IRNSS User Receiver

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IRNSS User Receiver

Types of User Receiver:

- **Single Frequency**
  - **L-5 Band: BPSK (Civil Use) Or BOC (Restricted)**
  - **S Band : BPSK (Civil Use) Or BOC (Restricted)**
- **Dual Frequency**
  - **BPSK (Civil Use) Or BOC (Restricted)**

Building Blocks of IRNSS User Receiver

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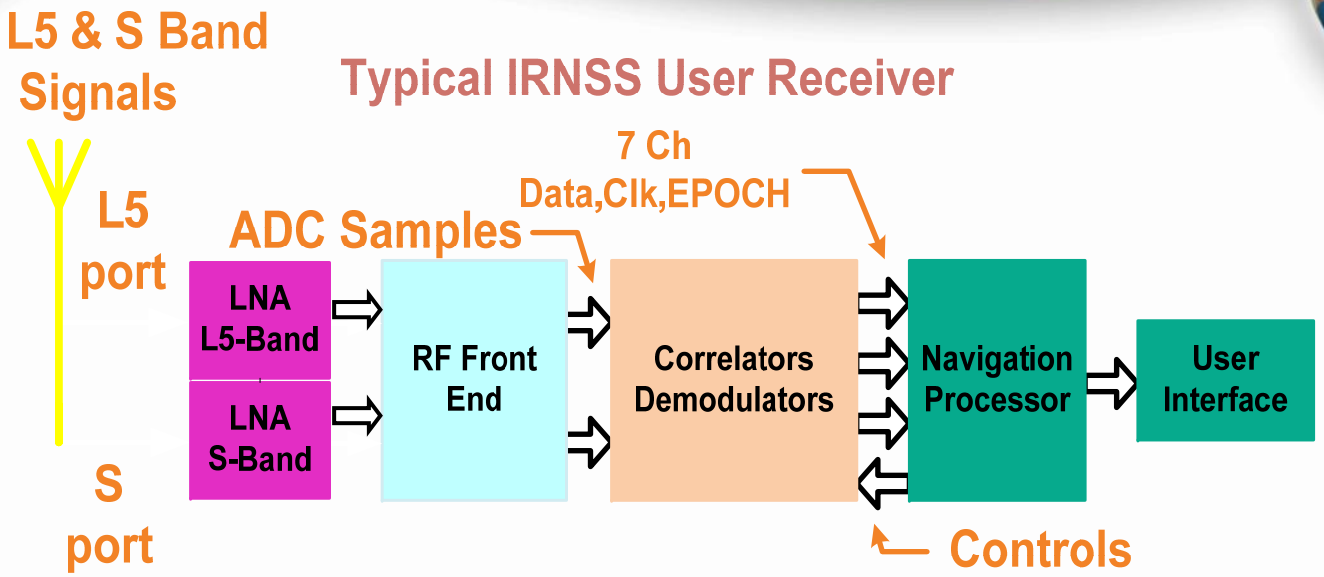


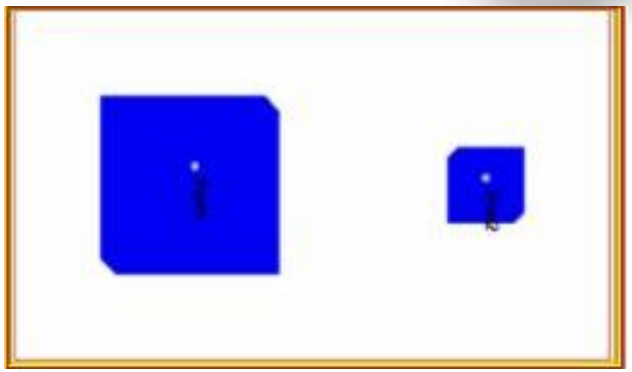
- Antenna
- LNA
- RF Front End Processor
- Correlator & Demodulator
- Navigation Processor & User Interface

IRNSS User Receiver : Antenna

Two Options:

