# Radio Programming with CHIRP

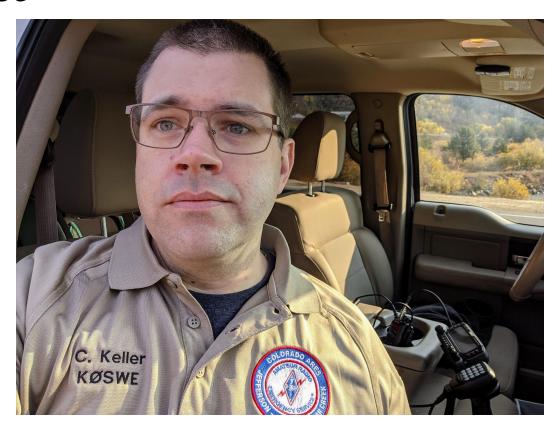


RMHAM University
Tech Talks

Chris Keller, KOSWE January 19, 2021

### **Your Host**







# What is CHIRP?

#### **CHIRP**



"CHIRP is a **free**, **open-source** tool for **programming** your amateur radio. It supports a **large number of manufacturers and models**, as well as provides a way to interface with **multiple data sources and formats**."

https://chirp.danplanet.com/projects/chirp/wiki/Home

## Capabilities



What can it program?

Dozens of manufacturers, hundreds of radios

What doesn't it do?

