



Simplex Operation

South Pasadena Amateur Radio Club

January 3, 2024

Simplex

- Point-to-point communication
- Primary advantage of ham radio
- May require **relays** to extend reach or to include stations using alternate communication systems such as GMRS



SPARC 2024 Goal

Add a monthly simplex net to our rotation:

- ▣ Second Wednesday of the month
- ▣ Create a city propagation map. “Where can I hear, and where can I be heard?”

Stretch goals:

- ▣ Include Neighborhood Watch and CERT, encourage use of FRS/GMRS
- ▣ Annual operating event tied to Shakeout



Operating Simplex

- CTSS / “PL” Tones
- Cross-band Repeaters
- Propagation
- Equipment
- SPARC Schedule Review
- Other Local Simplex Nets



CTCSS or “PL” Tones

- Tone Squelch (SQ or TSQL)
 - Receiver activated only if correct tone is present
 - If you know the receiver is using tone squelch, then you must transmit the correct tone to be heard
 - You are not required to use tone squelch on your own receiver, but it can be used to filter out unwanted signals
- Tone Mode (T or TONE) generally means you are set up to transmit a tone but not set up to filter out unwanted signals



Cross-band Repeaters

- Using two bands for long-range communication
 - For example, 2M and 70CM
- Signals received on one band are re-transmitted on the other band
- Many dual-band radios can operate as a cross-band repeater
 - Use your existing dual-band antenna
 - No need for an expensive duplexer
 - Be careful to ensure both frequencies are available before operation
 - Don't forget to ID regularly on both frequencies

