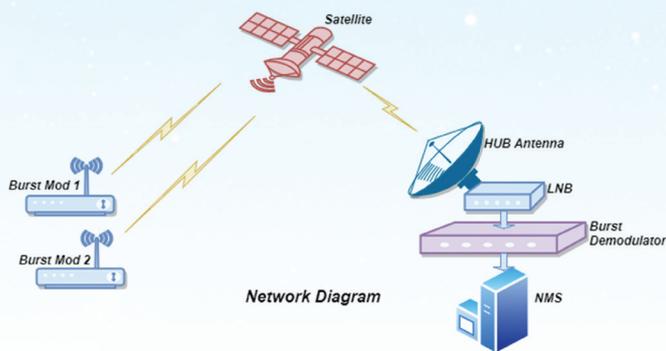


## Burst Demodulator IP Core

Space Applications Centre (ISRO) has developed a burst demodulator which performs the demodulation of PSK modulated signal being transmitted in burst mode. The demodulator expects the quantized, complex baseband samples from analog to digital convertor and recovers timing, frequency and phase of the complex baseband symbols. In addition, core handles the Viterbi decoding, Data De-scrambling & HDLC decoding for data. The core can forward the data on UART/Ethernet interface.



Typical Diagram of SATCOM link with Burst Demodulator

### Applications

- As Signalling demodulator in SATCOM Network at HUB station.
- In receive station enabling burst mode of communication for services like Position reporting, Asset tracking etc.

### Features

Modulation	BPSK/QPSK
Data Rate	1.2 Kbps/2.4 Kbps
Payload Length	Configurable (10-100 bytes)
Forward Error Correction (FEC)	Convolutional Rate Half $\frac{1}{2}$ , K=7
Scrambler	$1+x+x^{15}$
Data Integrity Check	HDLC (CRC-16)

Acquisition Range	Less than $\pm 4 \times$ Symbol Rate
Eb/N0	7 dB & above
Packet Error Rate (PER)	1% or less at 7 dB
Dynamic Range	10 dB
Input Format	12 bit I/Q Samples
Data Output	UART / Ethernet

### Deliverables

- Bit file/Encrypted Netlist of the HDL IP is provided.
- One time (limited) HDL IP porting support is provided

### Present Platform Details

FPGA	Zynq7035 (SDR)
RF Transceiver	AD9364/AD9361
Receive Frequency	L-Band
Output Interface	UART/Ethernet