

Point-to-Point Radio Links Involving Reflective Surfaces - Design and Installation Considerations -



Exterior metal construction or metal/aluminum siding material



Buildings with metal exteriors do not need to be tall to cause RF reflections



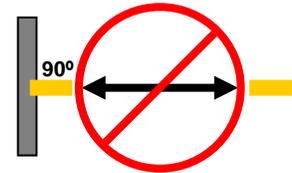
Glass with metallic tint typically looks like a mirror, with no view of the building interior through the glass



Even at this straight-on viewing angle the carpeting on the interior is plainly visible. This glass storefront is probably NOT tinted with metallic tinting material.

When a signal is transmitted towards a metal surface some of the RF energy reflects from the surface. The reflected energy can interfere with and corrupt the signal being transmitted. The transmitted signal interferes with itself and communication is disrupted. Buildings with metal exteriors (steel building, aluminum siding, etc.) and large areas of glass tinted with metallic tint (making the glass look like a mirrored surface) will cause significant signal reflections.

Antennas should NEVER be installed with their line of sight perpendicular to a metal building. Signal energy will be reflected directly back to the transmitter and the connection will be disrupted.



Never install two antennas with a line of sight that's perpendicular to a metal surface

It's recommended that a minimum offset angle of 10° be provided to minimize the effect of reflections. The offset distances are shown in the table below. When a minimum 10° offset can not be achieved then an on-site survey should be part of the design process to determine whether specialty antennas or installation alternatives can mitigate the reflection issues.

It is worth noting that not all tinted glass uses metallic tint. When you can see clearly through the tinted glass on a bright day, even when standing directly in front of the glass it's probably not tinted with metallic tint. Confirm that your glass surfaces are tinted with metallic material if in doubt.

Required Offset Between Antennas

OFFSET DISTANCE CAN BE HORIZONTAL OR VERTICAL

