NOVELSAT

XEMULATOR SATELLITE TRANSPONDER EMULATORS

For Seamless Mobile SATCOM Validation

PRODUCT SHEET

UNMATCHED FLEXIBILITY FOR SATCOM TESTING

The Xemulator family of satellite transponder emulators delivers practical, real-world satellite link emulation for developers, integrators, and test labs—enabling thorough testing of Satcom-On-The-Move (SOTM) terminals, airborne systems, and ground-based platforms. Available in both indoor and outdoor configurations, and supporting Ku- and Ka-band operation, it simulates live satellite transponder performance—without the need to coordinate costly satellite capacity. With independent operation, hub integration, and internal signal generation, the Xemulator replicates authentic link behavior across a range of use cases and deployment environments.

VERSATILE APPLICATIONS IN THE FIELD AND LAB

Designed for the challenges of modern SATCOM development, Xemulator's adaptable platform supports static and dynamic scenarios, including direct installation on drones for LEO satellite simulation or field-testing in hangars and rugged terrain. Engineers can replicate satellite links with precise frequency control, real-world RF characteristics, and flexible gain and attenuation settings—perfect for verifying end-to-end system behavior and stress-testing under realistic conditions. From research labs to production line testing, the Xemulator accelerates workflows and validates performance before real-world deployment.

ROBUST PERFORMANCE, RUGGED DESIGN

Xemulator's compact footprint and robust build ensure reliable operation in any environment. Outdoor models are engineered to withstand harsh weather and industrial conditions, while indoor variants streamline lab integration. Featuring full L-band coverage (950–2150 MHz), Ku-band and Ka-band RF interfaces, and advanced gain control, the Xemulator supports precise link modeling—while minimizing cost and complexity. Integrated Ethernet and protected connectors provide secure data and power interfaces, supporting seamless integration into your SATCOM test environment.

HIGHLIGHTS

- Ku- and Ka-band versions
- Indoor and outdoor models
- Standalone operation or hub integration
- Realistic satellite transponder emulation for SOTM terminals, airborne platforms, and field-deployed sensors
- Drone-mountable for dynamic, on-the-move LEO simulation
- Supports RF performance testing without live satellite coordination
- Full L-band interface with programmable gain and attenuation
- Compact, rugged design for lab and field environments
- ±30° coverage angle for field deployment
- Simple setup, flexible operation, and low power consumption

XEMULATOR SATELLITE TRANSPONDER EMULATOR – SPECIFICATIONS

Ka-BAND OUTDOOR VERSION

UP CONVERTER

Selectable LO:
16.75 GHz for 17.7-18.9 GHz
17.35 GHz for 18.3-19.5 GHz
20.55 GHz spectrum inversion for 19-20.2 GHz
22.15 GHz spectrum inversion for 20-21.2 GHz

Frequency Resolution: 1 MHz

Input:
Interface: SMA
Freq. Range: 950 – 2150 MHz
Power at Max. Gain: 5 dBm
Input P1dB: -8 dBm
Max. Input Power: -5dBm

Output:
Interface: Feed Horn
Freq. Range: 17.7 – 20.2 GHz
Polarization: LHCP / RHCP electrically switchable
Max. Gain: >12 dB
RF VVA Range: >20 dB
IF DCA: 31 dB, 1 dB step

DOWN CONVERTER

Selectable LO:
26.55 GHz for 27.5-28.7 GHz
27.15 GHz for 28.1-29.3 GHz
27.85 GHz for 28.8-30 GHz
28.6 GHz for 29.55-30.75 GHz

Frequency resolution: 1 MHz

Input:
Interface: Feed Horn
Freq. Range: 27.5 – 30.75 GHz
Polarization: LHCP / RHCP electrically switchable
Noise Figure: 10 dB
Max. Gain: 10 dB
Input P1dB: >-15 dBm
VVA Range: >15 dB
Max. Input Power: -10 dBm

Output:
Connector: SMA
Freq. Range: 950 – 2150 MHz

CONNECTIVITY & POWER

Ethernet Ports: 10/100/1000

DC Power: 36 VDC, 0.5 A

PHYSICAL

Dimensions (L x W x H):
202 x 88.2 x 170.8 mm

Weight: 2 Kg

Ku-BAND OUTDOOR VERSION

UP CONVERTER

LO Frequency Range:
9.75 – 10.6 GHz (including Doubler)

