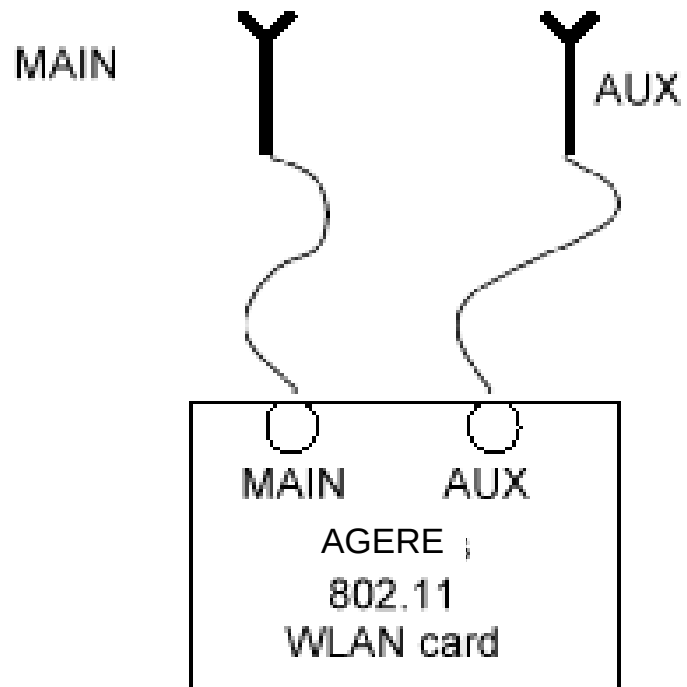

Antenna diversity in mini-PCI



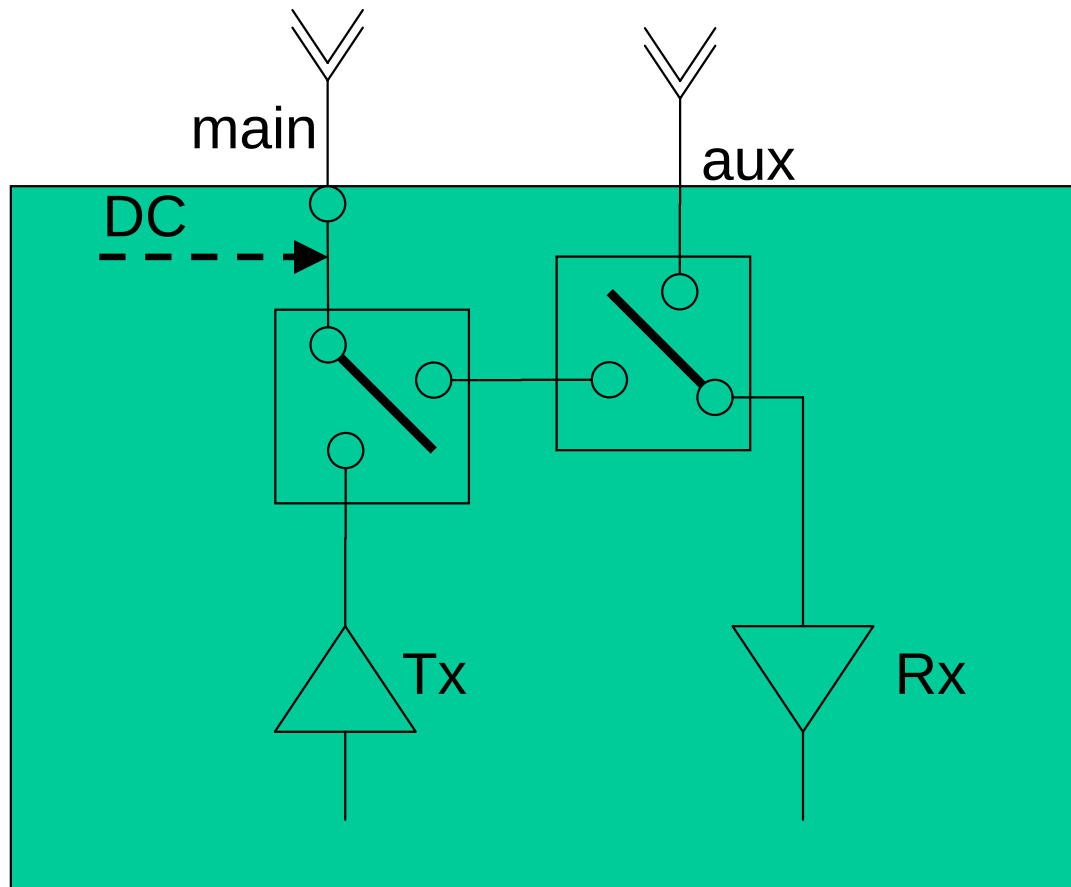
Diversity - What is that ?

