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## An Optical Communication Method in an MRI Environment

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The development of an optical communications system for use with products in shielded or enclosed environments such as an MRI suite. Communication in this environment is often difficult due to the additional shielding and imaging equipment sensitivity to RF emissions that may be associated with popular communications equipment.

### SPECIFICATION

The system is comprised of two major types of components: a 'node' associated with each device and an 'optical bridge' required for each enclosed / shielded room that the system must operate in. In this system concept, the nodes located on each device derive power from that device (or it can be battery-powered). Likewise the ceiling/wall units associated with the optical bridge can be powered from an AC source or from a battery. Also, a 'range extension' feature of the system will allow increased range and room coverage. It is envisioned that multiple 'nodes' could be daisy-chained together to comprise this feature.

This optical communication system is novel in the following manner:

1. Solution allows non-tethered communications for the device located in the scan room to another device located outside the scan room
2. Should not preclude a network solution in the future
3. Installation ease (in time)
4. Will not compromise room shielding integrity.
5. Will not present any safety hazards (and other regulatory issues)
6. One solution for 90% of rooms
7. Data rate accommodated shall be at least 115 kbps.
8. Shall not induce image artifacts