

Beamforming Sectorial Antenna



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Beamforming is the technique that allows to focus the antenna radiation pattern into a directional beam steered towards the subscriber terminal, which the base station sector currently receives from or transmits to. There is a fixed number of beam azimuth positions within the sector. The actual position for each subscriber terminal is being identified automatically during the learning procedure.

There are two operation modes: broadcast and unicast. In the former mode the antenna gain is lower and the radiation pattern is similar to a standard sector antenna and so the signals radiated from the sector can be received by all the subscriber terminals within the sector. This mode is used for the sending the control information to the subscribers such as frame schedule, etc. as well as for connecting new terminals to the sector. The latter mode is used for the actual data exchange between the subscriber terminal and base station sector. In the unicast mode the antenna higher gain is significantly better. Thus, the coverage and the link availability are determined by the broadcast antenna gain, while the sector capacity is defined by the unicast antenna gain. The focused radiation pattern allows to improve the link budget for both uplink and downlink as well as to mitigate the impact of the interference.

R5000-Qmxb, an **InfIMAN 2x2** family member has an integrated beamforming antenna. It only supports TDMA (Time Division Multiple Access) air protocol. Thus, in case of upgrading the existing network using MINT marker access protocol, it needs to be upgraded to TDMA via a software upgrade.



NOTE

MINT to *TDMA* upgrade procedure is described in the [Upgrade from Polling to TDMA](#) section.



NOTE

All beamforming and learning procedures are performed fully automatically. No additional configuration required.