- **Similar to human beings: talking with one mouth and listening with two ears**
- **Two antennas are available (internal or external)**
- **One antenna is only active for transmission**
- **Two antennas are available for reception**
- **The receiver chooses during the training sequence which antenna delivers the better signal. It switches to this antenna for the reception of the whole packet.**

Diversity - Why ?

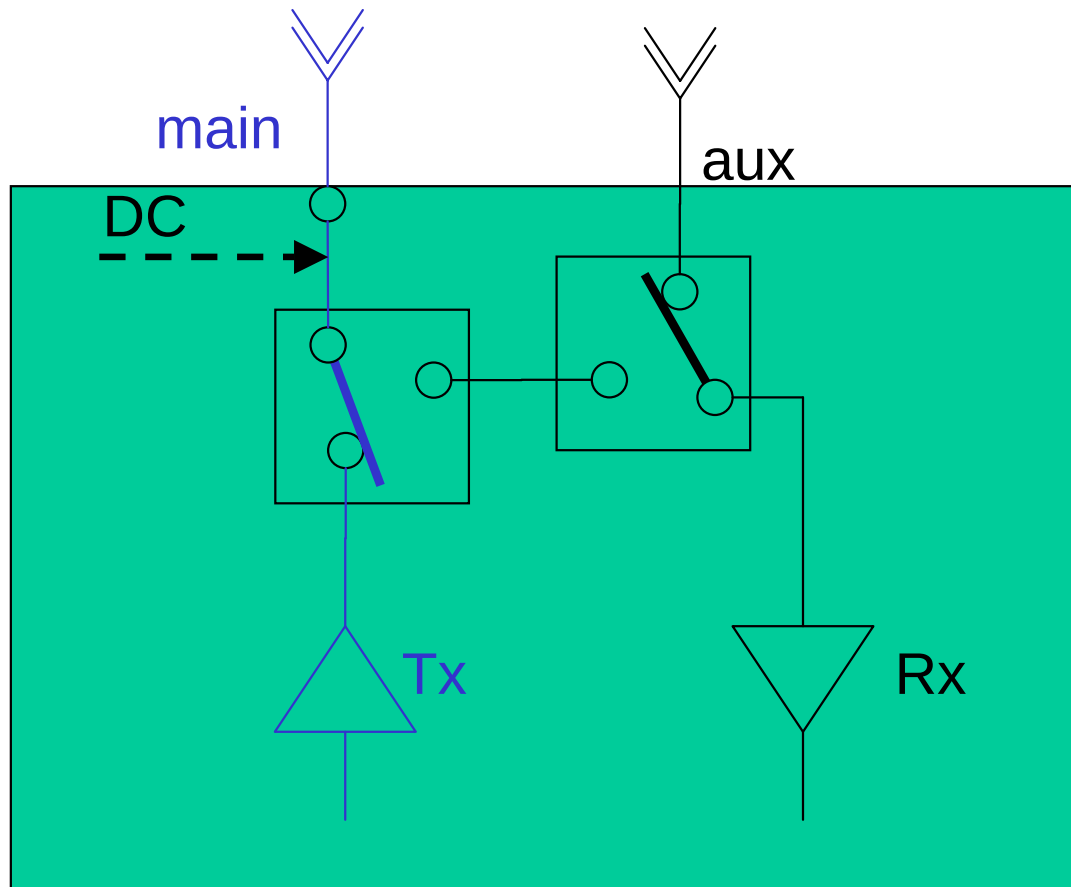
- **Average receiving sensitivity is increased by 3dB**
- **Multipath environments especially results in fading signals. There is a 10% chance to be hit by those effects without diversity, but only a 1% chance to be hit with diversity.**
- **Offers more freedom in designing antennas for notebooks, handhelds etc.**
- **... ..**

Diversity - How ?



