











# Spread-Spectrum Radios

Minimize noise and interference from RF sources



Spread-spectrum radios are very popular for creating wireless communication links to and between data loggers. These low-cost devices provide robust links ranging in speeds from 10 to 200 kbps and distances of 3 to 50 miles, depending on the radio model and operating conditions. These radios consume little power and are easy to install and maintain, as they have been designed for low-power, non-licensed operation. Spread-spectrum radios spread the normally narrow-band information signal over a relatively wide band of frequencies. This allows the communication to be highly immune to noise and interference from RF (radio-frequency) sources.

	Frequency	Country Used In	Transmission Distance
<p><b>RF452</b> 900 MHz 1 W Spread-Spectrum Radio</p> <p>Popular</p> 	902 to 928 MHz	US, Canada, New Zealand, Australia	<ul style="list-style-type: none"> <li>20.92 to 96.56 km (13 to 60 mi) depending on antenna and line-of-sight</li> <li>-Note- Transmission distance assumes line-of-sight and appropriate antenna. Line-of-sight obstructions, RF interference, and antenna type will affect transmission distance.</li> </ul>
<p><b>RF407</b> 900 MHz Spread-Spectrum Radio</p> <p>Popular</p> 	902 to 928 MHz	US, Canada	<ul style="list-style-type: none"> <li>-Note- Transmission distance assumes line-of-sight and appropriate antenna. Line-of-sight obstructions, RF interference, and antenna type will affect transmission distance.</li> <li>Up to 1.61 km (1 mi) with omnidirectional antenna; up to 16.09 km (10) mi with higher-gain directional antennas at ideal conditions</li> </ul>
<p><b>RF412</b> 922 MHz Spread-Spectrum Radio</p> 	915 to 928 MHz	Australia, New Zealand	<ul style="list-style-type: none"> <li>Up to 1.61 km (1 mi) with omnidirectional antenna; up to 16.09 km (10) mi with higher-gain directional antennas at ideal conditions</li> <li>-Note- Transmission distance assumes line-of-sight and appropriate antenna. Line-of-sight obstructions, RF interference, and antenna type will affect transmission distance.</li> </ul>

		Frequency	Country Used In	Transmission Distance
<b>RF422</b> 868 MHz SRD860 Radio 		863 to 870 MHz	EMEA (Europe, Middle East, and Africa)	<ul style="list-style-type: none"> <li>▶ -Note- Transmission distance assumes line-of-sight and appropriate antenna. Line-of-sight obstructions, RF interference, and antenna type will affect transmission distance.</li> <li>▶ Up to 5 km (3.11 mi) depending on antenna and line-of-sight</li> </ul>
<b>RF427</b> 905 MHz + 920 MHz Spread-Spectrum Radio 		905/920 MHz	Brazil	<ul style="list-style-type: none"> <li>▶ -Note- Transmission distance assumes line-of-sight and appropriate antenna. Line-of-sight obstructions, RF interference, and antenna type will affect transmission distance.</li> <li>▶ Up to 1.61 km (1 mi) with omnidirectional antenna; up to 16.09 km (10 mi) with higher-gain directional antennas at ideal conditions</li> </ul>
<b>RF401A</b> 900 MHz Spread-Spectrum Radio 		910 to 918 MHz	US, Canada	<ul style="list-style-type: none"> <li>▶ Up to 1.61 km (1 mi) with omnidirectional antenna; up to 16.09 km (10 mi) with higher-gain directional antennas at ideal conditions</li> <li>▶ -Note- Transmission distance assumes line-of-sight and appropriate antenna. Line-of-sight obstructions, RF interference, and antenna type will affect transmission distance.</li> </ul>
<b>RF411A</b> 922 MHz Spread-Spectrum Radio 		920 to 928 MHz	Australia, New Zealand	<ul style="list-style-type: none"> <li>▶ Up to 1.61 km (1 mi) with omnidirectional antenna; up to 16.09 km (10 mi) with higher-gain directional antennas at ideal conditions</li> <li>▶ -Note- Transmission distance assumes line-of-sight and appropriate antenna. Line-of-sight obstructions, RF interference, and antenna type will affect transmission distance.</li> </ul>
<b>RF416</b> 2.4 GHz Spread-Spectrum Radio 		2.450 to 2.482 GHz	Any country where 2.4 GHz Wi-Fi communications are allowed	0.4 km (0.25 mi) with omnidirectional antenna (outdoors); up to 0.8 km (0.5 mi) with higher-gain directional antennas at ideal conditions

For comprehensive details, visit: [www.campbellsci.com/spread-spectrum-radios](http://www.campbellsci.com/spread-spectrum-radios) 

