



Communications

Portable Wireless Signal Booster

Increases signal strength for commercial wireless products

Innovators at NASA Johnson Space Center have invented a portable communications signal booster that is currently available for licensing. Originally designed to improve communications for lunar missions, this lightweight, portable device can boost incoming signals to improve local reception for cell phones, laptops, satellite and Wi-Fi internet receivers without the need for power plugs, cables or batteries. This portable signal booster can be configured as an umbrella or window shade for easy deployment and compact storage. This technology has the flexibility to be designed in different shapes and sizes to offer variations in booster strength and degree of directional focus.

BENEFITS

- High performance - 7-15 dB gain increase
- Cable-free - requires no physical connection to wireless devices
- Free of power plugs and batteries
- Compact, portable and lightweight
- Easy to set up, easy to store
- Simple, low-cost manufacturing

technology solution



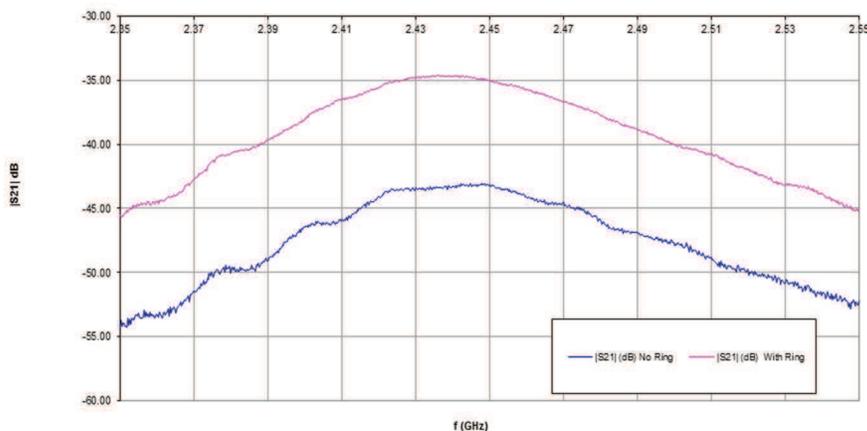
THE TECHNOLOGY

Communications are of paramount importance in conducting space missions, and an antenna's signal strength is vital to the success of any mission. All antennas have a limited range. NASA needed a mobile signal booster that could be placed as needed to supplement any weak spots encountered by an astronaut crew at the site once a baseline system was deployed. Like all space hardware, the booster needed to be durable, compact and lightweight.

This innovation successfully integrates the classic Fresnel Ring model into a conductive fabric structure. The result is an ultra-light, deployable device that acts as a lens to significantly enhance the realizable gain of an antenna.

A Fresnel Ring design on the booster is specially shaped to cancel specific phases of the radiated signal. This makes other more desirable parts of the signal more prominent.

Different variations of shapes of the booster can be offered. A round, medium size unit could expect to increase signal gain in all directions by about 7 dB. A larger, elliptical-shaped unit could expect to increase signal gain in a focused direction by up to 15 dB.



Results of the gains with no signal booster ring (in blue) and with signal booster (red)

APPLICATIONS

The technology has several potential applications:

- Consumer: boost dead zones at home and work
- First response: wireless communications systems for field emergency & rescue workers
- Recreation: enhance hunting, camping and other remote/outside experiences
- Networking: support RFID/wireless sensor networks
- Industry: remote work

PUBLICATIONS

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