Frequency Resolution: 1 MHz

Input:
Interface: SMA
Freq. Range: 950 – 2150 MHz
Power at Max. Gain: -5 dBm
Input P1dB: -9 dBm
Max. Input Power: -5dBm

Output:
Interface: Feed Horn
Freq. Range: 10.7 – 12.75 GHz
Polarization: Dual linear electrically switchable
Max. Gain: 15 dB
RF VVA Range: >16 dB

DOWN CONVERTER

LO Frequency: 12.8 GHz

LO Frequency Resolution: 1 MHz

Input:
Interface: Feed Horn
Freq. Range: 13.75 – 14.5 GHz
Polarization: Linear
Noise Figure:
8 dB at maximum gain
40 dB at minimum gain
Max. Gain: 10 dB
Input P1dB: <-9 dBm
VVA Range: >22 dB
Max. Input Power: -10 dBm

Output:
Connector: SMA
Freq. Range: 950 – 2150 MHz

CONNECTIVITY & POWER

Ethernet Ports: 10/100/1000

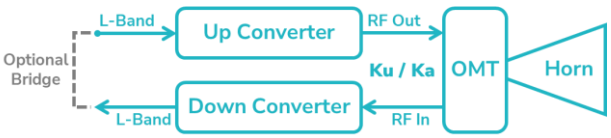
DC Power: 36 VDC, 0.5 A

PHYSICAL

Dimensions (L x W x H):
177 x 74.9 x 160.6 mm

Weight: 1.4 Kg

Outdoor Unit Block Diagram (Ku or Ka)



XEMULATOR SATELLITE TRANSPONDER EMULATOR – SPECIFICATIONS

Ka-BAND INDOOR VERSION

UP CONVERTER

LO Frequency Range:
9 – 22 GHz (including Doubler)

Frequency Resolution: 1 MHz

Input:
Interface: SMA
Freq. Range: 950 – 2150 MHz
Power at Max. Gain: 5 dBm
Input P1dB: -8 dBm
Max. Input Power: -5dBm

Output:
Interface: SMA
Freq. Range: 10 – 23 GHz
Max. Gain: >12 dB
RF VVA Range: >20 dB
IF DCA: 31 dB, 1 dB step

DOWN CONVERTER

Selectable LO:
26.55 GHz for 27.5-28.7 GHz
27.15 GHz for 28.1-29.3 GHz
27.85 GHz for 28.8-30 GHz
28.6 GHz for 29.55-30.75 GHz

Frequency resolution: 1 MHz

Input:
Interface: 2.92mm (K)
Freq. Range: 27.5 – 30.75 GHz
Noise Figure: 10 dB
Max. Gain: 10 dB
Input P1dB: >-15 dBm
VVA Range: >15 dB
Max. Input Power: -10 dBm

Output:
Connector: SMA
Freq. Range: 950 – 2150 MHz

CONNECTIVITY & POWER

Ethernet Ports: 10/100/1000

DC Power: 36 VDC, 0.5 A

PHYSICAL

Dimensions (L x W x H):
200 x 100 x 41 mm

Weight: 0.8 Kg

Ku-BAND INDOOR VERSION

UP CONVERTER

LO Frequency Range:
9 – 22 GHz (including Doubler)

Frequency Resolution: 1 MHz

Input:
Interface: SMA
Freq. Range: 950 – 2150 MHz
Power at Max. Gain: -5 dBm
Input P1dB: -9 dBm
Max. Input Power: -5dBm

Output:
Interface: SMA
Freq. Range: 10 – 23 GHz
Max. Gain: 15 dB
RF VVA Range: >16 dB

DOWN CONVERTER

LO Frequency Range: 9 – 15 GHz

LO Frequency Resolution: 1 MHz

Input:
Interface: SMA
Freq. Range: 10 – 16 GHz
Noise Figure:
8 dB at maximum gain
40 dB at minimum gain
Max. Gain: 10 dB
Input P1dB: <-9 dBm
VVA Range: >22 dB
Max. Input Power: -10 dBm

Output:
Connector: SMA
Freq. Range: 950 – 2150 MHz

CONNECTIVITY & POWER

Ethernet Ports: 10/100/1000

DC Power: 36 VDC, 0.5 A

PHYSICAL

Dimensions (L x W x H):
184 x 88 x 41 mm

Weight: 0.8 Kg

Indoor Unit Block Diagram (Ku or Ka)