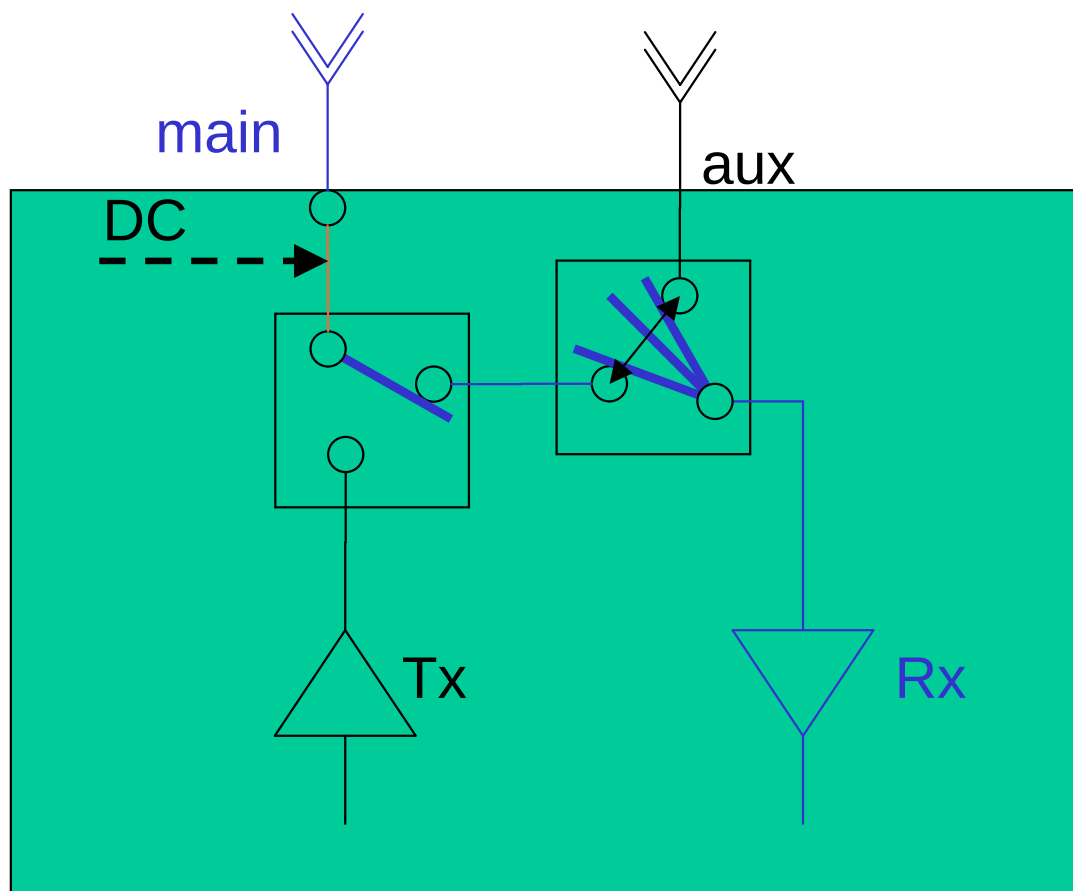
**Card sketch:
antenna part**

Diversity (1)