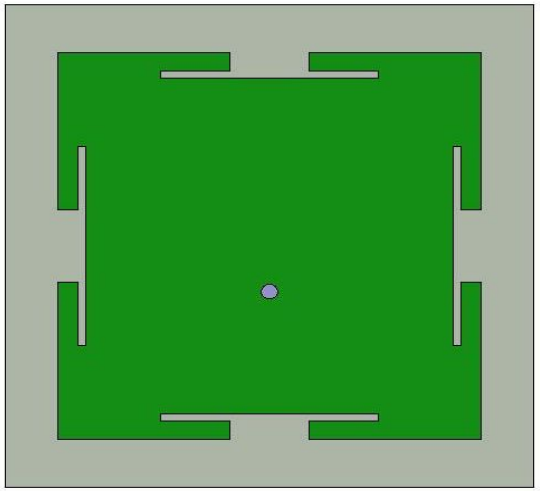
Option 1: Separate Band Patch Antenna

Gain: 2.2 dBi @ bore sight,
-4.5 dBi @ +/- 60 ^{0}



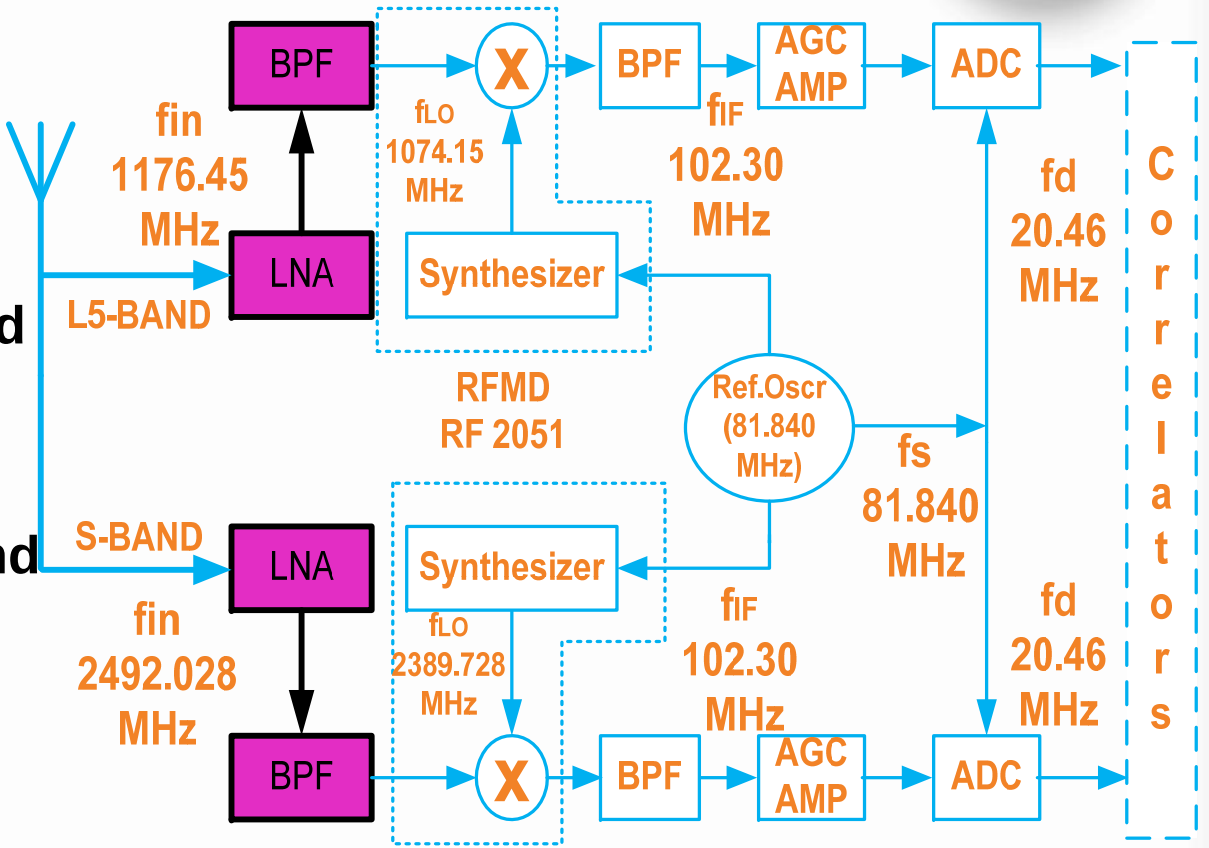
Option 2: Dual Band Antenna

Gain: 2.2 dBi @ bore sight,
-4.5 dBi @ +/- 60 ^{0}



IRNSS User Receiver : LNA

- **Separate LNA's for L5 and S Band**
  - **Gain :**
    - **31 dB @ L5 ,**
    - **30 dB @ S Band**
  - **Noise Figure :**
    - **0.9 db @ L5**
    - **0.9 dB @ S Band**