- DMR, D-Star, C4FM
- Motorola

# vs RT Systems?



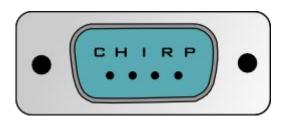


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2 447.52500 442.52500.5.00 MHz Minus FM			CTCSS DC	Tone Mode	Name	AMS							
3 4 4 8 22500 443 22500 5.00 MHz Minus FM = 11U1 Tone 141.3 Hz 023 RN-TN 17 445 92500 146 38500 600 kHz Minus FM = 11U2 Tone 100.0 Hz 023 RN-TN 18 17 43500 147 43500 MHz Minus FM = 11U4D None 103.5 Hz 023 RN-TN 10 11 46 64000 146 65000 MHz Minus FM = 11U4D None 103.5 Hz 023 RN-TN 10 11 46 64000 146 65000 Simplex FM = 11U4D None 103.5 Hz 023 RN-TN 10 11 46 64000 146 65000 MHz Minus FM = 12U1 Tone 100.0 Hz 023 RN-TN 11 44 822500 444 22500 5.00 MHz Minus FM = 12U2 Tone 141.3 Hz 023 RN-TN 14 448 62250 443 22500 5.00 MHz Minus FM = 12U2 Tone 141.3 Hz 023 RN-TN 14 448 62500 146 55000 Simplex FM = 12U4D Tone 141.3 Hz 023 RN-TN 14 448 62500 146 5500 Simplex FM = 12U4D Tone 141.3 Hz 023 RN-TN 14 448 62500 146 5500 Simplex FM = 12U5D None 103.5 Hz 023 RN-TN 16 147.55500 I47.55500 Simplex FM = 12U5D None 103.5 Hz 023 RN-TN 16 147.55500 I47.55500 Simplex FM = 12U5D None 103.5 Hz 023 RN-TN 16 147.55500 I47.55500 Simplex FM = 12U5D None 103.5 Hz 023 RN-TN 18 449.4500 444.65000 5.00 MHz Minus FM = 12UB Tone 100.0 Hz 023 RN-TN 18 449.4500 444.65000 5.00 MHz Minus FM = 12UB Tone 103.5 Hz 023 RN-TN 18 449.4500 444.65000 5.00 MHz Minus FM = 12UB Tone 103.5 Hz 023 RN-TN 18 449.6500 444.65000 5.00 MHz Minus FM = 12UB Tone 103.5 Hz 023 RN-TN 18 449.6500 444.65000 5.00 MHz Minus FM = 12UB Tone 103.5 Hz 023 RN-TN 18 449.6500 444.65000 5.00 MHz Minus FM = 12UB Tone 103.5 Hz 023 RN-TN 18 449.6500 444.65000 5.00 MHz Minus FM = 12UB Tone 141.3 Hz 023 RN-TN 18 449.6500 444.65000 5.00 MHz Minus FM = 12UB Tone 141.3 Hz 023 RN-TN 18 449.6500 444.65000 5.00 MHz Minus FM = 12UB Tone 141.3 Hz 023 RN-TN 18 449.6500 442.25000 5.00 MHz Minus FM = 12UB Tone 141.3 Hz 023 RN-TN 18 449.6500 442.25000 5.00 MHz Minus FM = 12UB Tone 141.3 Hz 023 RN-TN 18 449.6500 442.25000 5.00 MHz Minus FM = 12UB Tone 141.3 Hz 023 RN-TN 18 449.6500 440.65000 5.00 MHz Minus FM = 12UB Tone 141.3 Hz 023 RN-TN 18 449.6500 440.65000 5.00 MHz Minus FM = 12UB Tone 141.3 Hz 023 RN-TN 18 449.6500 440.65000 5.00 MHz Minus FM = 12UB Tone 141.3 Hz 023 RN-TN 18 449.6500 440.65000 5.0	TN - 00	23 - RN-	146.2 Hz 023	Tone	10U1	12	FM -	Minus ~	5.00 MHz	442.52500	447.52500	P1	
48	TN 00	23 RN-	203.5 Hz 023	Tone	10U2	12	FM	Minus	5.00 MHz	442.52500	447.52500	2	
5 482,2500 443,22500 5.00 MHz Minus FM = 11U1 Tone 141.3 Hz 023 RN-TN (7 449,2500 444,2500.5.00 MHz Minus FM = 11V2 Tone 100.0 Hz 023 RN-TN (7 449,2500 444,2500.5.00 MHz Minus FM = 11V4D None 103.5 Hz 023 RN-TN (7 449,2500 444,2500.5.00 MHz Minus FM = 11V4D None 103.5 Hz 023 RN-TN (7 445,500 Hz 045,500 MHz Minus FM = 11V5D None 103.5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V1 Tone 100.0 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V1 Tone 100.0 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V1 Tone 141.3 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V2 Tone 141.3 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V3 Tone 8,5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V4 Tone 141.3 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V4 Tone 141.3 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V4 Tone 141.3 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V5 None 103.5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V5 