

# **DDCs and DUCs for Wireless Communications**

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Digital signal processing has been moving closer to the antennas in the radio signal path. Digital down converters (DDCs) and digital up-converters (DUCs) allow digital signal processing to take on the role of isolating a channel (in the receive case) or building up the baseband FDM stack. Digital IF processing started with the military/government applications where flexibility and signal processing quality were more important than power and cost.

Commercial applications started with infrastructure applications such as satellite ground stations and more recently with wireless local loop and cellular base stations. Future applications include beamforming and support for wider band signals (such as WCDMA).

With the near term release of ADC's with sufficient SFDR performance wideband cellular base stations with beamforming are becoming practical. The presentation covers the history of DDCs and DUCs, design trades and options, compares several current devices, and presents two new ones about to be released.