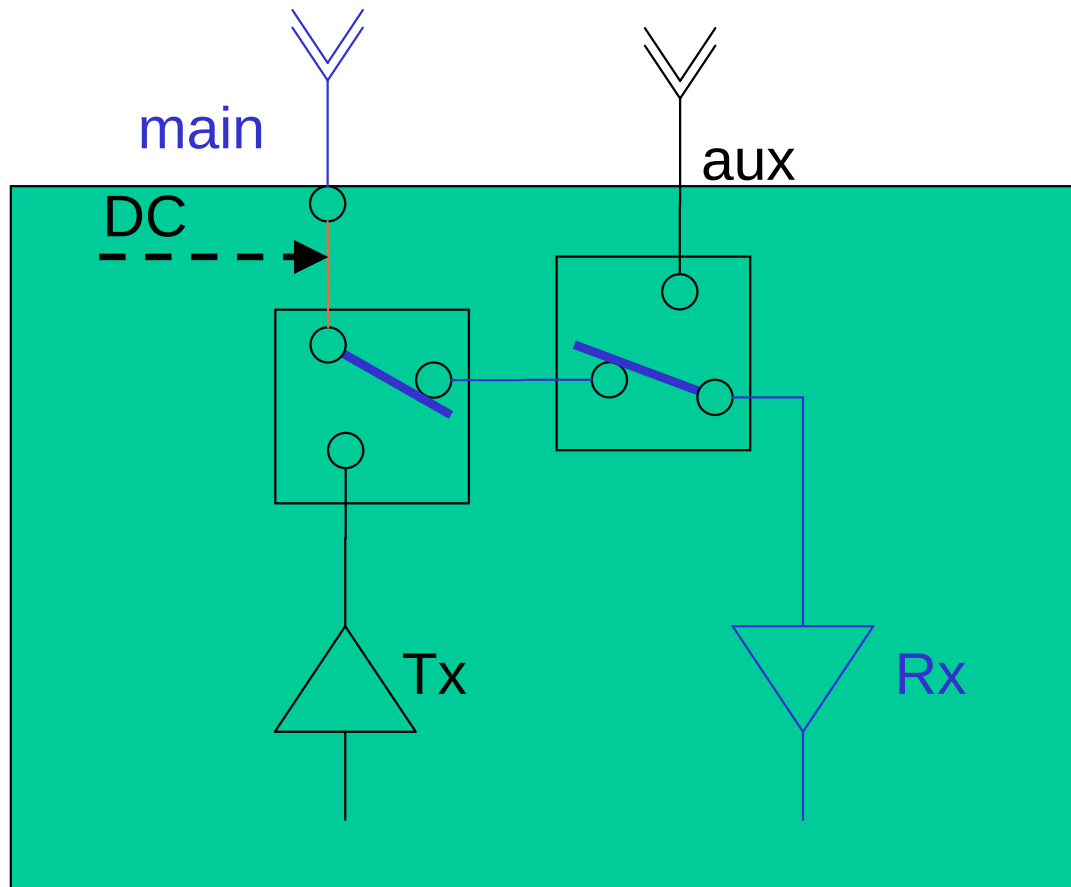
Card transmits

Diversity (2)



