

Arrowhead Amateur Radio Group / Garden Net Radio Equipment

Garden Net is an auxiliary emergency communication team at Arrowhead Gardens. It includes up to 16 residents equipped and trained to use **handheld transceivers** (HT's). Regular over-the-air tests are led by the *Net Control Operator* on a set schedule.

Each HT comes in a brown cardboard box with the following:

1. [Retevis RT27](#) HT with belt clip & hand-strap attached
2. Lithium-ion battery 1100 mAh** – good for 10 hours powered on
3. Charge cradle with USB cable/connector
4. USB AC adapter 120v to 5v – can be used to charge two devices at one time
5. Manual – review the pages for learning how to use HT controls

**Turn HT off before inserting or removing the battery.

Each box, HT, manual, and charge cradle is labeled with the last 4 digits of the HT's serial number. The units are tested to verify that they can communicate together on all 22 channels and that they can hold a charge. Batteries should not be charged for more than 6 hours at one time. Remove a battery from its charger when the light turns from red to green. When an HT is not needed for 2 or more weeks, the battery should be removed from the HT and all the equipment stored in the original box.

The HT's are [FRS](#) radios regulated by FCC and do not require licenses to operate. The model used is [Retevis RT27](#) and is [FCC certified](#). Each HT can operate on 22 FCC designated channel frequencies (page 3). The HT's are all programmed to share the same squelch tones, which means HT's will ignore any transmission received that does not carry the programmed sub-audible tones. The squelch can be overridden by pressing the monitor button. Other features include frequency scan, VOX, and alarm. *See user manual.*

Channels 1-7 and 15-22 (462 MHz) transmit up to **2 watts**. Channels 8-14 (467 MHz) transmit up to **0.5 watts**. Channels 19 (462.650 MHz) and 21 (462.700 MHz) should not be used except in real emergencies and when no other channels are available. Seattle is above Line A, with two relevant frequency restrictions adjacent to Canada.

When a resident HT operator stops participating in Garden Net, she should **return** all the equipment in the box to the designated equipment administrator. As of June 1, 2018, the equipment administrator is **John Walling 424D** wallingconsulting@gmail.com.

If you wear or have an internal medical electronic device, consult your health-care provider before using Retevis RT27.

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HT assignments and statuses:

Serial	HT operator name	Apt	Issued	Returned
0145	Billie O.	A106	4-29-2021	
0230	Camp Second Chance Ch-7	N/A	04/05/2020	N/A
0238	Marty and Bob D.	AP202	9-3-2018	
0240	Camp Second Chance Ch-7	N/A	04/05/2020	N/A
0298	Camp Second Chance Ch-7	N/A	04/05/2020	N/A
0307	Ingrid S.	A505	3-19-2019	
0314	Cradle (no box) CSC return			
0398	Camp Second Chance	N/A	01/24/2019	04/05/2020 Damaged
0423	Camp Second Chance Ch-7	N/A	01/24/2019	04/05/2020 Damaged
0439	Cradle ready (no box)			
2346	John Walling (Net Control)	D424	04/23/2018	N/A
2397	John Walling (Net Control)	D424	04/23/2018	N/A
8849				
8856				
8858	Jennifer	A528	2/4/2023	
8991				
9042				
9044				
9063				
9778	Camp Second Chance Ch-7	N/A	01/16/2021	N/A
9780	Camp Second Chance Ch-7	N/A	01/16/2021	N/A
9871	Sue	C601	2/4/2023	

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HT Orders

- 10x HT's 8849 to 9871 were received in a bulk order on December 9th, 2019
- 10x HT's 0145 to 0439 were received in a bulk order on May 24th, 2018.
- 2x HT's 2346 and 2397 were received on April 23rd, 2018.

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Family Radio Service frequencies and power restrictions.

Channel	Frequency (MHz)	FRS EIRP Restriction	GMRS EIRP Restriction
1	462.5625	Up to 2 watt	Up to 5 watts
2	462.5875	Up to 2 watt	Up to 5 watts
3	462.6125	Up to 2 watt	Up to 5 watts
4	462.6375	Up to 2 watt	Up to 5 watts
5	462.6625	Up to 2 watt	Up to 5 watts
6	462.6875	Up to 2 watt	Up to 5 watts
7	462.7125	Up to 2 watt	Up to 5 watts
8	467.5625	Up to 0.5 watt	Up to 0.5 watt
9	467.5875	Up to 0.5 watt	Up to 0.5 watt
10	467.6125	Up to 0.5 watt	Up to 0.5 watt
11	467.6375	Up to 0.5 watt	Up to 0.5 watt
12	467.6625	Up to 0.5 watt	Up to 0.5 watt
13	467.6875	Up to 0.5 watt	Up to 0.5 watt
14	467.7125	Up to 0.5 watt	Up to 0.5 watt
15	462.5500	Up to 2 watt	Up to 50 watts
16	462.5750	Up to 2 watt	Up to 50 watts
17	462.6000	Up to 2 watt	Up to 50 watts
18	462.6250	Up to 2 watt	Up to 50 watts
19	462.6500	Up to 2 watt	Up to 50 watts
20	462.6750	Up to 2 watt	Up to 50 watts
21	462.7000	Up to 2 watt	Up to 50 watts
22	462.7250	Up to 2 watt	Up to 50 watts

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Garden Net Protocol Friday 6PM Nets start on FRS Channel 1

Refer to <http://www.arrl.org/quick-reference-operating-aids>
and https://en.wikipedia.org/wiki/Plain_language_radio_checks

Protocol is designed to be brief and understandable under poor reception.

