

In-Building RF Coverage Systems Overview

The Challenge:

Due to high-level expectations of wireless end users today, cellular coverage as well as two-way radio reception is expected to be nearly ubiquitous both indoors and outside. Business owners cannot afford reduced productivity from their workforce due to spotty-to-no voice and data coverage. In addition, there is a marked increase in the reliance of smartphones and wireless devices to perform mission-critical tasks. Poor signal is caused by building materials, line-of-sight issues, thick tree cover and densely configured interior spaces. Radio signals are electromagnetic waves that travel freely through the air, but can be absorbed, reflected, and diffracted by various materials. Current building codes call for thicker facades, stronger glass, engineered steel supports, and recommend sweeping enhancements to in-building communications capabilities. Full service availability is now expected in stairwells, parking garages, and underground spaces.



The Solution:

This can all be rectified through the design, implementation, and optimization of cellular and/or two-way Public Safety amplification systems. Most buildings lend themselves to becoming good candidates for signal amplification when the technician performs a thorough site survey to determine signal received at the proposed donor location, length of cabling needed, and performs a solid design analysis.

System Components:

Donor antenna, amplifier, coaxial or fiber optic cable, indoor coverage antennas, splitters and couplers.

Steps for Engaging TESSCO Design Assistance:

- Perform a site walk of the space capturing outdoor signal strength at donor location.
- Complete the in-building questionnaire found on the technical support section of TESSCO.com.
- Request floor plans from the building owner, architect, tenant or property manager.
- Capture building material information, carriers desired, as well as rooftop outdoor signal per carrier.

In-Building Design Considerations:

- Inquire if standard or plenum-rated cabling is required.
- Complete the in-building questionnaire found on the TESSCO website using the link www.tessco.com/go/inbuilding
- TESSCO Sales and/or Engineering Teams will provide a quote upon full receipt of the required information (typically within 3-5 business days).

In-Building Amplification Considerations:

- Full-band versus band-specific amplifier, noting that Cellular Carriers will not approve full band.
- Cavity filtered versus digital filtered.
- Gain and composite output required.
- Battery backup, redundant amplifier for mission-critical facilities.
- Future-proof remote monitoring, alarm capabilities.
- Extended Warranties & Service Level Agreements.