

**Evolution eM1D1
Line Card
Models eM1D1, eM1D1-FIPSL2**



eM1D1 shown

The Evolution eM1D1 line card is suited for supporting secure voice, data, and video communication links for mission-critical military and COTM broadband applications operating in either DVB-S2/ACM or iNFINITI TDM mode on the outbound. It supports Adaptive TDMA or SCPC Return* with optional Spread Spectrum and extremely efficient FEC with 2D 16-State coding on the inbound. The line card features one modulator and one demodulator and is designed to meet the guidelines of MIL-STD 810F for operation in harsh environments.

Network Configuration

Modem	One Modulator (Transmit one downstream carrier) One Demodulator (Receive one upstream carrier)		
Modulation		<u>Downstream</u> DVB-S2/ACM or (iNFINITI TDM)	<u>Upstream</u> ATDMA or (SCPC Return*)
FEC		LDPC, 1/4–8/9; (TPC, 0.495 - 0.879)	TPC**, 0.431–0.793 2D 16-State, 1/2-6/7 (2D 16-State 1/3- 6/7)
Maximum Carrier Rates	Symbol Rate	45 Msps ¹ (15 Msps)	7.5 Msps (15 Msps)
	Info Rate	150 Mbps ¹ (21 Mbps ²)	19.2 Mbps ³ (38.5 Mbps ⁴)
	IP Data Rate	149 Mbps ¹ (20 Mbps ²)	16 Mbps ³ (19.8 Mbps ⁴)
	Notes:	¹ 16APSK, 8/9 FEC ² QPSK, .793 FEC ³ 8PSK, 438 6/7 FEC ⁴ 8PSK, 438 6/7 FEC Maximum downstream and upstream data rates cannot be achieved simultaneously Maximum rates are achieved under optimal conditions	
Spread Spectrum	Chip Rate	(TDM: Up to 15 Mcps)	Up to 7.5 Mcps (SCPC Return: 15 Mcps)
	Spreading Factor	(TDM: 2, 4, 8)	2, 4, 8, and 16 (SCPC Return: 2, 4, and 8)
Interoperability	Compatible with Series 12000 Universal Hub (4-slot) and Series 15000 Universal Hub chassis Requires iDX 1.1 software or above		

Interfaces

SatCom Interfaces	TxIF: Type-F, 950–2000 MHz (WGS), +5dBm/-35dBm RxIF: Type-F, 950–2000 MHz (WGS), -5dBm composite/ -130+10*log(Fsym)dBm (min) single carrier
Data Interfaces	LAN: RJ-45 Two 100/1000Base-T, one 10/100Base-T RS-232: RJ-45 (console connection)
Security	TRANSEC with FIPS 140-2 Level 2 Compliant***

Mechanical/Environmental

Redundancy	Software Controlled, Hot-Swappable, and Auto-Failover
Weight	Model eM1D1: 1.2 lbs (0.6 Kg) Model eM1D1-FIPSL2: 1.5 lbs (0.7 Kg)
Operating Temperature	-30° to +60°C (-22° to +140°F), tested in accordance with MIL-STD 810F
Radio Standards (System Level)	EN 301-428 v1.3.1 — Ku-Band System Level Specification EN 301-443 v1.3.1 — C-Band System Level Specification
Safety Standard (System Level)	Complies with IEC 60950, EN 60950-1, UL 60950-1, CSA C22.2 No.60950-1-03
Emission Standard (System Level)	Complies with EN 55022 Class A, FCC Part 15 Class A, CISPR 22 Class A, EN 61000-3-2, EN 61000-3-3
EMC/Immunity Standard (System Level)	Complies with EN 55024, EN 301-489-1, EN 301-489-12, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Certification	FCC, CE, and RoHS Compliant

* Linecard operates in Receive Only mode when using SCPC Return
** TPC not supported for use with DVB-S2 outbound in iDX 3.0 and above
*** FIPS-140-2 L2 compliance requires iDX 2.3 and above

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