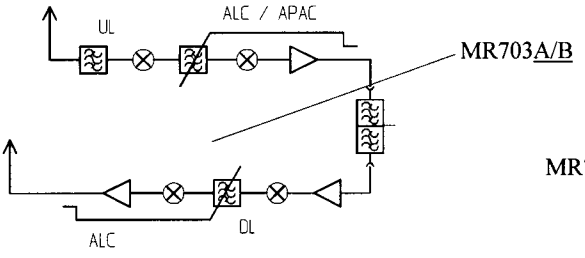
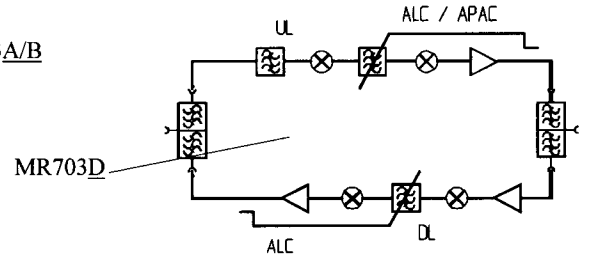
Functional Description

The MR703 is a Repeater operating in the PCS1900 frequency range. The operation principle is given with regard to the following block diagrams.





Downlink signals reach the duplexer. The duplexer is the frequency separation unit that splits and recombines uplink (UL) and downlink (DL).

After the duplexer the signals get to a pre-amplifier and afterwards to a mixer. The mixer converts the signals down to an intermediate frequency (IF). An IF filter provides the selectivity of the Repeater. After the IF filter the signals are reconverted to the original frequency again by means of another mixer. A final amplifier amplifies the signal again and provides the required output power.

After the final amplifier a power detection measures the output power and controls the gain. This is called automatic gain control (ALC) and keeps intermodulations below - 30 dBm. Finally, the signals are fed to the built-in antenna of the Repeater (MR703A/B) or the duplexer and thus to the external antenna (MR703D).

The uplink signals are received by the integrated antenna of the Repeater (MR703A/B) or the external antenna and then to the duplexer (MR703D). After the antenna or duplexer a preselection of the frequency is made. After that the signals are converted down to IF by means of a mixer and an IF filter provides the selectivity against other frequencies. After the reconversion the signals are amplified in an amplifier that provides the output power. The signals are then fed to the antenna via the duplexer.

In this link an ALC and an automatic power adjust circuit (APAC) is provided. APAC limits the output power if two carriers are present at the UL input. This again keeps intermodulations below the desired limit.