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Multi-Layered Isolation

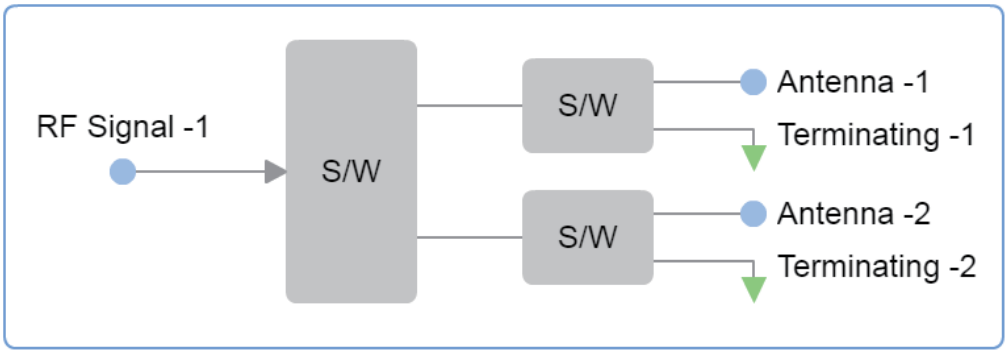
WHY (Reason to Build This Technology)

There are many applications that need to be able to receive the information through different antennas, especially in the RFID field, such as RTLS, Library, Asset Tracking, and Multi-lanes access application ...etc. Sometimes we may encounter this kind of situation that the design of the device can not resist the mutual interference from other antenna. Moreover, each antenna cannot distinguish whether the information is received successfully. Those will cause system failed in data processing. Therefore, the high isolation between each antenna is essential.

HOW (Concept of This Technology)

Antenna to antenna isolation is a measure of how tightly coupled antennas are. Typically, antenna isolation is measured for antennas on the same product - that is, the isolation between different antennas can be enhanced on the air or in PCBs.

For a multi-antenna-port RFID reader, increasing the physical separation between all antennas is not enough to isolate the RF signal because all RF signal is from the same PCB, which easily leaks in a PCB. No matter how far the external antenna is isolated from each other, the signal cannot effectively be isolated. By using multiple multi-layered RF switches and suitable terminating design, the isolation between the near RF ports can be highly enhanced, which is described in the figure below. In this layered switch design, the isolation can be increased through the sum of isolation in these switches.



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WHAT (Case Study Benefits)

unitech's RS816 is a 16-antenna-port RFID fixed reader, which adopts this technology ,and then reaches 60dB isolation degree. It is better and stronger than other general fixed readers which only have 25dB isolation degree. The equivalent distance of antennal isolation is showed in the following table. It shows that the equivalent distance between the near antennas is about 15m. For a general reader, its equivalent distance is about 30cm, which means the reader only has 30cm isolated distance effectivity. It cannot distinguish where the signal is as showed in the figures below. Therefore, we proudly present to you unitech's RS816.
We make it better and fast.

Isolation	Equivalent Distance
60dB	15m
25dB	30cm