SpaceWDM
OPTICAL ENGINEERING

DWDM, ENGINEERED FOR ORBIT.

A modular optical-engine thesis for next-generation space laser terminals.



THE PRODUCT HYPOTHESIS

SpaceWDM is developing wavelength-multiplexed optical-engine concepts for terminal OEMs. We propose to combine multiple optical carriers, coherent modulation, integration and repeatable test workflows in a subsystem that can be evaluated independently of the telescope and pointing system.

12.8 Tb/s

32 x 400 Gb/s gross capacity (illustrative design)

10.24 Tb/s

After 20% assumed overhead

WHAT THE CALCULATION DOES NOT PROVE

Aggregate arithmetic capacity is not physical link closure. A credible design also needs measured per-channel BER and receiver sensitivity, diffraction and aperture-coupling losses, pointing statistics, coherent DSP power, thermal controls and qualification evidence.

ARCHITECTURE PARTITION (PROPOSED)

SPACECRAFT
Data fabric

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OPTICAL ENGINE
Source / WDM / DSP

>

TERMINAL
Telescope + PAT

State: research-stage concept. No 10 Tb/s link or space-qualified hardware is claimed.

What we would validate with an OEM

01

Link budget

Close a traceable per-wavelength optical budget against the buyer's aperture, range, pointing and sensitivity constraints.

02

Capacity and errors

Measure modulated throughput, OSNR / BER and FEC assumptions in a repeatable bench setup.

03

Watts per net bit

Measure sources, drivers, control and DSP power rather than extrapolating from channel counts.

04

Packaging readiness

Define thermal limits, calibration, connector interfaces, radiation-screening approach and qualification boundary.

WHAT PARTNERS CAN EXPECT

An initial scoping discussion, a customer-specific technical trade study and a written, measurable proof plan. A paid evaluation would be negotiated around the OEM's actual requirements; no purchase orders or customer commitments are implied.

Bring us your hardest optical-engine constraint.

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