None 103.5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V5 None 103.5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V5 None 103.5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V5 None 103.5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V5 None 103.5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V5 None 103.5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V5 None 103.5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V5 None 103.5 Hz 023 RN-TN (7 445,500 MHz Minus FM = 12V5 None 103.5 Hz 023 RN-TN (7 447,250 MHz Mz												3	
6         148,98500 148,38500 600 kHz         Minus         FM         # 111/2         Tone         100,0 ktz         223         RN-TN           8         147,43500         147,43500         Simplex         FM         # 111/3         Tone         143,5 ktz         223         RN-TN           10         445,80000         445,80000         Simplex         FM         # 111/3D         None         103,5 ktz         223         RN-TN           10         1146,64000         146,04000         140,04000         Mr.TN         # 111/3D         None         103,5 ktz         223         RN-TN           12         449,22500         444,22500,5 0.0 MHz         Minus         FM         # 121/2         Tone         141,3 htz         023         RN-TN           14         446,22500         443,22500,5 0.0 MHz         Minus         FM         # 124/3         Tone         88,5 htz         023         RN-TN           14         446,22500         443,22500,5 0.0 MHz         Minus         FM         # 124/3         Tone         88,5 htz         023         RN-TN           15         146,55000         146,55000         146,55000         MHz         Minus         FM         # 124/5         None         10												4	
7 449 25000 444 25000 5 0 MHz Minus FM = 111/3 Tone 141,3 Hz 023 RN-TN   9 445 80000 445 80000 Simplex FM = 111/4D None 103,5 Hz 023 RN-TN   11 146 84000 146 04000 800 kHz   Minus FM = 12/1 Tone 101,0 Hz 023 RN-TN   12 449 22500 444 22500 5 0 MHz Minus FM = 12/2 Tone 141,3 Hz 023 RN-TN   14 48 22500 147,72500 600 kHz Pus FM = 12/2 Tone 8,6 Hz 023 RN-TN   14 448 22500 146,55500 Simplex FM = 12/2 Tone 141,3 Hz 023 RN-TN   16 147,55500 146,55500 Simplex FM = 12/2 Tone 141,3 Hz 023 RN-TN   16 147,55500 147,55500 Simplex FM = 12/2 Tone 10,5 Hz 023 RN-TN   16 147,55500 147,55500 Simplex FM = 12/2 Tone 10,5 Hz 023 RN-TN   16 147,55500 147,55500 Simplex FM = 12/2 Tone 10,5 Hz 023 RN-TN   16 147,55500 147,50500 Simplex FM = 12/2 Tone 10,5 Hz 023 RN-TN   16 144,456000 5 00 MHz Minus FM = 12/2 Tone 10,5 Hz 023 RN-TN   17 498,6000 444,65000 5 00 MHz Minus FM = 12/2 Tone 10,5 Hz 023 RN-TN   18 449,45000 444,65000 5 00 MHz Minus FM = 12/2 Tone 10,5 Hz 023 RN-TN   19 449,6500 444,65000 5 00 MHz Minus FM = 12/2 Tone 10,5 Hz 023 RN-TN   19 449,6500 444,65000 5 00 MHz Minus FM = 12/2 Tone 10,5 Hz 023 RN-TN   19 449,6500 444,65000 5 00 MHz Minus FM = 12/2 Tone 10,0 Hz 023 RN-TN   19 449,6500 444,65000 5 00 MHz Minus FM = 12/2 Tone 10,0 Hz 023 RN-TN   19 449,6500 444,65000 5 00 MHz Minus FM = 12/2 Tone 141,3 Hz 023 RN-TN   19 449,6500 444,65000 5 00 MHz Minus FM = 12/2 Tone 141,3 Hz 023 RN-TN   19 449,6500 444,65000 5 00 MHz Minus FM = 12/2 Tone 141,3 Hz 023 RN-TN   19 447,75000 647,75000 600 600 Hz Minus FM = 12/2 Tone 141,3 Hz 023 RN-TN   19 447,75000 442,75000 5 00 MHz Minus FM = 12/2 Tone 141,3 Hz 023 