# :Description:

1 System Architecture

2.5GHz analog section has total 8 transmitter/receiver chains, each of them consists of a tower top amplifier module (a part of RFS), a RF module (RFM), a channel filter and IF card. RFS connects to channel filter via RF cable. Channel filter, RFM and IFC locate at a tower base in a same cabinet. Figure 1 depicts the physical partition of RFS, channel
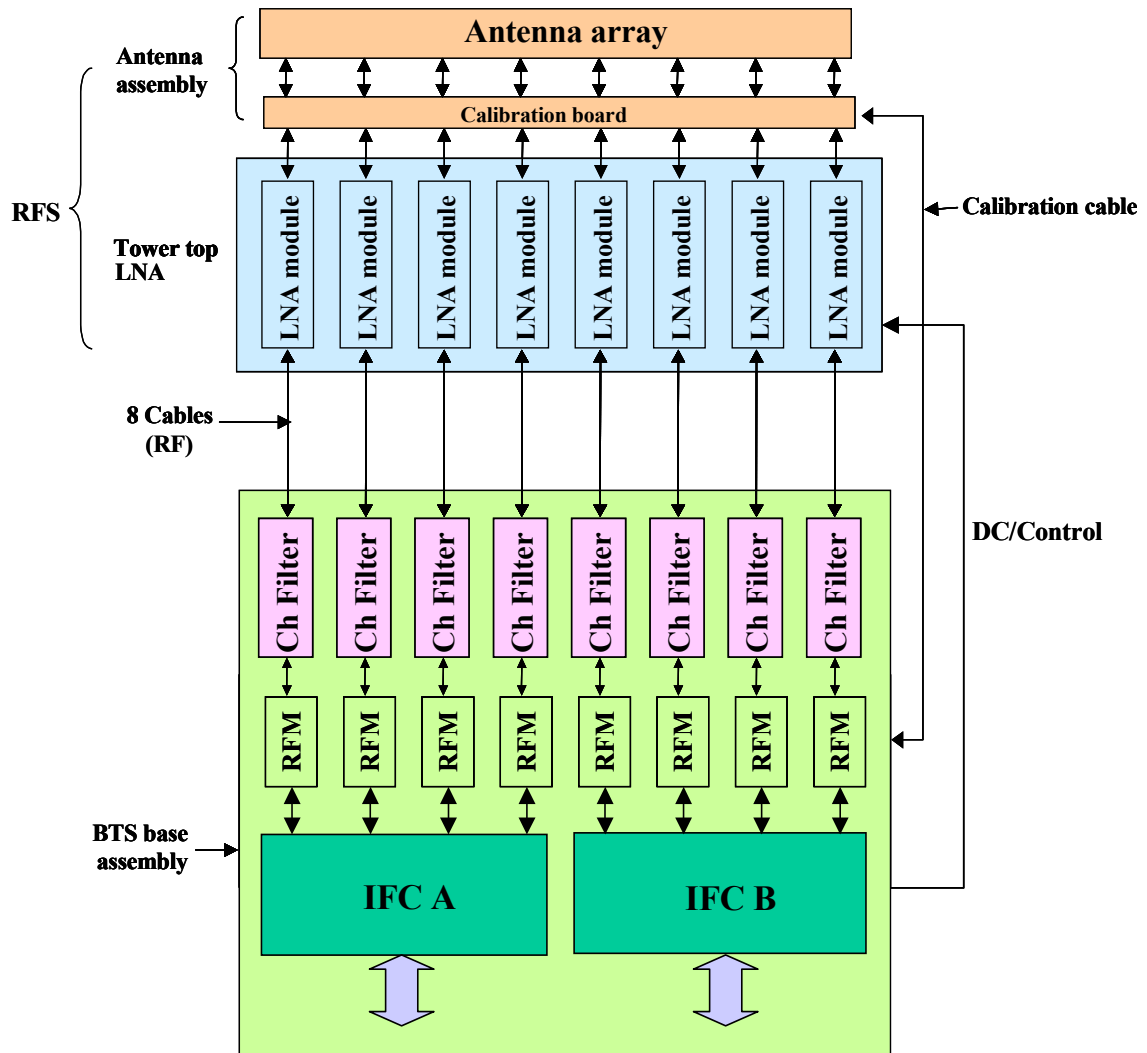
filter, RFM and IFC. Fig.2 illustrates the function blocks of each transmitter/receiver chain (analog section).

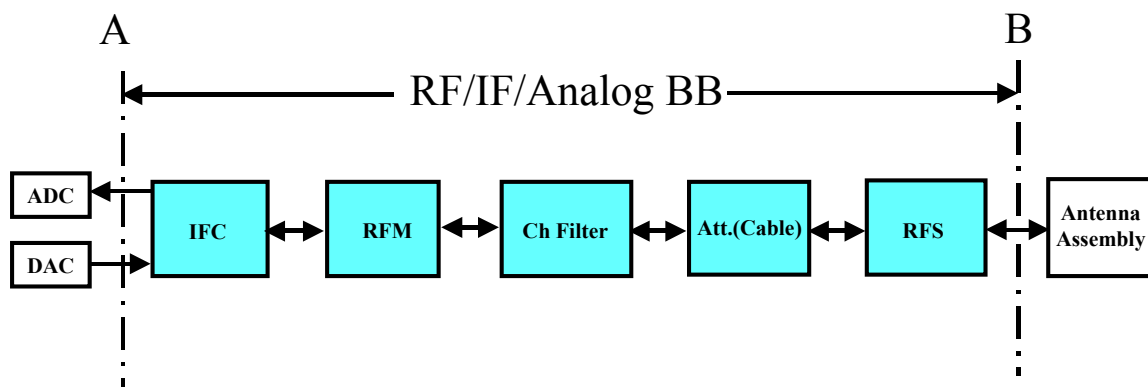**Fig.1 The physical partition of system analog section**

Fig.2 The function blocks of each transmitter/receiver chain. It contains all parts between ADC/DAC and the input of calibration board in antenna assembly.

1.1   Frequency Range

The operation frequency shall be from 2500MHz to 2596MHz.

1.2   Electrical

1.2.1   Function Description

1.2.1.1   Tower Top LNA (RFS)

The tower top LNA consists of LNA module for the receiver path and by-pass connection for the transmitter path. The turn on and off of transmitter and receiver paths are controlled by the TDD timing sent over to tower top from the BTS via the control cable. During the receiver period, the signal received from antenna will be amplified and sent to the RFM module via the RF cable. During the transmitter period, the high power RF signal received from RFM will by-pass the transmitter path and be sent to the antenna port.

1.2.1.2   Channel filter

The functions of channel filter are two folds: One is to shape the transmitter power amplifier out-of-band emission during transmitter period. The other is to provide high rejection for close-in jammers during receiver period.

1.2.1.3   RF module (RFM)

RFM module basically does two major functions: Frequency conversions and high power amplification during transmitter period. It works in TDD mode. During receive period, it amplifies and converts the received RF signal to IF signal. During transmitter period, it converts the IF signal received from IFC and amplifies the RF signal to a high level (39dBm maximum). The TDD timing is controlled by base band module. Also some filtering is carried out at RFM.

1.2.1.4   IF card (IFC)

During the receive period, the IF signal received from RFM will be quadrature demodulated into base band signal and sent to ADC. During the transmitter period, the base band signal from DAC will be quadrature modulated into IF signal. The TDD timing is controlled by BTS base band module. The filtering is mainly carried out at IF stage.