**Card receives
the training sequence,
switches antennas,
checks quality**

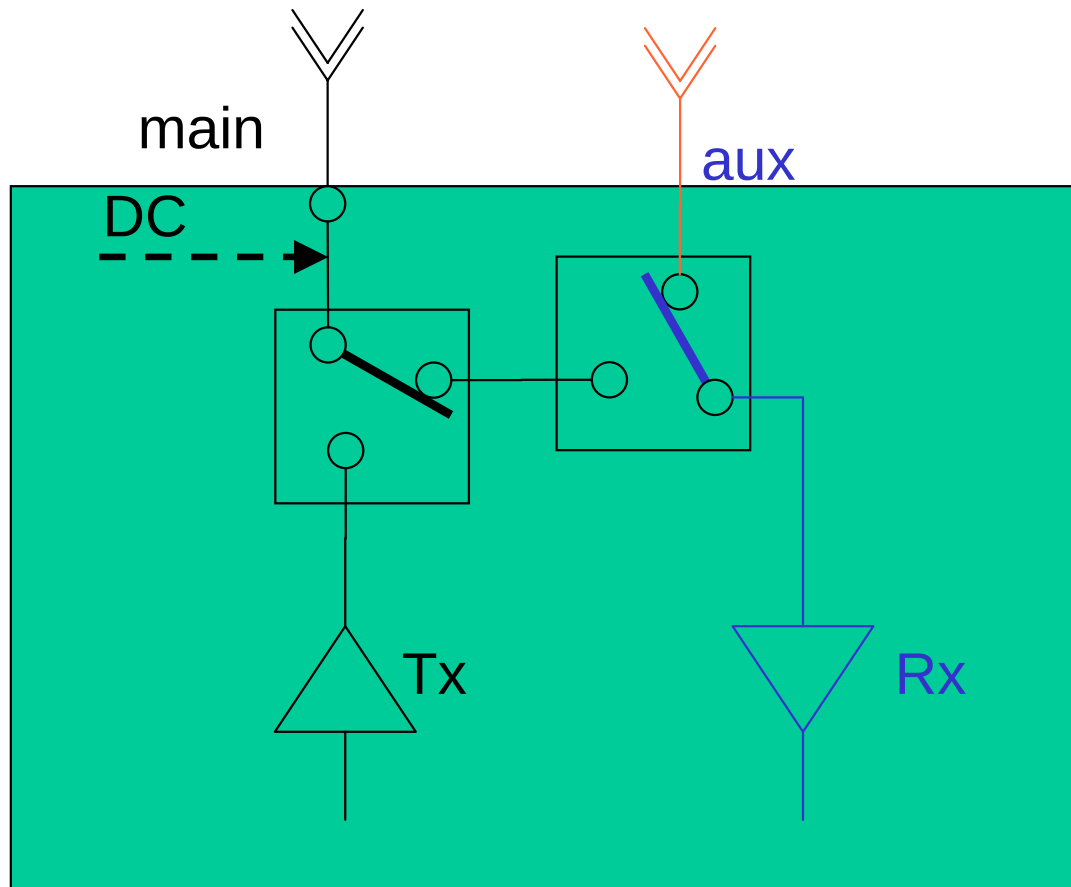
Diversity (3)



Card receives,
main antenna
signal is better

agere systems

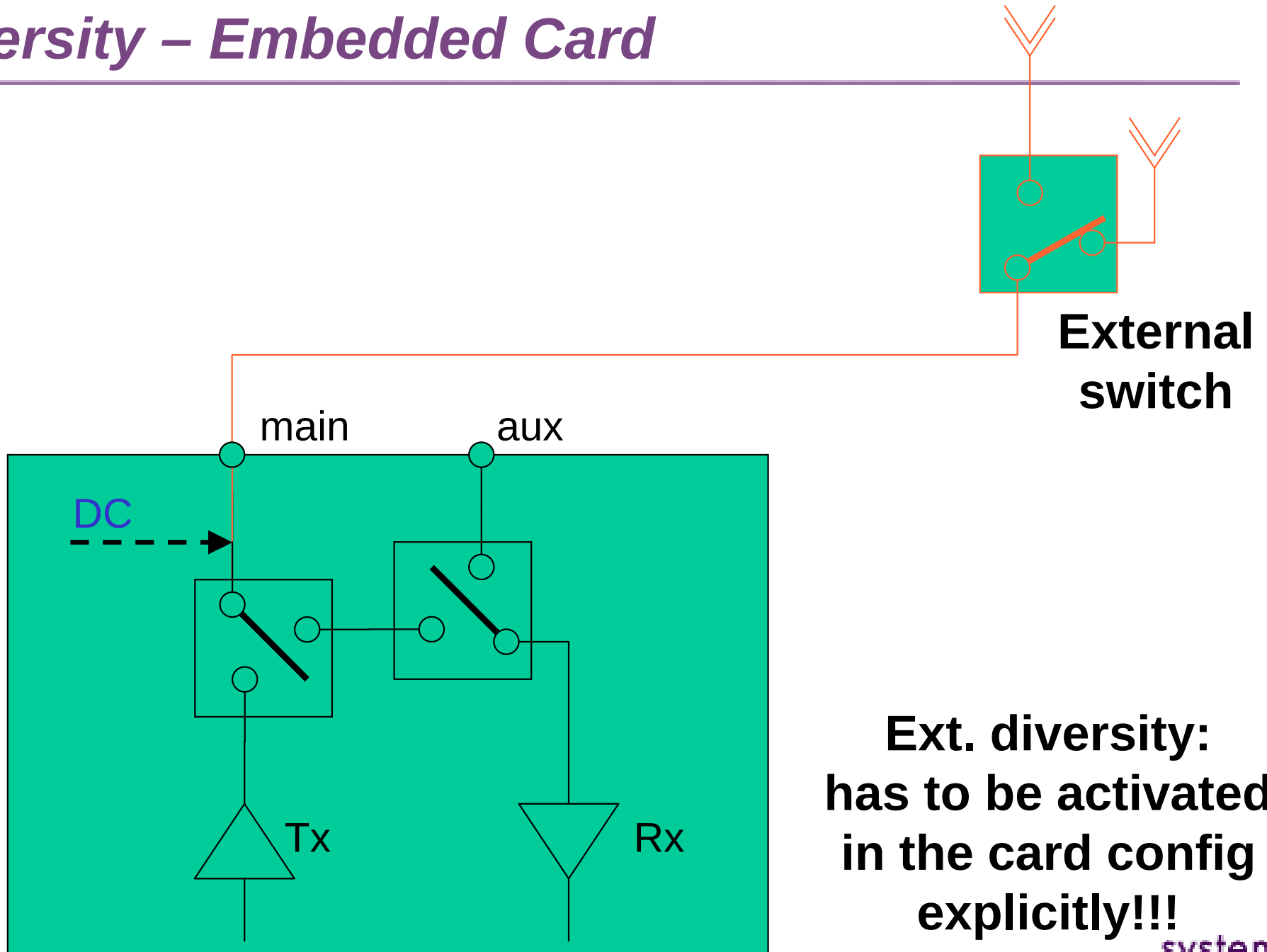
Diversity (4)



