

## Remote Control of Devices

Some events require competitors to build a device that performs certain tasks.

**Unless otherwise specified or prohibited in the event rules, the following guidelines will apply. Compliance to individual event rules and the spirit of the problem always takes priority over these guidelines.**

Note that design (e.g. size, weight, max voltage, etc.), safety (e.g. pressure limitations, etc.) and operational (e.g. not imparting energy directly into a device, etc.) constraints detailed in the event rules always apply as well.

**Electronic Devices:** Competitors are allowed to utilize electronic devices and components (e.g. computers, laptops, tablets, smartphones, microprocessors, etc.) to control their devices.

**Physical Connections:** Competitors are allowed to utilize physical connections (e.g. push/pull cables, strings, hydraulics, pneumatics, electrical wires, etc.) to control their devices.

**Wireless Connections:** Competitors are allowed to utilize the following types of wireless connections to control their devices:

- Sound pressure waves (including infrasound, acoustic, and/or ultrasound)
- Electromagnetic radiation in the ultraviolet, visible and/or infrared spectrums
- Radio waves as allowed by FCC regulations, which correspond to both the frequency (e.g. 2.4 GHz, 5.8 GHz, etc.) and the power (e.g. 100mW, 50mW, etc.). Allowable examples include, but aren't limited to: Bluetooth, WiFi, ZigBee, R/C cars, etc.
- Note that some older R/C systems designed explicitly for model aircraft operate in the 72.0 – 73.0 MHz range and are explicitly prohibited from operating model 'surface' vehicles and devices. The corresponding, allowable, surface devices operate in the 75.4 – 76.0 MHz and 27 MHz range. Most modern R/C systems operate in the 2.4 or 5.8 GHz range and incorporate 'spread spectrum' technology.

**Radio Interference:** Competitors that utilize radio based control systems are inherently at risk for radio interference and are ultimately responsible for any impact it may have on their performance in the event. Event supervisors, at their discretion, may require impounding of radio devices to help reduce interference. Competitors are encouraged to utilize modern spread spectrum radio systems that are less prone to interference.

**References concerning radio control:**

U.S. Federal Communications Commission – Radio Control (R/C) Radio Service

<http://www.fcc.gov/encyclopedia/radio-control-rc-radio-service>

Code of Federal Regulations – Title 47 – Telecommunications

[http://wireless.fcc.gov/index.htm?job=rules\\_and\\_regulations](http://wireless.fcc.gov/index.htm?job=rules_and_regulations)