“Good Evening:

This is the Friday 6PM Garden Net at Arrowhead Gardens

This is John in Delta Building, 4th floor.

I will be your Net Control.

This is a Directed Net, followed by an optional informal discussion net.

I will request check-ins by building Alpha, Bravo, Charlie, Delta.

I will confirm each check-in and request the next check-in.”

When you check-in, give

1. First name,
 2. Building and floor, or other location
 3. Signal report: 1 to 5. (1 = worst, 5 = best) Charlie Mike 1, 2, 3, 4, 5
- * End transmissions with OVER.
 - * End final transmission with CLEAR to indicate you are signing off.
 - ** or, end final transmission with MONITORING to indicate you will continue listening.
 - * For a short pause, say BREAK, release PTT button, then resume transmission.

If Channel 1 is receiving interference, Net Control will ask everyone to switch another channel. After check-ins, Net Control will ask for any reports or comments.

“This ends the Directed Net portion of Garden Net.

Feel free to continue informal communications.”

Charlie Mike Signal Reporting

The CM (“Circuit Merit”) system was devised by HF radiotelephone professionals to better quantify the average quality of a VOICE signal. In telecomm engineering specifications the letters “CM” are followed by a figure from 0 to 5 – to indicate the readability and quality of the VOICE.

Charlie Mike Five: No noise, full quieting. Broadcast quality.

Charlie Mike Four: Slight noise, fully readable.

Charlie Mike Three: Marginal voice communications. Occasional unintelligible words, noisy; weak audio level.

Charlie Mike Two: Unreliable, difficult copy, frequent fills needed.

Charlie Mike One: Unintelligible, signal barely evident.

Charlie Mike Zero: No audio signal is detectable.

Arrowhead Gardens Campus Map: <http://www.thegardensgazette.org/contact.html>

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Wikipedia: Plain language radio checks

The prowords listed below are for use when initiating and answering queries concerning signal strength and readability.

Proword	Meaning
RADIO CHECK	What is my signal strength and readability; how do you hear me?
ROGER	I have received your last transmission satisfactorily.
NOTHING HEARD	To be used when no reply is received from a called station.

Signal Strength Prowords

Proword	Meaning
LOUD	Your signal is very strong.
GOOD	Your signal strength is good.
WEAK	Your signal strength is weak.
VERY WEAK	Your signal strength is very weak.
FADING	At times your signal strength fades to such an extent that continuous reception cannot be relied upon.

Readability Prowords

Proword	Meaning
CLEAR	The quality of your transmission is excellent.
READABLE	The quality of your transmission is satisfactory.
UNREADABLE	The quality of your transmission is so bad that I cannot read you.
DISTORTED	Having trouble reading you due to interference.
WITH INTERFERENCE	Having trouble reading you due to interference.
INTERMITTENT	Having trouble reading you because your signal is intermittent.

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ARRL Communications Procedures

Voice	Code	Situation
Go ahead	K	Used after calling CQ, or at the end of a transmission, to indicate any station is invited to transmit.
Over	AR	Used after a call to a specific station, before the contact has been established.
	KN	Used at the end of any transmission when only the specific station contacted is invited to answer.
Stand by or wait	AS	A temporary interruption of the contact.
Roger	R	Indicates a transmission has been received correctly and in full.
Clear	SK	End of contact. SK is sent before the final identification.
Leaving the air or closing the station	CL	Indicates that a station is going off the air, and will not listen or answer any further calls. CL is sent after the final identification.

International Telecommunication Union Phonetic Alphabet

A--Alfa	J--Juliett	S--Sierra
B--Bravo	K--Kilo	T--Tango
C--Charlie	L--Lima	U--Uniform
D--Delta	M--Mike	V--Victor
E--Echo	N--November	W--Whiskey
F--Foxtrot	O--Oscar	X--X-ray
G--Golf	P--Papa	Y--Yankee
H--Hotel	Q--Quebec	Z--Zulu
I--India	R--Romeo	

More information: [TheGardensGazette.org](http://www.thegardensgazette.org) > Clubs > Amateur Radio Group
<http://www.thegardensgazette.org/amateur-radio-group.html>

For questions and comments, contact
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