RN-TN   19 447,75000 647,75000 600 600 Hz Minus FM = 12/2 Tone 141,3 Hz 023 RN-TN   19 447,75000 647,75000 600 600 Hz Minus FM = 12/2 Tone 141,3 Hz 023 RN-TN   19 447,75000 647,75000 600 600 Hz Minus FM = 12/2 Tone 141,3 Hz 023 RN-TN   19 447,75000 647,75000 600 600 Hz Mz Minus FM = 12/2 Tone 14/3 Hz 02/2 RN-TN   19 447,75000 647,75000 600 600 Hz Mz Minus FM = 12/2 Tone 14/3 Hz 02/2 RN-TN   19 447,75000 640 640 640 640 640 640 64	TN 00	23 RN-	141.3 Hz 023	Tone	11U1	B	FM	Minus	5.00 MHz	443.22500	448.22500	5	
8   147,43500   147,43500   Simplex   FM   9   111/4D   None   103,5 Hz   023   RN-TN   10   10   146,64000   146,04000600 kHz   Minus   FM   9   111/4D   None   103,5 Hz   023   RN-TN   112   448,02550   444,22500.5 00 MHz   Minus   FM   9   121/2   Tone   141,3 Hz   023   RN-TN   14   448,02550   443,22500.5 00 MHz   Minus   FM   9   121/2   Tone   141,3 Hz   023   RN-TN   15   146,55000   146,55000   146,55000   Simplex   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   16   146,55000   146,55000   146,55000   Simplex   FM   9   121/4   Tone   103,5 Hz   023   RN-TN   17   448,0000   444,00000.5 00 MHz   Minus   FM   9   121/4   Tone   100,0 Hz   023   RN-TN   18   448,5000   444,50000.5 00 MHz   Minus   FM   9   121/4   Tone   100,0 Hz   023   RN-TN   19   449,62500   444,65000.5 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   19   449,62500   444,65000.5 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   19   449,62500   444,65000.5 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   10   477,65000   442,25000.5 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   10   477,5000   442,25000.5 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   10   477,5000   442,25000.5 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   10   474,75000   474,25000.5 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   10   474,75000   474,75000.5 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   10   477,75000   477,75000.6 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   10   477,5000   477,75000.6 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN   10   477,75000   477,75000.6 00 MHz   Minus   FM   9   121/4   Tone   141,3 Hz   023   RN-TN	TN 00	23 RN-	100.0 Hz 023	Tone	11V2	B	FM	Minus	600 kHz	146.38500	146.98500	6	
9 445,80000 445,80000 Simplex FM 9 11U5D None 103,5 Hz 023 RN-TN 11 146,64000 146,04000,600 kHz Minus FM 9 12V1 Tone 100,0 Hz 023 RN-TN 12 449,22500 443,22500,500 MHz Minus FM 12V3 Tone 88,5 Hz 023 RN-TN 14 448,22500 147,75000,600 kHz Pus FM 9 12V4 Tone 141,3 Hz 023 RN-TN 14 448,22500 145,2500,500 MHz Minus FM 12V3 Tone 88,5 Hz 023 RN-TN 15 146,55000 146,55000 Simplex FM 9 12V4D None 103,5 Hz 023 RN-TN 16 147,55500 147,55500 Simplex FM 9 12V5D None 103,5 Hz 023 RN-TN 16 147,55500 MHz Minus FM 9 12V6D None 103,5 Hz 023 RN-TN 18 149,45000 444,60000,500 MHz Minus FM 9 12V6D None 103,5 Hz 023 RN-TN 18 149,45000 444,60000,500 MHz Minus FM 9 12V7 Tone 100,0 Hz 023 RN-TN 18 149,45000 444,65000,500 MHz Minus FM 9 12V8 Tone 103,5 Hz 023 RN-TN 19 149,662500 MHz Minus FM 9 12V8 Tone 113,5 Hz 023 RN-TN 19 149,662500 MHz Minus FM 9 12V8 Tone 113,5 Hz 023 RN-TN 19 149,662500 MHz Minus FM 9 12V8 Tone 141,3 Hz 023 RN-TN 19 149,662500 MHz Minus FM 9 12V8 Tone 141,3 Hz 023 RN-TN 19 147,65000 MHz Minus FM 9 12V13 Tone 100,0 Hz 023 RN-TN 19 12V13 Tone 100,0 Hz 023 RN-TN 19 12V13 Tone 141,3 Hz 023 RN-TN 19 12V13 Tone 141,3 Hz 023 RN-TN 19 12V14 Tone 141,3 Hz 023 RN-TN 19 12V15 Tone 141,3 Hz	TN 00	23 RN-	141.3 Hz 023	Tone	11U3	B	FM	Minus	5.00 MHz	444.25000	449.25000	7	
