

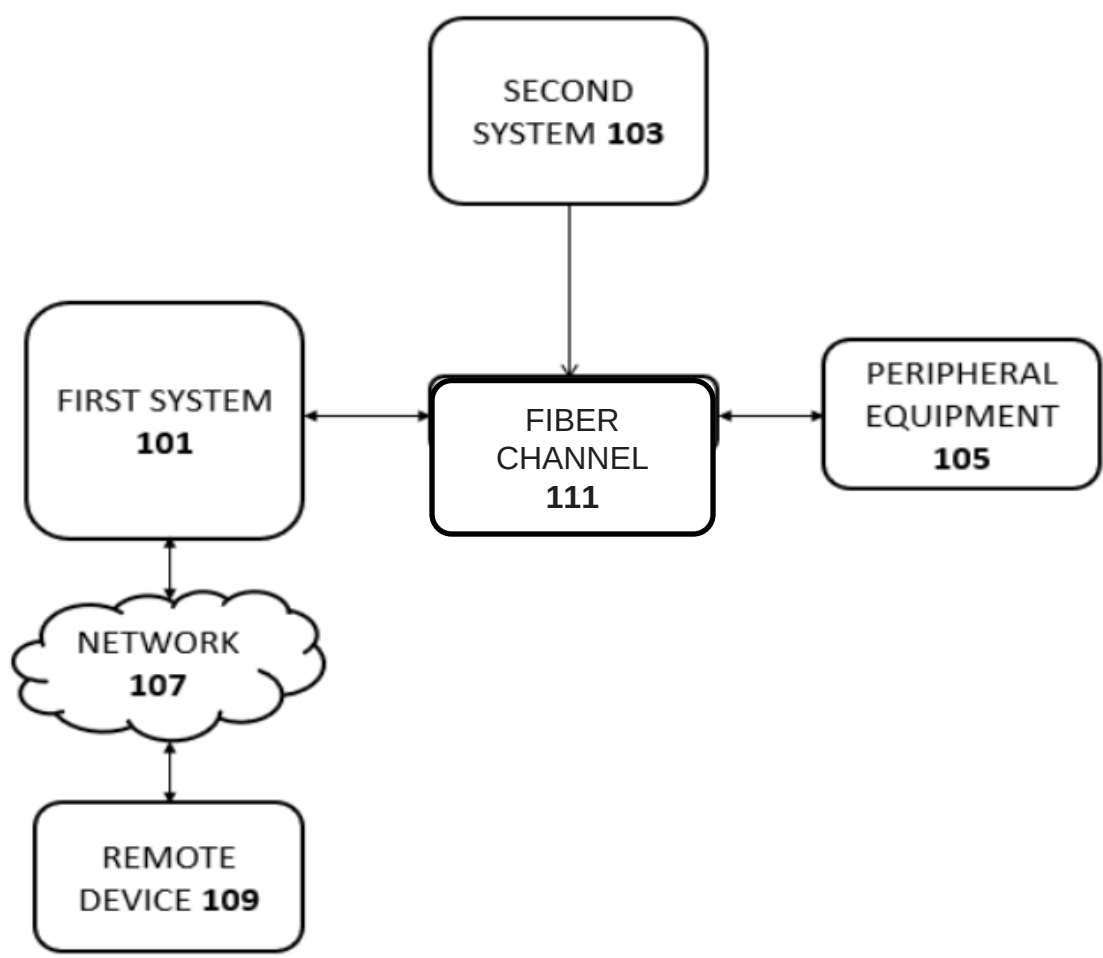


FIG.1A

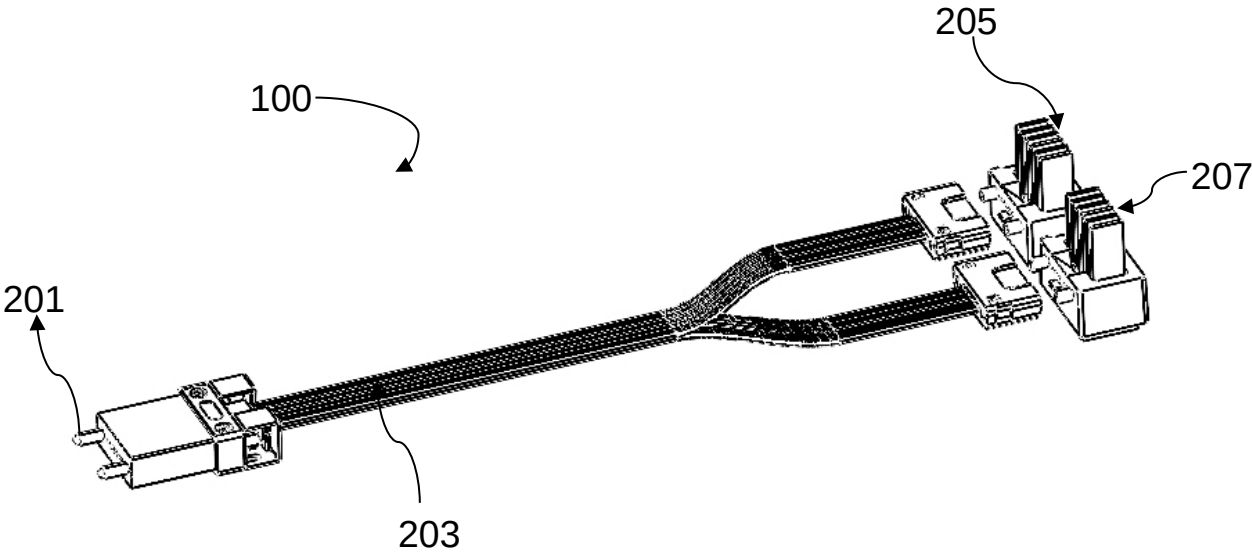


FIG.1B

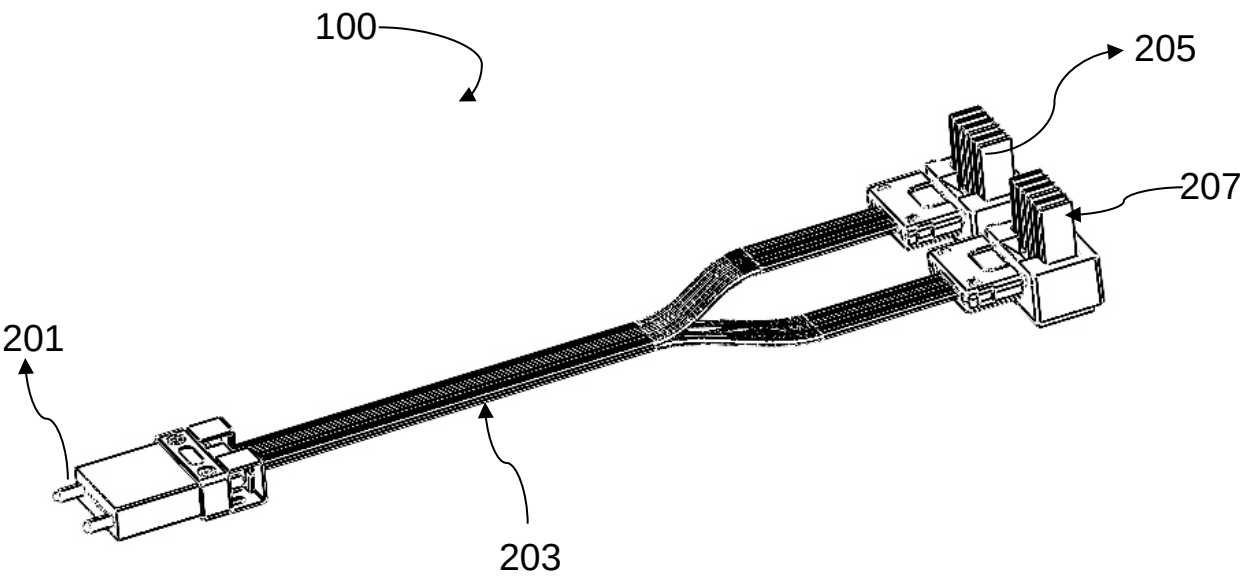


FIG.1C

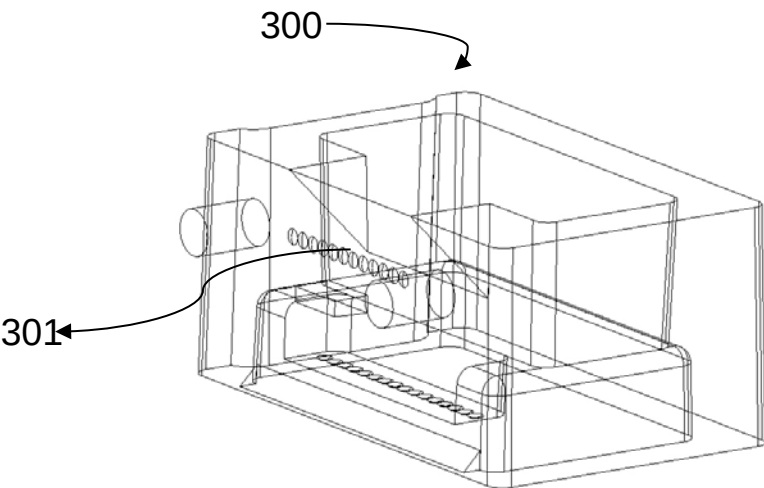


FIG. 2A

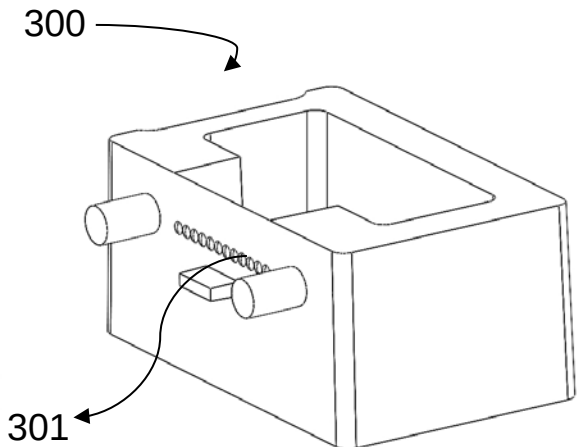


FIG. 2B

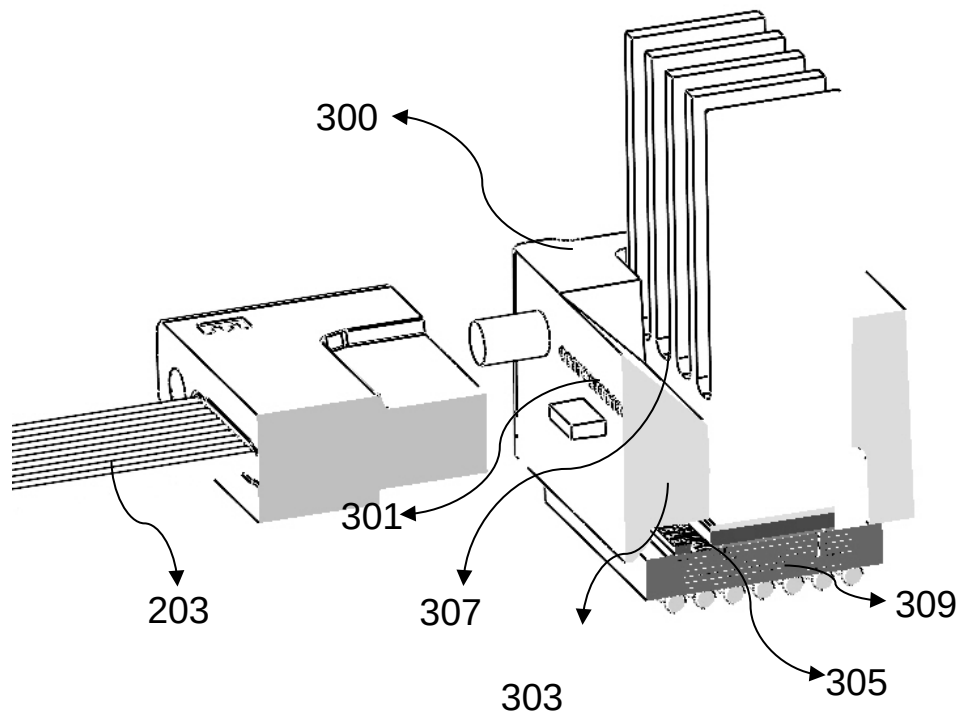