IRNSS User Receiver : RF Front End Processor

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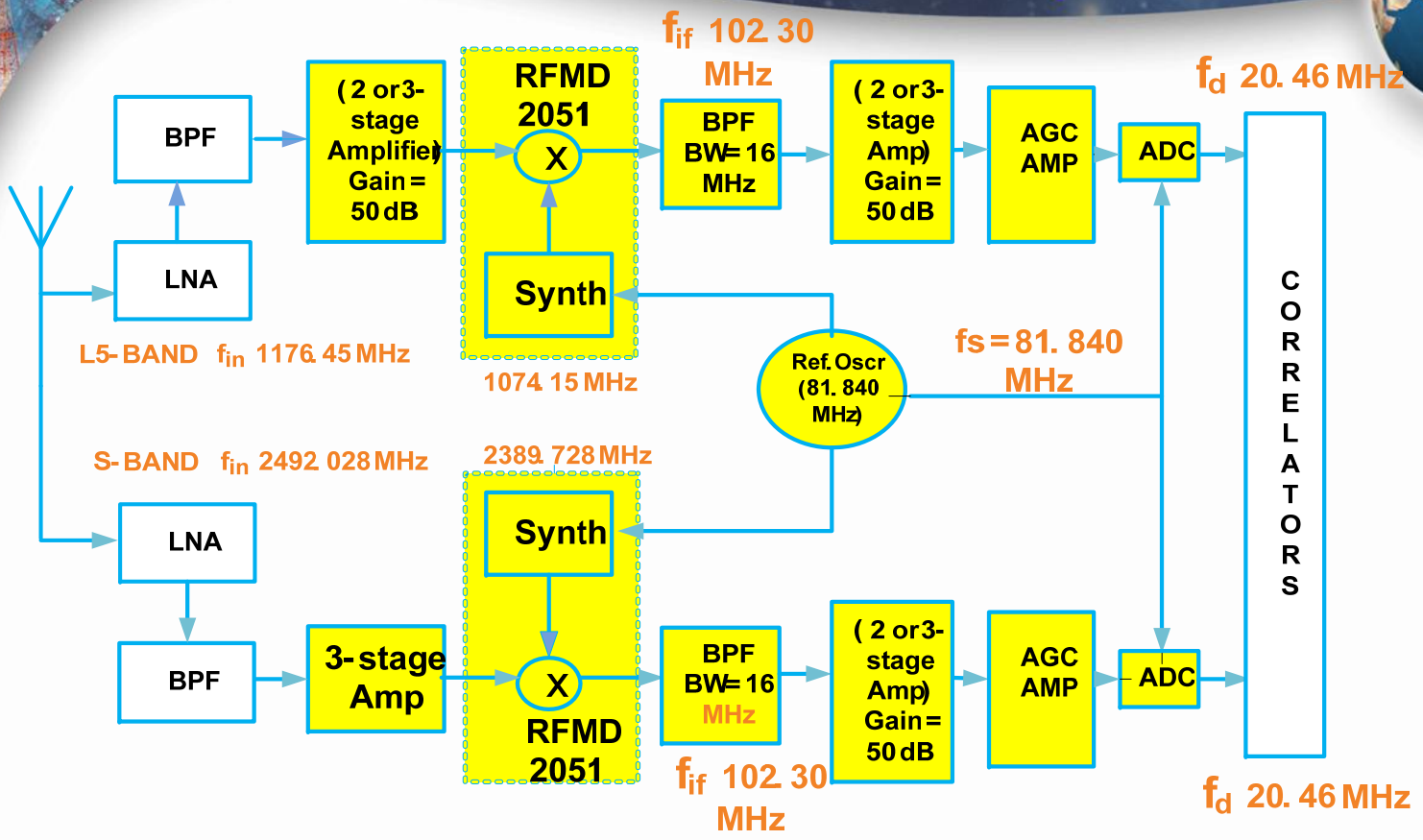

- **Separate chains for L5 band to IF & S to IF**
- **Down Conversion and IF (102.3 MHz) digitization.**

IRNSS User Receiver :Correlators & Demodulators

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Key Features:

- Multi Channel Correlator and demodulator for SPS and RS services.
- 25 bps with Rate 1/2 FEC, Interleaver
- BOC(5,2), BPSK, Pilot and Interplex signals
- Very Early – Very Late Corelator, Double Estimator

IRNSS User Receiver :Navigation Processor

Key Features:

- **Frame Extraction**
- **De-Encryption (for RS service only)**
- **Pseudo range calculation**
- **Iono / Tropo Corrections**
- **Kalman Filtering**
- **User Position Calculation**

Thank you