

## Resensys Three-Check Reliability Protocol (3CRP)

The Resensys Three-Check Reliability Protocol is the official recommended best-practice for installing wireless SenSpot sensor networks on structures. Following these three simple rules during installation will ensure a smooth installation with high repeatability and reliability.



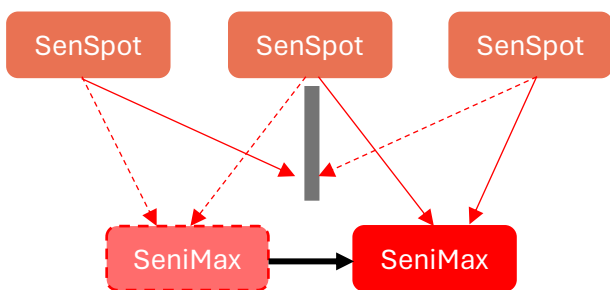
1. "SeniMax before SenSpot"

2. Signal Strength

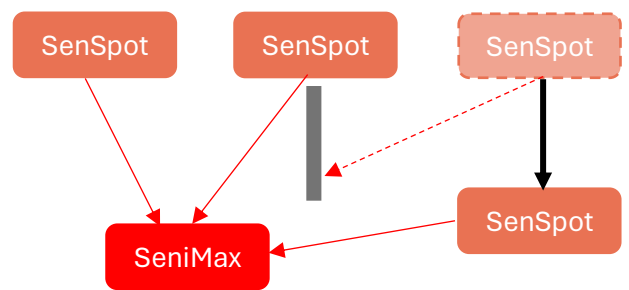
3. Line of Sight

### 1. "SeniMax before SenSpot"

**Always plan to install the SeniMax before any SenSpots.** A single SenSpot has only one constraint for its position: the SeniMax. However, the SeniMax needs to simultaneously maintain communications with one or more SenSpots in its communication range and thus is constrained by every SenSpot location simultaneously. By installing SeniMax before SenSpots, you can optimize the RF for only a single node at a time (e.g. relocating or adding an antenna extension).



Gateway after SenSpots (conflict of constraints)



Gateway before SenSpots



## 2. Signal Strength

**Monitor signal strength, or RSSI, religiously during installation using SenScope.** Distance measures are misleading due to the stochastic nature of RF transmission and reflection. For this reason, the best rule of the thumb is to apply the following rule for each SenSpot after installing the SeniMax:

**RSSI Golden Rule:**  
RSSI Stable and RSSI  $\geq$  -70 dBm

Achieving RSSI readings that are both stable and at least -70 dBm will provide very reliable signal and data transmission with no data loss.

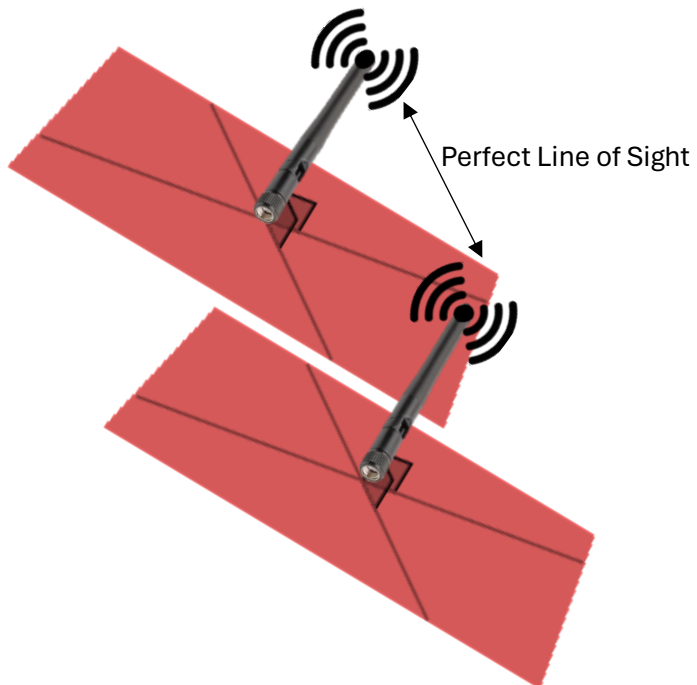
## 3. Line of Sight

**Always check a SenSpot's line of sight to the SeniMax gateway.** "Line of sight" refers to the free-space (i.e. no obstacles) approximation for RF transmission.

All antennas should be mutually parallel, and all lie along the same or parallel plane(s) of transmission to maximize transmit power and optimize RSSI. If the SenSpot node does not allow for a direct line of sight at the intended monitoring location, you can use an RP-SMA coaxial extension cable (see below) to artificially relocate the antenna to an area with improved line of sight.



RP-SMA Coaxial Extension Cable



Parallel Planes of Transmission