NovelSat NS1000 Satellite Modulator
A New Standard for Satellite Broadcast

The innovative NovelSat NS1000 is a state-of-the-art modulator designed for high demand satellite transmission. The NS1000 is the only system with NovelSat NS4™ satellite transmission technology, delivering more than 40% higher spectral efficiency compared with DVB-S2.

The NovelSat NS4 system has several marked advantages that set it apart from the field:

**Lower Satellite Bandwidth:** Satellite bandwidth savings of up to 45% (over available DVB-S2 equipment in the market)

**Higher Data Rate:** Increases transmitted data rate by over 100% (compared with DVB-S2 equipment)

**Smaller Dish:** Achieves the same data rate using a smaller dish.

The NS1000 supports high data rates of up to 425Mbps using 80Msps, which enables transmission of one carrier over an entire 84MHz transponder.

The NS1000 dual-channel option enables any two inputs to be combined simultaneously over one carrier, each with a different modulation scheme using Variable Coding Modulation (VCM), one for each channel. This enables transmission quality that is dependent upon the interface content and the different receivers' locations.

Dual-channel operation also enables the combination of Ethernet streaming and the ASI interface, easing migration to IP streaming while controlling the QoS of each stream.

**Key Features:**
- NovelSat NS4 technology - More than 40% efficiency gain over DVB-S2
- DVB-S, DSNG, DVB-S2 and DVB-S2X standard compliant
- Data rates of up to 425Mbps
- TSoIP support
- Dual-channel mode
- L-Band output mode 950MHz-2150MHz (Extended L-Band)
- IF output mode 50MHz-180MHz (either L-Band or IF)
- Monitor output port
- 10MHz reference (In/Out)
- Dual ASI input interface
- Dual Ethernet 1Gb input interface
- CCM, VCM & ACM support
- CID (Carrier ID) compatible
- Non-Linear pre-distortion Technology (NLPD)
NovelSat NS1000 Satellite Modulator – Specifications

**Output Interfaces**

**L-Band Output**
- **Connector**: SMA (F) 50 Ohm
- **Frequency range**: 950-2150 MHz in 1 Hz steps
- **Power level**: -30 dBm in 0.1 dB steps
- **Power accuracy/ temp. stability**: ±0.5 dB/°C
- **Return loss**: >12 dB
- **Spurious**: <-55 dBc in band and out of band at max. power
- **Phase noise**: @100 kHz: -70 dBc, @1 kHz: -85 dBc, @10 kHz: -95 dBc, @1 MHz: -100 dBc

**IF-Band Output**
- **Connector**: BNC (F) 50 Ohm
- **Frequency range**: 70 MHz to 2048 MHz in 1 Hz steps
- **Power level**: -30 dBm in 0.1 dB steps
- **Power accuracy/ temp. stability**: ±0.5 dB/°C
- **Return loss**: >20 dB
- **Spurious**: >-65 dBc/40 MHz @ -10 dBm
- **Phase noise**: Meets ESS-308

**Monitoring Output**
- **Connector**: SMA (F) 50 Ohm
- **Frequency**: Identical to L-Band/IF-Band frequencies
- **Power level**: -40 dBm
- **Return loss**: >7 dB

**10 MHz Reference Clock I/O (Optional)**
- **Connector**: BNC (F) 50 Ohm
- **Freq. input power level**: -3 dBm to +7 dBm
- **Ref. output power level**: +7 dBm
- **Waveform**: Sine wave

**Baseband**

**DVB-S/DSNG**
- **Inner code**: Convolution
- **QPSK**: 2/3, 5/6, 8/9
- **16QAM**: 3/4, 7/8
- **Outer code**: BCH
- **Rate**: 1/2, 2/3, 3/4, 5/6, 7/8
- **Code rates and modulation**: 1/4, 3/4, 1/2, 2/3, 3/4, 5/6, 7/8, 9/10
- **ASI Input**: Loopback on each ASI input
- **Physical**: 19” W x 18” D x 1.75”
- **Environmental**:
  - **Size**: 48.3 x 45.7 x 4.45 cm
  - **Weight**: 3.5 Kg (7.7 pounds)

**DVB-S2/S2X**
- **Inner code**: LDPC
- **QPSK**: 1/2, 2/3, 5/6, 7/8
- **8PSK**: 3/4, 2/3, 3/5, 1/3
- **16APSK**: 1/2, 2/3, 3/4, 5/6
- **32APSK**: 3/4, 5/6, 7/8, 9/10, 1/3
- **64APSK**: 1/2, 2/3, 3/4, 5/6, 7/8, 9/10, 1/3
- **Waveform**: Ref. output power level
- **Physical**: 19” W x 18” D x 1.75”
- **Environmental**:
  - **Size**: 48.3 x 45.7 x 4.45 cm
  - **Weight**: 3.5 Kg (7.7 pounds)

**NovelSat NS3/NS4**
- **Inner code**: LDPC
- **QPSK**: 1/2, 2/3, 3/4, 5/6, 7/8
- **8PSK**: 3/4, 2/3, 3/5, 1/3
- **16APSK**: 1/2, 2/3, 3/4, 5/6
- **32APSK**: 3/4, 5/6, 7/8, 9/10, 1/3
- **64APSK**: 1/2, 2/3, 3/4, 5/6, 7/8, 9/10, 1/3
- **Waveform**: Ref. output power level
- **Physical**: 19” W x 18” D x 1.75”
- **Environmental**:
  - **Size**: 48.3 x 45.7 x 4.45 cm
  - **Weight**: 3.5 Kg (7.7 pounds)

**Input Interfaces**

**ASI Input**
- **2 ASI interfaces that can function in parallel**: BNC female with 75 Ohm coax
- **Return loss**: 18-20 dB
- **Sensitivity**: 210 mVpp
- **Max. input**: 900 mVpp

**ASI Output (Loopback)**
- **Loopback on each ASI input**: BNC female with 75 Ohm coax
- **Power level**: 800 mVpp ±10%

**10 MHz Clock – High Stability (Optional)**
- **Stability**: ±1.5 ppm over 0 deg C to 50 deg C
- **Aging**: ±1.0 ppm/year

**10 MHz Clock**
- **Stability**: ±10 ppb over 0 deg C to 70 deg C
- **Aging**: <± 0.5 ppb/day, <± 75 ppb/year

**Additional Information**

**Monitor and Control Interfaces**
- **Command line interface**
- **SNMP V3**
- **Type**: Dual Ethernet 10/100/1G

**Optional Interfaces**
- **Weight**: 3.5 Kg (7.7 pounds)
- **Size**: 19” W x 18” D x 1.75”
- **Physical**: 48.3 x 45.7 x 4.45 cm

**Physical**
- **Environmental**:
  - **Prime power**: 100-240 VAC, 50-60 Hz, 30 Watts Max.
  - **Operating temp.**: 0 to 50°C
  - **Operating humidity**: Up to 85% Non-Condensing
  - **Storage temp.**: -40°C to 70°C
  - **Storage humidity**: Up to 95% Non-Condensing

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*Specifications are subject to change without prior notice.*