Card receives,
aux antenna
signal is better

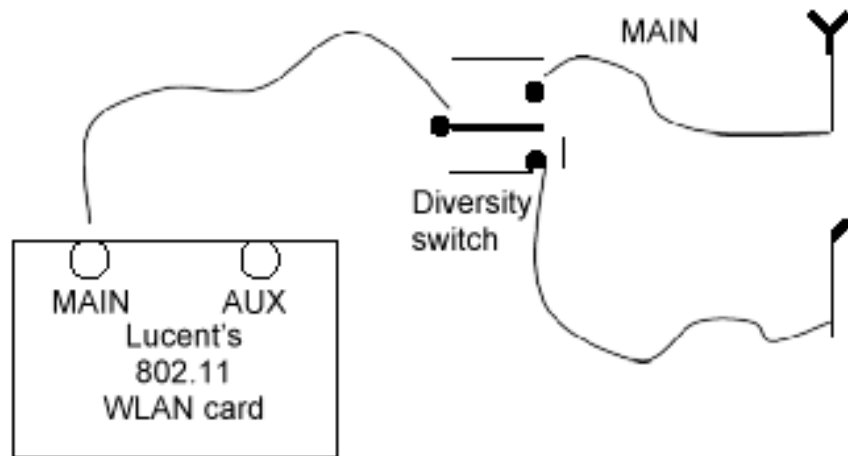
agere^{systems}

Diversity – Embedded Card



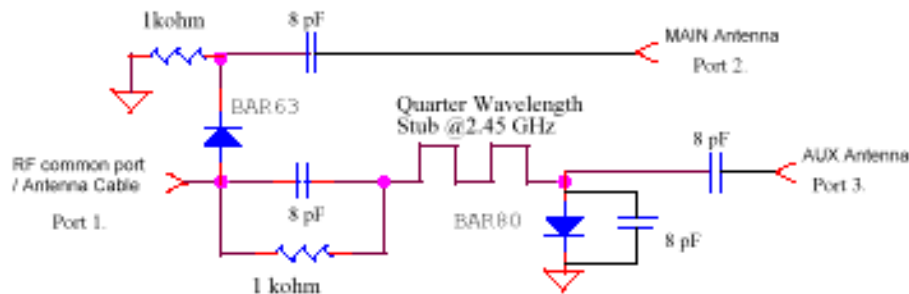
**Ext. diversity:
has to be activated
in the card config
explicitly!!!**

Antenna (External diversity solutions)



External diversity

- use one (MAIN) connector attaching to two antennas
- Antennas are interconnected with externally provided diversity switch.



Diversity switch

Diversity switching is achieved by injecting of +3 V / 0 V DC through the coax cable into the Port 1. (RF common port)