DVB S2 Modem IP Core in Matlab

MATLAB implementation of DVB-S2 communication system.

IP Core Serial Number

Angelia DVB S2 Modem Matlab No 001 v1.0

IP Types

Soft IP

Standards

DVB S2 System from ETSI EN 302 307-1 V1.4.1 (2014-11)
Digital Video Broadcasting (DVB);
Second generation framing structure, channel coding and modulation systems for Broadcasting, Interactive Services, News Gathering and other broadband satellite applications;
Part 1: DVB-S2

Languages

Matlab

Development Environment

MathWorks

Maturity / Status

Pre-Silicon

Overview

The aim of this IP core is to implement RTL components for DVB-S2 Modulator and Demodulator.

The IP core will match exactly what was described on the DVB-S2 base spec (no extensions yet). This means components will handle

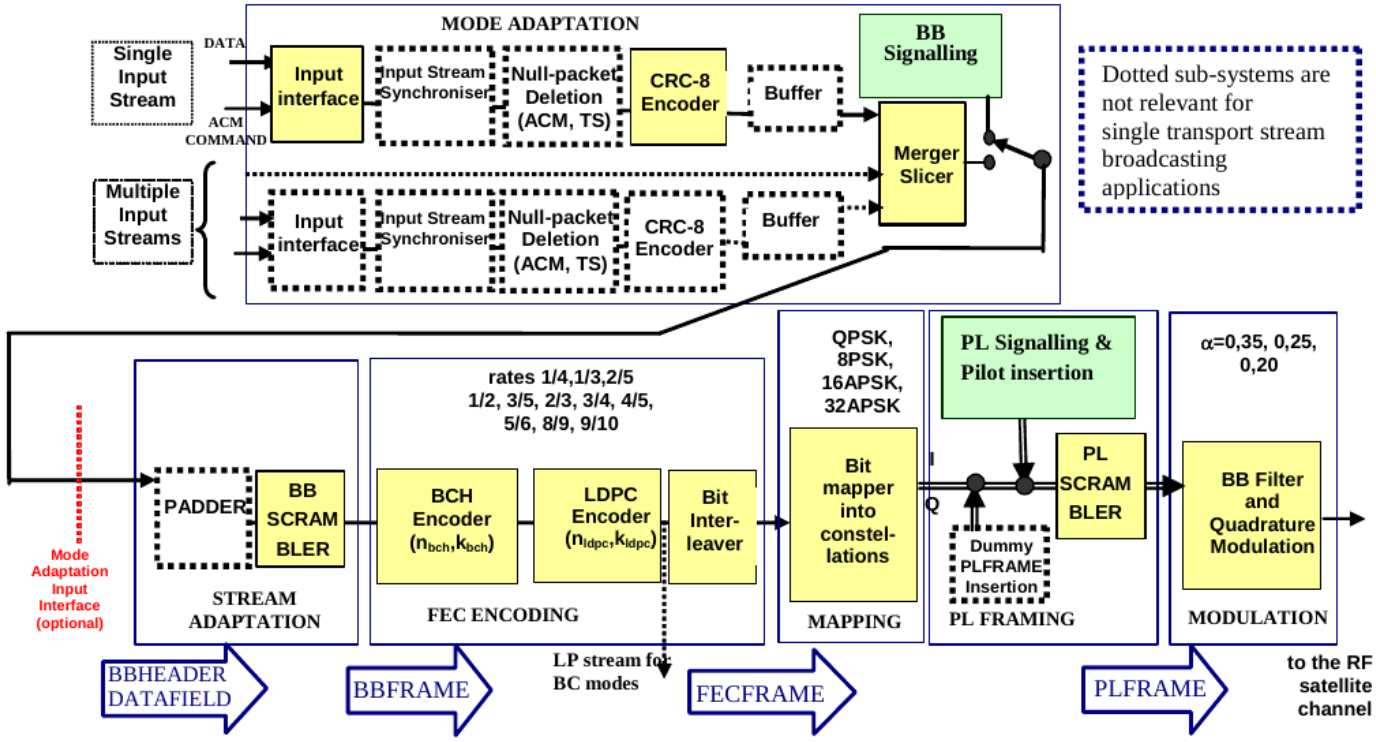
- Frame types: Normal and short
- Constellations: 8 PSK, 16 APSK and 32 APSK
- Code rates: 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10,

Components will also handle parameters changing on every frame, that is, they will handle frame with config A then a frame with config B immediately afterwards without requiring reset or wait cycles

Deliverables

Matlab source code
HDL simulation models
Comprehensive documentation

Block Diagram



Functional block diagram of the DVB-S2 System from ETSI EN 302 307-1 V1.4.1

Source File Description

Key source code files:

gamma_dvbs2.m
Determining the gamma value (constellation radius ratios) for DVB S2

DVBS2Constellation.m
DVBS2Constellation Signal Constellations taken from ETSI EN 302 307

demod_16apskllr.m
Demodulates the stream of symbols according to the 16apsk mapping defined for a certain gamma value.

Integration Guide

See INTEGRATION GUIDE.pdf

Developer

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