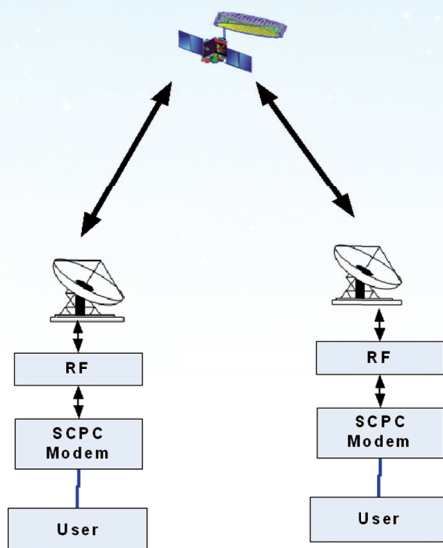


## SCPC Modem IP Core

SAC has designed and developed a SCPC modem IP core performs modulation & demodulation for enabling two communications through satellite network. Modem takes binary data from user, performs scrambling, FEC encoding & pulse shaping operations and provides modulated complex baseband samples for DAC. Similarly, it demodulates the modulated signal & performs FEC decoding & descrambling operations and provides binary data at output. SCPC modem has serial synchronous data interface with HDLC encapsulation option for packet type data.



Typical Diagram of SATCOM link with SCPC Modem

### Applications

- In SATCOM Hub stations & terminals for enabling two-way point to point communication in continuous mode
- Two-way Audio/video & data communication over satellite network

### Features

Modulation	BPSK/QPSK
Data Rate	32Kbps-2Mbps
Data Interfaces	Serial Synchronous

Forward Error Correction(FEC)	Conv. (K=7, R= 1/2, 3/4) +Reed Solomon (short)-optional
Scrambler	V.35 (IESS-308)
Phase Ambiguity	Differential Encoding/ Decoding
Acquisition Range	< ±Symbol Rate/8
Encapsulation	HDLC / Custom (details to be provided)
Required Eb/No for BER of 1x10 <sup>-6</sup>	6.0 dB (including implementation margin)
Dynamic Range	30 dB
ADC/DAC interface	12 bit I/Q Samples

### Deliverables

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

### Present Platform Details

FPGA	Xilinx Artix-7
RF Transceiver	AD9364/AD9361
Tx/Rx Frequency	L-Band
Data Interface	Serial/Ethernet