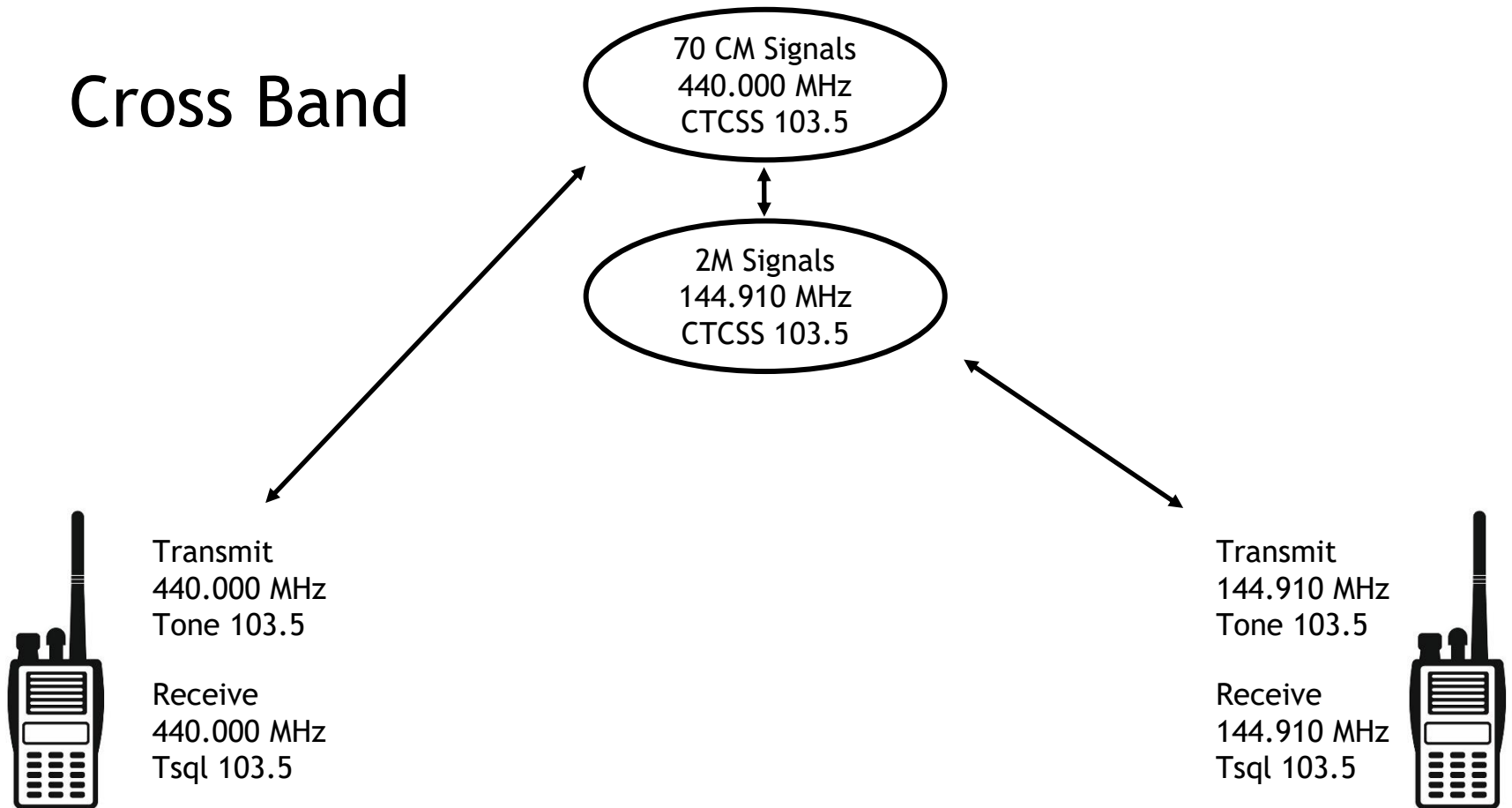


Cross-band Repeaters

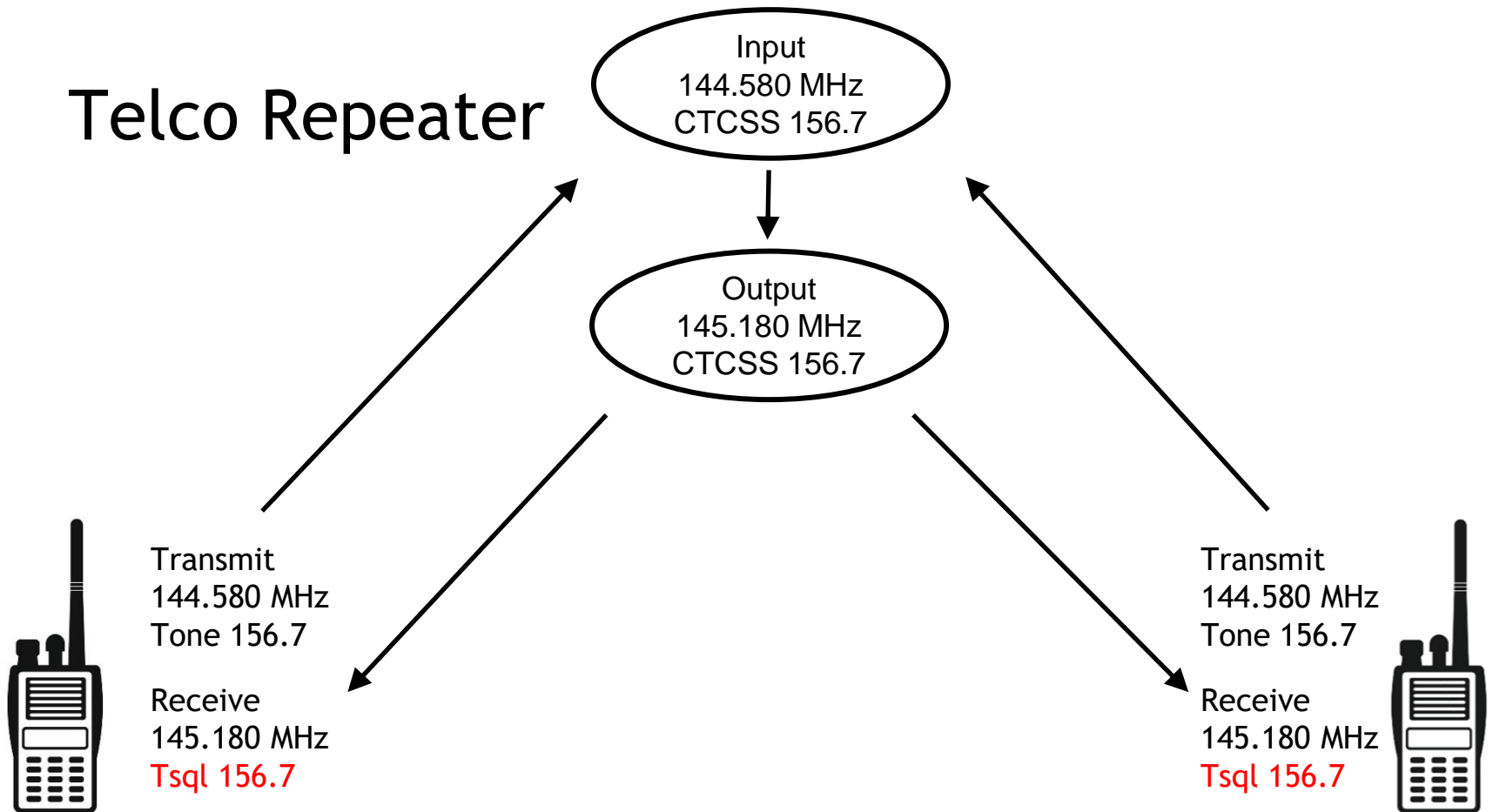
- Stations using the repeater must operate on opposite bands
- CTCSS tones are optional but recommended
 - Cross-band repeaters generally use simplex frequencies
 - Using tones helps minimize interference
- If CTCSS tones are used on the repeater
 - You must transmit the tone to activate the repeater (**T** or **TONE** mode)
 - You may use tone squelch to silence other simplex stations (**SQ** or **TSQL** mode), but it's not required