FIG. 2C

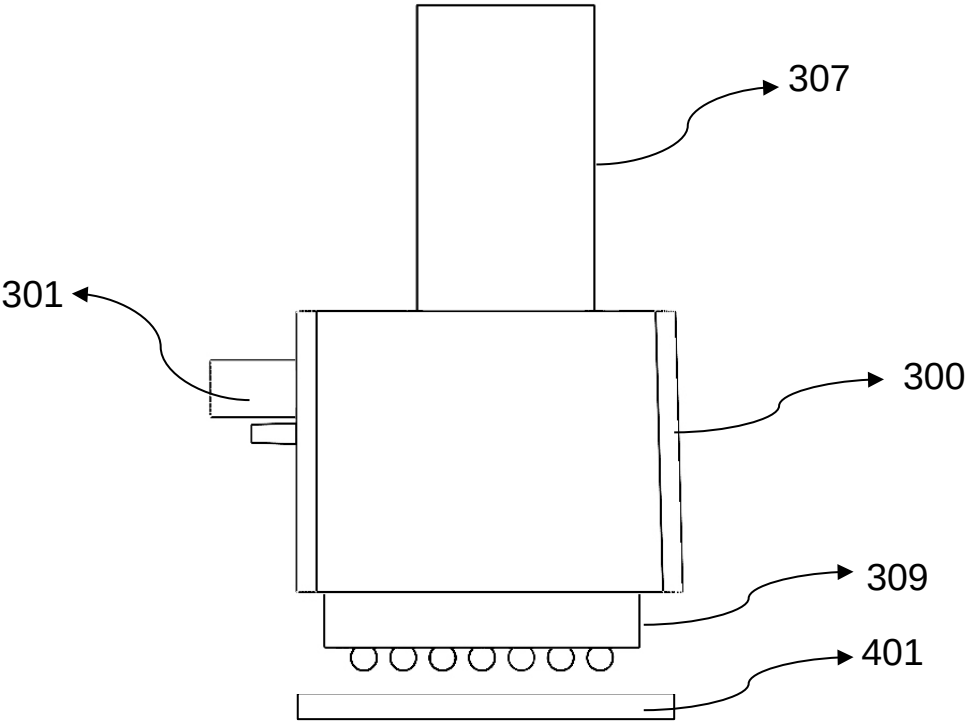


FIG.3A

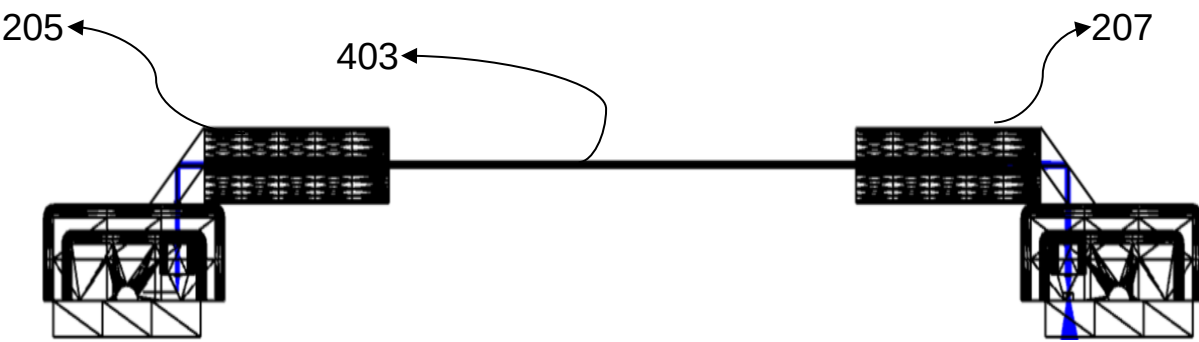


FIG.3B

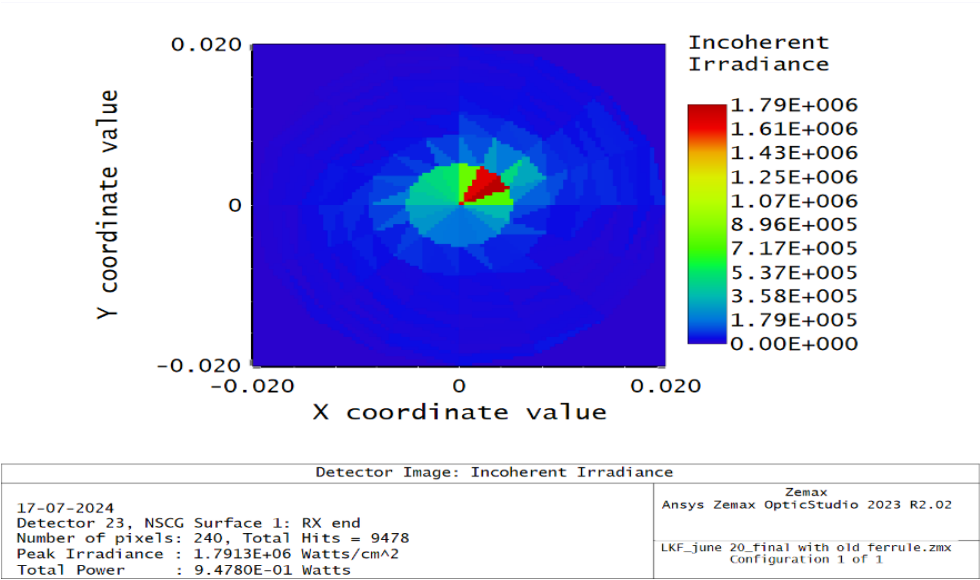


FIG.3C

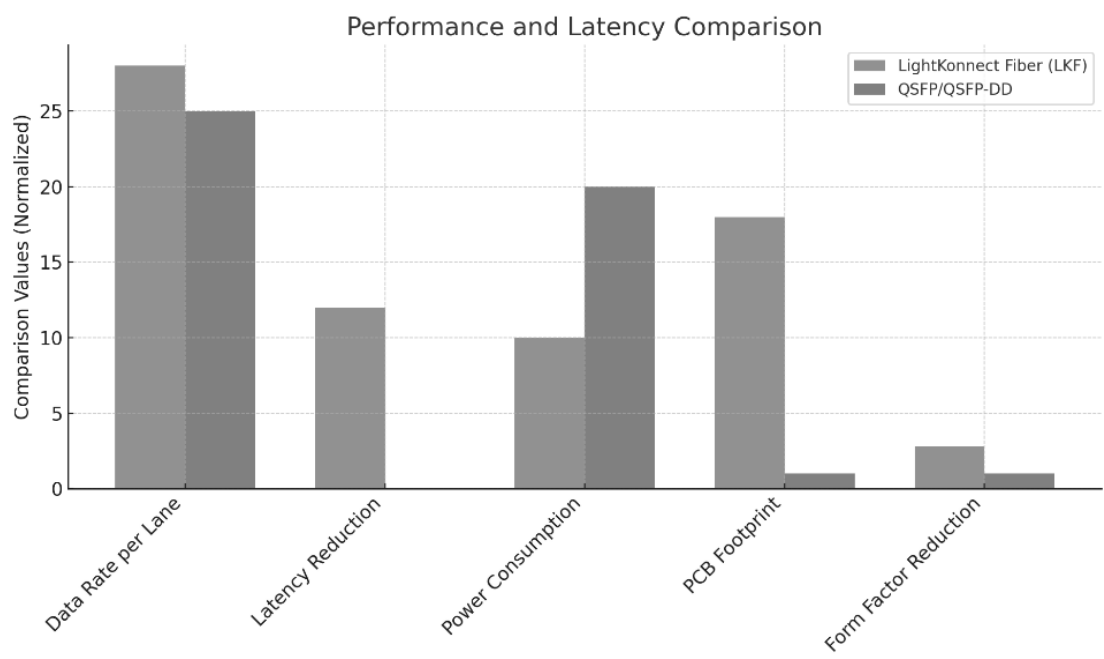


FIG.4A

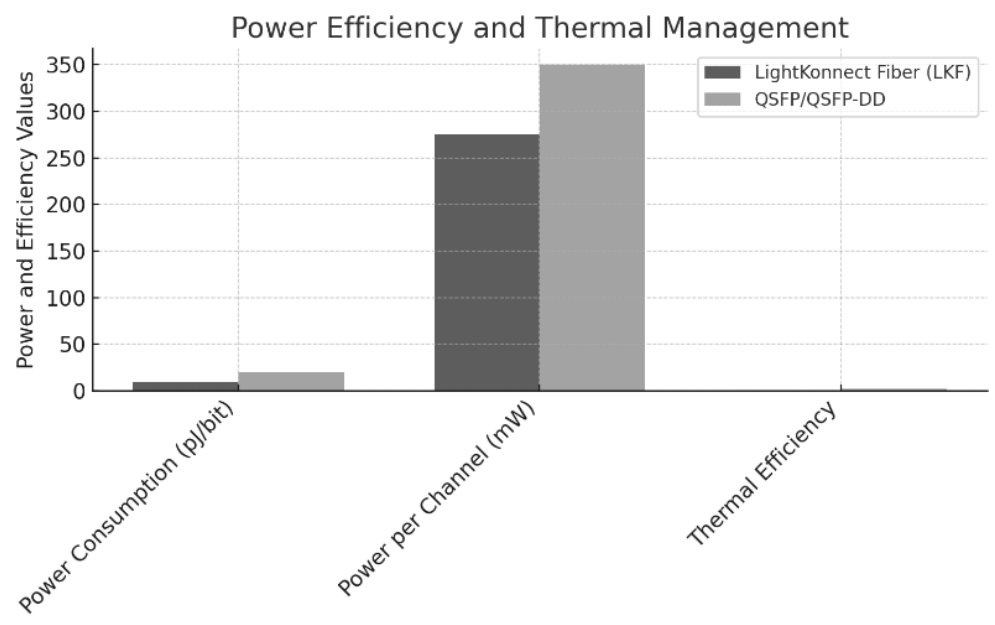


FIG.4B

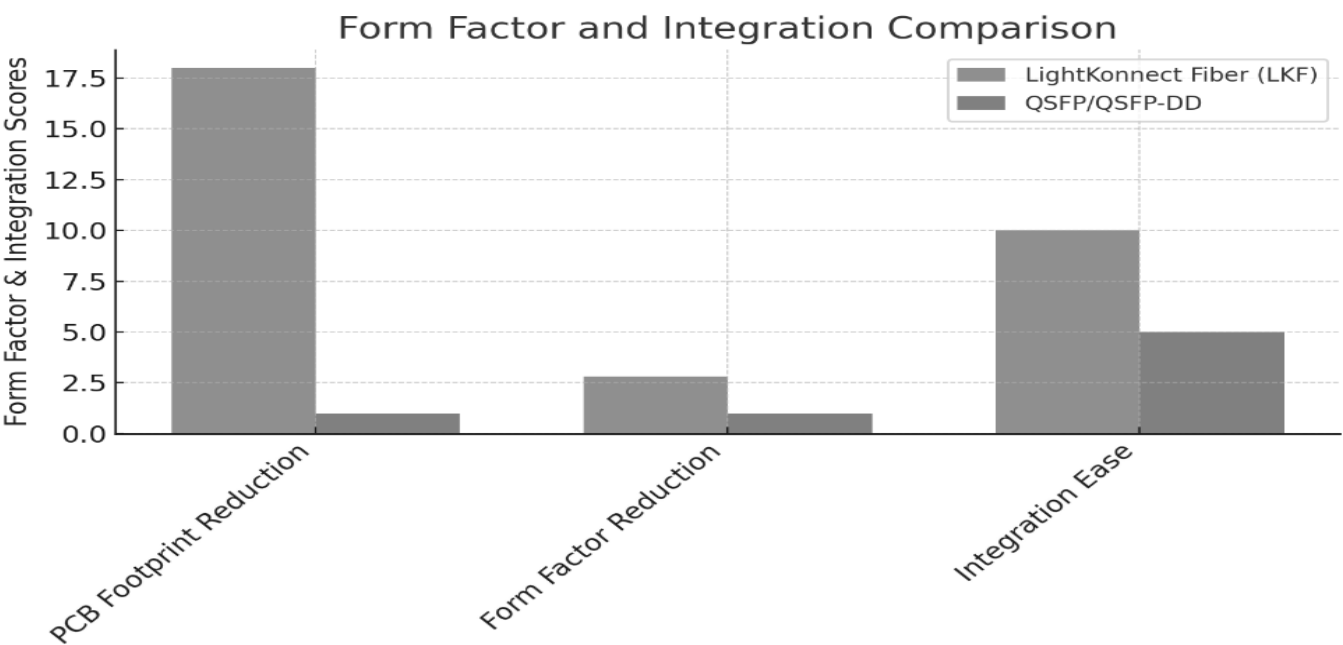


