factors of up to 50% transmitting and is authorized by the FCC for occupational use only. In terms of measuring RF energy for compliance with the FCC exposure guidelines, your radio radiates measurable RF energy only while it is transmitting (during talking), not when it is receiving (listening) or in standby mode.

NOTE: The approved batteries supplied with this radio are rated for a 5-5-90 duty factor (5% talk - 5% listen - 90% standby), even though this radio complies with the FCC occupational RF exposure limits and may operate at duty factors of up to 50% talk.

Have questions? Call 800-USA-I-USA (800-872-1872) or visit our website at www.ritron.com

Your Ritron 2-way radio complies with the following RF energy exposure standards and guidelines:
- United States Federal Communications Commission, Code of Federal Regulations; 47 CFR JJ 1.1307, 1.1310, 2.1091 and 2.1093
- American National Standards Institute (ANSI)/Institute of Electrical and Electronic Engineers (IEEE) C95.3-2003
- Institute of Electrical and Electronic Engineers (IEEE) C95.3 2003 Edition

RF EXPOSURE COMPLIANCE AND CONTROL GUIDELINES AND OPERATING INSTRUCTIONS -To control your exposure and ensure compliance with the occupational/controlled environment exposure limits always adhere to the following procedures.

GUIDELINES:
- Do not remove the RF Exposure Label from the device.
- This user manual should accompany device when transferred to other users.
- Do not use this device if the operational requirements described herein are not met.

OPERATING INSTRUCTIONS:
- Transmit no more than the rated duty factor of 50% of the time. To transmit (talk), push the Push-To-Talk (PTT) button. To receive calls, release the PTT button. Transmitting 50% of the time, or less, is important because this radio generates measurable RF energy exposure only when transmitting (in terms of measuring for standards compliance).
- Hold the radio in a vertical position in front of face with the microphone (and the other parts of the radio, including the antenna) at least one inch (2.5 cm) away from the nose. Keeping the radio at the proper distance is important because RF exposures decrease with distance from the antenna. Antenna should be kept away from eyes.
- When worn on the body, always place the radio in a Ritron approved clip, holder, holster, case, or body harness for this product. Using approved body-worn accessories is important because the use of other manufacturers' non-approved accessories may result in exposure levels, which exceed the FCC's occupational/controlled environment RF exposure limits.
- If you are not using a body-worn accessory and are not using the radio in the intended use position in front of the face, then ensure the antenna and the radio are kept at least 2.5 cm (one inch) from the body when transmitting. Keeping the radio at the proper distance is important because RF exposures decrease with increasing distance from the antenna.
- Use only Ritron approved supplied or replacement antennas, batteries, and accessories. Use of non-Ritron approved antennas, batteries, and accessories may exceed the FCC RF exposure guidelines.
- For a list of Ritron approved accessories see this user manual, or visit **http://www.ritron.com http://www.ritron.com**, or call Ritron at **800-872-1872.**

CONTACT INFORMATION
For additional information on exposure requirements or other information, contact Ritron at 800-872-1872.
Have questions? Call 800-USA-I-USA (800-872-1872) or visit our website at http://www.ritron.com

RITRON, INC. LIMITED WARRANTY

WHAT THIS WARRANTY COVERS:
RITRON, INC. ("RITRON") provides the following warranty against defects in materials and/or workmanship in RITRON Radios and Accessories under normal use and service during the applicable warranty period (as stated below). "Accessories" means antennas, holsters, chargers, earphones, speaker/microphones and items contained in the programming and programming/service kits.

WHAT IS COVERED	FOR HOW LONG	WHAT RITRON WILL DO
NT Series Radios	1 year*	During the first year after date of purchase, RITRON will repair or replace the defective product, at RITRON's option, parts and labor included at no charge.
Accessories	90 days*	*After date of purchase

WHAT THIS WARRANTY DOES NOT COVER:
- Any technical information provided with the covered product or any other RITRON products;
- Installation, maintenance or service of the product, unless this is covered by a separate written agreement with RITRON;
- Any products not furnished by RITRON which are attached or used with the covered product, or defects or damage from the use of the covered product with equipment that is not covered (such as defects or damage from the charging or use of batteries other than with covered product);
- Defects or damage, including broken antennas, resulting from:
  - misuse, abuse, improper maintenance, alteration, modification, neglect, accident or act of God,
  - the use of covered products other than in normal and customary manner or,
  - improper testing or installation;
- Defects or damages from unauthorized disassembly, repair or modification, or where unauthorized disassembly, repair or modifica-tion prevents inspection and testing necessary to validate warranty claims;
- Defects or damages in which the serial number has been removed, altered or defaced.
- Batteries if any of the seals are not intact.

IMPORTANT: This warranty sets forth the full extent of RITRON's express responsibilities regarding the covered products, and is given in lieu of all other express warranties. What RITRON has agreed to do above is your sole and exclusive remedy. No person is authorized to make any other warranty to you on behalf of RITRON. Warranties implied by state law, such as implied warranties of merchantability and fitness for a particular purpose, are limited to the duration of this limited warranty as it applies to the covered product. Incidental and consequential damages are not recoverable under this warranty (this includes loss of use or time, inconven-ience, business interruption, commercial loss, lost profits or savings). Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitation on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you. Because each covered product system is unique, RITRON disclaims liability for range, coverage, or operation of the system as a whole under this warranty.

WHO IS COVERED BY THIS WARRANTY:
This warranty is given only to the purchaser or lessee of covered products when acquired for use, not resale. This warranty is not assignable or transferable.

HOW TO GET WARRANTY SERVICE:
To receive warranty service, you must deliver or send the defective product, delivery costs and insurance prepaid, within the applicable warranty period, to

RITRON, INC., 505 West Carmel Drive, Carmel, Indiana 46032,
Attention: Warranty Department.
Please point out the nature of the defect in as much detail as you can. You must retain your sales or lease receipt (or other written evidence of the date of purchase) and deliver it along with the product. If RITRON chooses to repair or replace a defective product, RITRON may replace the product or any part or component with reconditioned product, parts or components. Replacements are covered for the balance of the original applicable warranty period. All replaced covered products, parts or components become RITRON's property.

RIGHTS TO SOFTWARE RETAINED :
Title and all rights or licenses to patents, copyrights, trademarks and trade secrets in any RITRON software contained in covered products are and shall remain in RITRON. RITRON nevertheless grants you a limited non-exclusive, transferable right to use the RITRON software only in conjunction with covered products. No other license or right to the RITRON software is granted or permitted.

YOUR RIGHTS UNDER STATE LAW: This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

WHERE THIS WARRANTY IS VALID: This warranty is valid only within the United States, the District of Columbia and Puerto Rico.

RITRON®
WIRELESS SOLUTIONS