Cross Band



Telco Repeater



Propagation

- TL;DR: Higher elevation is better

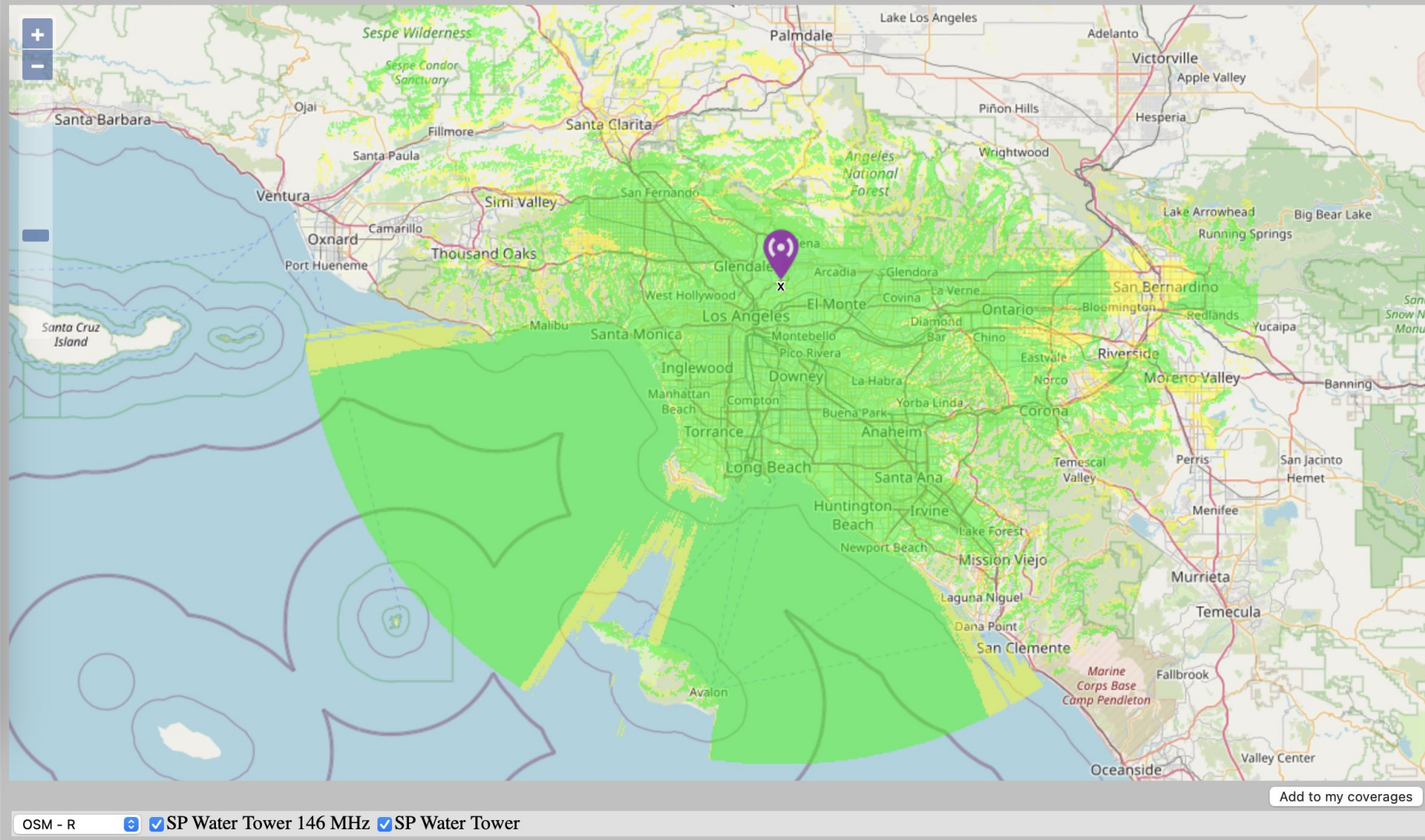
ARRL Handbook chapter 19.4 is a great resource.

- Radio Mobile Online

https://www.ve2dbe.com/rmonline_s.asp

Free online tool to model your propagation





Radio Mobile Online prediction for 20 W transmission from SP Water Tower

Equipment

- When operating portable, think beyond the rubber duck antenna.

Ham Shack In Your Hand

- HT: Handheld Transceiver
- Affordable and compact transceiver with antenna, battery
- Typically covers 2 meters and 70 centimeters
- Low power (~5 watts)
- The three best ways to improve your HT:

Antenna, antenna, antenna



*Presentation by
Bob Witte, K0NR*



Equipment

- ❑ Roll-up antenna (can be home-brewed)
- ❑ Copper J-Pole (past SPARC project)
- ❑ Commercial replacements



SPARC Schedule Review

- 1st Wednesday of the month
 - No net; in-person meeting
- 2nd Wednesday of the month, 7:30 p.m.
 - Simplex - 145.600 MHz no PL tone
- Other Wednesdays - Telco Repeater, 7:30 p.m.
 - 145.180 MHz
 - PL 156.7
 - Negative offset



Other Local Simplex Nets

- ▣ Altadena Local Emergency Radio Team (ALERT)

Mondays approx. 8:10 p.m. — simplex roundtable after Telco net on “ALTA 1”

- ▣ Southern CA Emergency Simplex Net

Wednesdays 8 p.m. 446.500

- ▣ More!

Check Ed's Radio — edsradio.com “VHF/UHF Nets”

And consider ARRL January VHF Contest on 1/20

