



NASA SBIR 2009 Phase I Solicitation

S4.03 Wireless Data and/or Power Connectivity for Small Spacecraft

Lead Center: ARC

Participating Center(s): GSFC, JPL

New advances in wireless connectivity for mobile computing and other electronic devices have opened up the possibilities for wireless spacecraft busses. There are two potential applications, the transfer of data, commands, and signals and delivery of power to components. The use of wireless technology can be beneficial to small spacecraft designs by eliminating the need for data and power connects, thus reducing spacecraft overall mass and volume requirements. Wireless applications for a spacecraft bus must also ensure that the many different signals do not interfere and there is complete transfer of data and power.

The proposed wireless technologies should address or consider the following performance parameters:

- Data transmission capability from 5 - 100 unique devices within the spacecraft;
- Data transfer rates of 500 Megabits per second to 1 Gigabit per second per device;
- Scalable wireless power transfer from ~1mW up to ~20W;
- Overall wireless architecture mass from 3-50kg dependent on the size of the spacecraft bus;
- Both systems (power and data) should be capable of utilizing the Space Plug-and-Play Architecture (SPA) developed by the AFRL. See <http://www.dukeworks.org> for information on SPA;
- Power and data architectures should be tolerant to the space environment including temperatures (25Å°C to 40Å°C) and radiation ;
- Capable of surviving space launch environments.

Although these are baseline goals, proposals that are able to achieve near comparable values will also be considered.

The proposer to this subtopic is advised that the products proposed may be included in a future small satellite flight opportunity.