10   146 64000 146 04000 600 kHz   Minus	TN 00	23 RN	103.5 Hz 023	None	11V4D	8	FM	Simplex	)	147.43500	147.43500	8	
11	TN 00	23 RN	103.5 Hz 023	None	11U5D	8	FM	Simplex	)	445.80000	445.80000	9	
12												10	
13	TN 00	23 RN	100.0 Hz 023	Tone	12V1	8	FM	Minus	600 kHz	146.04000	146.64000	11	
14	TN 00	23 RN	141.3 Hz 023	Tone	12U2	8	FM	Minus	5.00 MHz	444.22500	449.22500	12	
15	TN 00	23 RN	88.5 Hz 023	Tone	12V3	B	FM	Plus	600 kHz	147.72000	147.12000	13	
18	TN 00	23 RN	141.3 Hz 023	Tone	12U4	B	FM	Minus	5.00 MHz	443.22500	448.22500	14	
17	TN 00	23 RN	103.5 Hz 023	None	12V5D	B	FM	Simplex	)	146.55000	146.55000	15	
18	TN 00	23 RN-	103.5 Hz 023	None	12V6D	B	FM	Simplex	)	147.55500	147.55500	16	
9449.82500	TN 00	23 RN-	100.0 Hz 023	Tone	12U7	B	FM	Minus	5.00 MHz	444.60000	449.60000	17	
20 447.22500 442.225005.00 MHz Minus FM = 12U10 Tone 141.3 Hz 023 RN-TN 212 146.88000 146.28000.600 kHz Minus FM = 12V13 Tone 100.0 Hz 023 RN-TN 23 447.75000 442.750005.00 MHz Minus FM = 12U14 Tone 141.3 Hz 023 RN-TN 41.471.5000.00 kHz PM = 12V15 Tone 100.0 Hz 023 RN-TN 24.471.5000.00 kHz 023 RN-TN 24.471.5000.00 kHz 023 RN-TN 24.471.5000.00 kHz 023 RN-TN 24.471.5000.00	TN 00	23 RN-	103.5 Hz 023	Tone	12U8	12	FM	Minus	5.00 MHz	444.45000	449.45000	18	
21   22   146.88000   146.28000.600 kHz   Minus	TN 00	23 RN-	141.3 Hz 023	Tone	12U9	2	FM	Minus	5.00 MHz	444.62500	449.62500	19	
22     148,88000 146,28000600.kHz     Minus     FM     = 12V13     Tone     100,0 Hz     023     RN-TN       24     147,15000     142,75000 00.8Hz     PM     = 12V14     Tone     141,3 Hz     142     RN-TN       24     147,15000     147,75000 00.8Hz     PM     = 12V15     Tone     100,0 Hz     023     RN-TN       24     147,1500     147,75000     147,75000     147,75000     147,75000     147,75000	TN 00	23 RN-	141.3 Hz 023	Tone	12U10	2	FM	Minus	5.00 MHz	442.22500	447.22500	20	
23 447.75000 442.750005.00 MHz Minus FM B 12U14 Tone 141.3 Hz 023 RN-TN 24 147.15000 147.75000600 kHz Plus FM B 12V15 Tone 100.0 Hz 023 RN-TN												21	
24 147.15000 147.75000 600 kHz Plus FM 8 12V15 Tone 100.0 Hz 023 RN-TN	TN 00	23 RN	100.0 Hz 023	Tone	12V13	В	FM	Minus			146.88000	22	
	TN 00	23 RN	141.3 Hz 023	Tone	12U14	В	FM	Minus	5.00 MHz	442.75000	447.75000	23	
	TN 00	23 RN	100.0 Hz 023	Tone	12V15	8	FM	Plus	600 kHz	147.75000	147.15000	24	
25 448.85000 443.85000 5.00 MHz Minus FM 8 12U17 Tone 88.5 Hz 023 RN-TN	TN 00	23 RN	88.5 Hz 023		12U17	8	FM	Minus	5.00 MHz	443.85000	448.85000	25	



# vs RT Systems?













# **Building a Generic Codeplug**

## **Generic Codeplug Methods**

Rocky Mountain Ham Radio

- Manual entry
- Online databases
  - RadioReference
  - RepeaterBook
  - RFinder
- CSV (next slide)

## **Power User: Spreadsheet to CSV**



- No import wizard like RT Systems
- Not too hard to transform our own CSV to fit CHIRP's "shape"
- Docs at <a href="https://chirp.danplanet.com/projects/chirp/wiki/CSV">https://chirp.danplanet.com/projects/chirp/wiki/CSV</a> HowTo



# **Transferring to Radios**



- Clone mode
- Only 127 channels, so might have to cut/paste some things around





#### Kenwood TH-D72

• Live mode





#### Yaesu FT3D

- CHIRP doesn't support SD card
- What happens to C4FM channels?







# **Contact Me**

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