FIG.4C

Feature	LightKonnnect Fiber (LKF)	QSFP	Advantage
Data Rate per Lane	Up to 28 Gbps	Up to 25 Gbps	Higher data rate
Total Data Throughput	Up to 336 Gbps (12x Tx, 12x Rx)	Up to 200 Gbps	Increased throughput
Latency	12% lower	Higher latency	Improved link performance
Error Rate (BER)	$\leq 10^{-12}$	Similar or slightly higher	Reliable data transmission
Link Length	Up to 30m (OM4/OM5 MMF)	Up to 100m (SMF)	Comparable for MMF

TABLE.1

Feature	LightKonnect Fiber (LKF)	QSFP	Advantage
PCB Footprint Reduction	18x smaller	Standard size	Drastically reduced size
Form Factor Reduction	2.8x smaller	Larger pluggable modules	Space-efficient design
Module Integration	Solderable, surface-mount	Pluggable module	Easier PCB integration
Distance to Processor	Minimal (direct SerDes to module)	Longer distance	Reduced latency

TABLE.2

Feature	LightKonnnect Fiber (LKF)	QSFP	Advantage
Power Consumption	≤ 10pJ/bit	15-20pJ/bit	55% power savings
Power per Channel Tx/Rx	275mW at 28 Gbps	Higher power	Lower operating power
Heat Dissipation	Better thermal performance	Higher heat generation	Reduced cooling requirements
Single Power Supply	3.3V	3.3V	Simplified power design

TABLE.3

Feature	LightKonnnect Fiber (LKF)	QSFP	Advantage
Optical Connector	MTP/MPO 24- fiber	LC/SC Duplex	Higher channel density
Transmitter Wavelength	850 nm (1x12 VCSEL)	850 nm	Similar but denser
Electrical Insertion Loss	<3dB at 28 Gbps	Higher losses	Better signal integrity
Return Loss	>20dB	~20dB	Improved isolation

TABLE.4