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# Defender

## Prevent unauthorized access to satellite bandwidth

**Defender is configurable and flexible to fill up unused spectrum in any frequency plan**

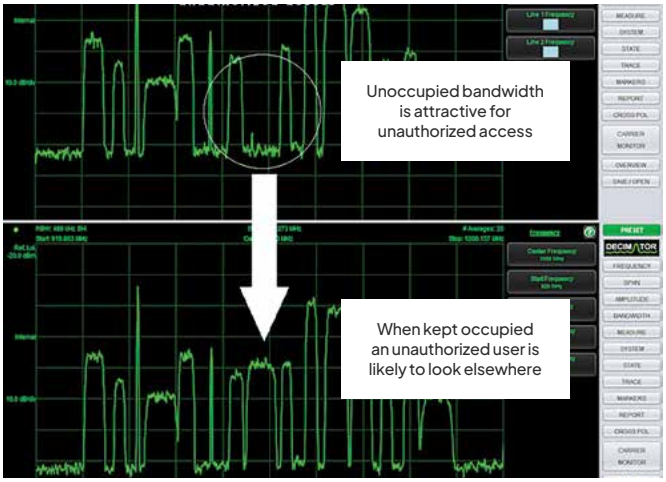
**Calian, Advanced Technologies Defender is an innovative approach to preventing unauthorized access to satellite transponder bandwidth. Defender generates carriers that fill up available spectrum to keep unauthorized users from illegally using spectrum.**

Defender saves time for technicians in the operation centre by preventing unauthorized access before it occurs and requires further investigation.

Defender is capable of generating up to 32 independent 30 Msps carriers in the 950 MHz to 1750 MHz band. All carriers are frequency agile and have independent control of the power level.

Defender is configurable and flexible to fill up unused spectrum in any frequency plan. The unit provides an ethernet management port to deliver an easy-to-use interface from any standard web browser.

An SNMP-based monitor and control interface provide a connection to external management systems.




## Defender specifications

### DVB-S/S2/S2X/SNG

| | |
|---|---|
| **Signal format** | • CCM |
| **Modulation format and FEC rates** | • **QPSK**; FEC rates 1/4, 1/3, 2/5, 1/2, and FEC rates: 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10<br>• **8PSK,** FEC rates 3/5, 2/3, 3/4, 5/6, 8/9, 9/10<br>• **16APSK,** FEC rates 2/3, 3/4, 4/5, 5/6, 8/9, 9/10* |
| **Roll off factor** | • 0.05 to 0.35 with 0.05 resolution |

### Performance

| | |
|---|---|
| **Min. symbol rate: (per carrier)** | • 1 carrier 45 Mbaud<br>• 8 carrier 5 Mbaud<br>• 16 carrier 100 kbaud |
| **Max. symbol rate: (per carrier)** | • 1 carrier 416 Mbaud<br>• 8 carrier 72 Mbaud<br>• 16 carrier 30 Mbaud<br>• 30 carrier 30 Mbaud |
| **Min. symbol rate step** | • 1 baud |

### Control interface

| | |
|---|---|
| **SNMP** | • SNMPv2. Accessed over ethernet physical interface. |
| **Web interface** | • Accessed over ethernet physical interface. |
| **Alarm** | • Complete suite of parameters monitored. Access via GUI or SNMP. Comprehensive alarm history. Alarm relay contact - DB9 sockets. |

## L-band interface

| | |
|---|---|
| **Operating frequencies[3]** | • Band 1: 950 MHz to 1450 MHz<br>• Band 2: 1250 MHz to 1750 MHz |
| **L-band output** | • 950 - 1750 MHz, 1 Hz step<br>• 50 Ω SMA-Female<br>• +5 to -25 dBm (composite) |
| **Output power step** | • 0.1 dB |
| **Output power stability** | • ±0.5 dB |
| **Output power accuracy** | • ±0.5 dB (single carrier) |
| **Monitor output** | • 50 Ω BNC - Female<br>• 950 - 1750 MHz<br>• -32 dBc, ±3 dB |
| **Return loss** | • Minimum 14 dB |
| **Spurious** | • -55 dB in any 4 kHz bandwidth |
| **Phase noise** | • Bands 1, 2<br>• 100 Hz : -80 dBc/Hz<br>• 1 kHz: -85 dBc/Hz<br>• 10 kHz: -85 dBc/Hz<br>• 100 kHz : -100 dBc/Hz<br>• 1 MHz: -110 dBc/Hz |

## Input interface

| | |
|---|---|
| **DVB-ASI** | • 75 Ω BNC (qty 2) |
| **Ethernet (data)** | • 10/100/1000 Base T (RJ-45) (qty 2)<br>• 1/10 GB SFP+ (qty 1)<br>• Supports COP3 as per:<br>• SMPTE 2022-1-2007 and<br>• SMPTE 2022-2-2007S<br>• Supports IGMPv3 |
| **Ethernet (control)** | • 10/100 Base T (RJ-45) |
| **10 MHz frequency** | • Connector: 50 Ω BNC-Female |
| **Power** | • Male IEC 320<br>• 100–120 VAC, 220–240 VAC<br>• auto-ranging, 50–60 Hz<br>• Power consumption: 75 W typical |

## Physical interface

| | |
|---|---|
| **Mechanical** | • 19" W x 1.75" H (1U) x 10" D<br>• EIA standard 19 inch rack mountable. |
| **Weight** | • 7 pounds |

## Environmental interface

| | |
|---|---|
| **Operating temp** | • 0 to 55°C |
| **Storage temp** | • 10°C to 55°C |
| **Humidity (operating)** | • 10% to 80% relative humidity non-condensing |

## Certifications

| | |
|---|---|
| **Electromagnetic capability** | • EN 61000-6-6-2005, EN 55022 2006<br>• Class A, FCC Title 47, Part 15 |
| **Safety** | • EN 60950-1, UL 60950-1,<br>• CSA22.2 No. 60950-1 |

Notes:

1. All specifications at 25°C unless otherwise noted.
2. All specifications subject to change without notice.
3. All active carriers must be in the same band.

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