

SpotCell – System Isolation Measurement

Introduction

The SpotCell Donor Unit (DU) and Coverage Unit (CU) must be installed in a manner that maximizes isolation to optimize system performance. This application note will define and recommend ways to improve isolation when installing the SpotCell adaptive repeater.

Isolation

Isolation is defined as the path loss between two points- the SpotCell DU and CU in this case. Greater isolation allows for more gain to be introduced by SpotCell into the uplink and downlink. This increased level of gain translates into an increased coverage area provided by the CU. The two main factors that will affect isolation are distance between the DU and CU and building penetration loss (see Table 1)

Typical Penetration Losses	
All metal attenuation	26 dB
Foil Insulation	3.9 dB
Concrete block wall	13-20 dB
Ceiling Duct	1-8 dB
Metal Stairs	5 dB

Table 1 - Typical Penetration Losses

Installation

The following general recommendations apply to applications where the DU and CU both installed indoors. Indoor installations present isolation challenges that do not exist in typical outdoor/indoor installations. Spotwave recommends:

1. Separate the DU and CU as much as possible, keeping within coax cable length recommendations (see SpotCell Application Note 103 “SpotCell Cable Length and Proper Installation”).

2. If possible, face the DU and CU in opposite directions, and back to back while maintaining maximum separation.
3. Ensure the greatest physical obstruction between the DU and CU as possible. Dense obstructions such as brick, concrete or metal walls are more effective at introducing isolation than wooden or plaster walls.

Isolation Measurement

The LCD display on the CU is used as a guide during system installation to determine whether adequate isolation is attained.

The System Isolation Indicator (commonly referred to as coverage area indicator) displays a number of bars that represents lack of system gain introduced as a result of insufficient isolation when the system is in ‘Active’ mode. The more bars displayed the better the isolation, with five bars being best case for the application.

The SpotCell system will indicate “In Service” when the system isolation indicator has at least three bars, recognizing that fewer bars indicates reduced system gain and therefore reduced coverage area.

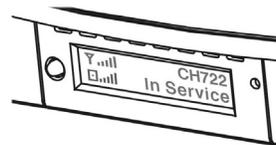


Figure 1 - Active mode (System Isolation Indicator located at bottom left)

For more technical information on System Isolation, see SpotCell Technical Note 106 “System Isolation”.

Spotwave Wireless Inc.