Phase-Matched 18GHz RF over Fiber system

Key Features:

- Supports 100MHz up to 18GHz.
- Phased matched WDM system of ±10°
- Gain matched response to ±1dB.
- Excellent High SFDR performance.
- Noise Figure < 10dB with RF low-noise pre-amplifier.
- System MDS ~164dB/Hz for very low incoming signals.
- Standby mode for reduced power dissipation.
- Excellent stability under temperature/ variations from -40°C to +70°C.
- Remote management supporting USB. with software or Ethernet web server.
- Outdoor solution, including IFL capability to control the remote side and provide gigabit ethernet transport.

Applications:

- Phased Array Radar
- Electronic Warfare
- Interferometry and DF

RFOptic presents its innovative high-frequency phase-matched RFoF system.

RFOptic WDM 18GHz RFoF multi-link system is phase matched to ±10° up to 18GHz and optionally up to 40GHz. Each of the RFoF links is comprised of a Tx unit with an optional low-noise pre-amplifier and an Rx unit with an optional post-amplifier. With a pre-amplifier, the MDS of each RFoF link can be as low as -114dBm @ 1MHz bandwidth. It is especially suitable for low signal wideband applications with a low Noise Figure under 10dB.

Each RFoF link can be gain matched within flatness and features good gain stability over a wide range of operating temperatures.

Remote management is available with RFOptic's Ethernet-enabled Management & Control system. Local management is provided over a USB connection. Both control interfaces provide access to diagnostic information and alarms for optical power and connection loss.

The system is available in Indoor or outdoor enclosures.

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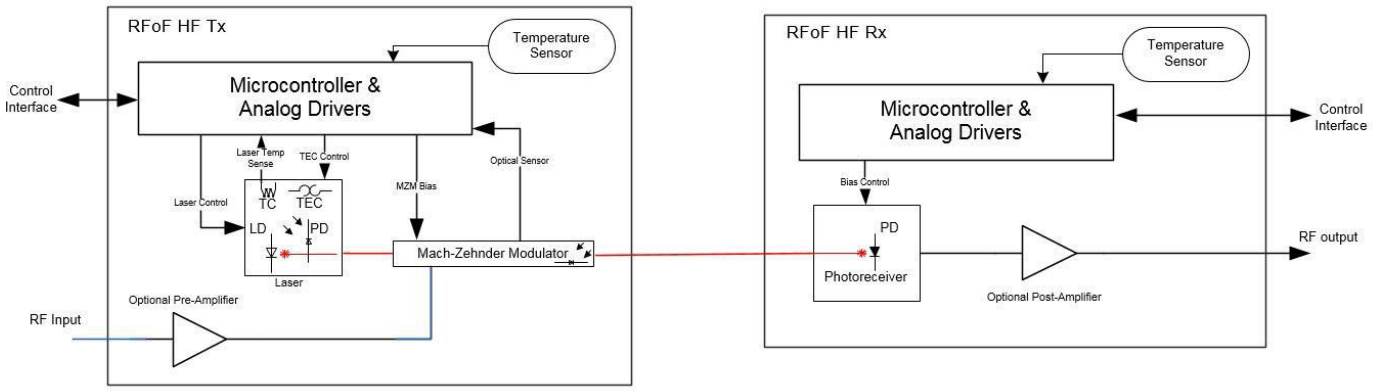
HSFDR 18GHz Phase Matched RF over Fiber System Specifications

Electrical	Unit	System Specification (typical)
Frequency Range	GHz	0.1 - 18
Gain (nominal value)	dB	0
Gain Flatness	dB	±2.5
Input P1 dB [1]	dBm	-8
Noise Figure [1,4]	dB	10
Phased matched up to 8 links with optical cable up to 100m [2]	deg	≤ ±8
Phased matched up to 8 links with optical cable up to 1.0Km [2]	deg	≤ ±10
Gain matched up to 8 links	dB	≤ ±1
SFDR [1]	$dB/Hz^{2/3}$	110
Maximum Input No damage	dBm	20
Spurious	dBm	-90
VSWR Input / Output	dBm	2:1
Input / Output impedance	Ohm	50
Optical and Electrical		
Laser wavelengths up to 8 links	-	WDM
Optical Power in the fiber (per link)	mW	8
Optical power loss alarm	-	Yes
System Monitor & Control - Optical parameters	-	USB or HTML/REST/SNMP
Mechanical and Environmental Parameters		
Operating temperature	°C	-25 to +60
Storage temperature	°C	-45 to +85
EMC and Safety	-	CE & FCC
Environmental & EMI/EMC Safety		CE, FCC, MIL-STD-461F, DO-160G & MIL-STD-810F
MIL Qualified (Ground / Airborne /Shipborne) Chassis. Customization can be done per customer requirement		
Fiber (supplied with the system)	0.1Km 8/12 Core Rodent Deterrent Outdoor Tactical Fiber Cable	

[1] Noise Figure and Input P1dBc are measured at mid-band. Input IP3 and SFDR are calculated values.
[2] For full frequency band, up to 18GHz and over temperature range of -25°C to +60°C.
[3] Safety EN60950-1:2006(2nd); EMC: ETSI EN 300 386 v1.6.1 (2012-04) and FCC CFR-47part 15 Sub part B.
[4] Including a 1000m fiber connection.

HSFDR RFoF – Simplified Block Diagram



Each RFoF link is comprised of a Tx RFoF module and an Rx RFoF module. The following simplified block diagram illustrates the main components of such modules.

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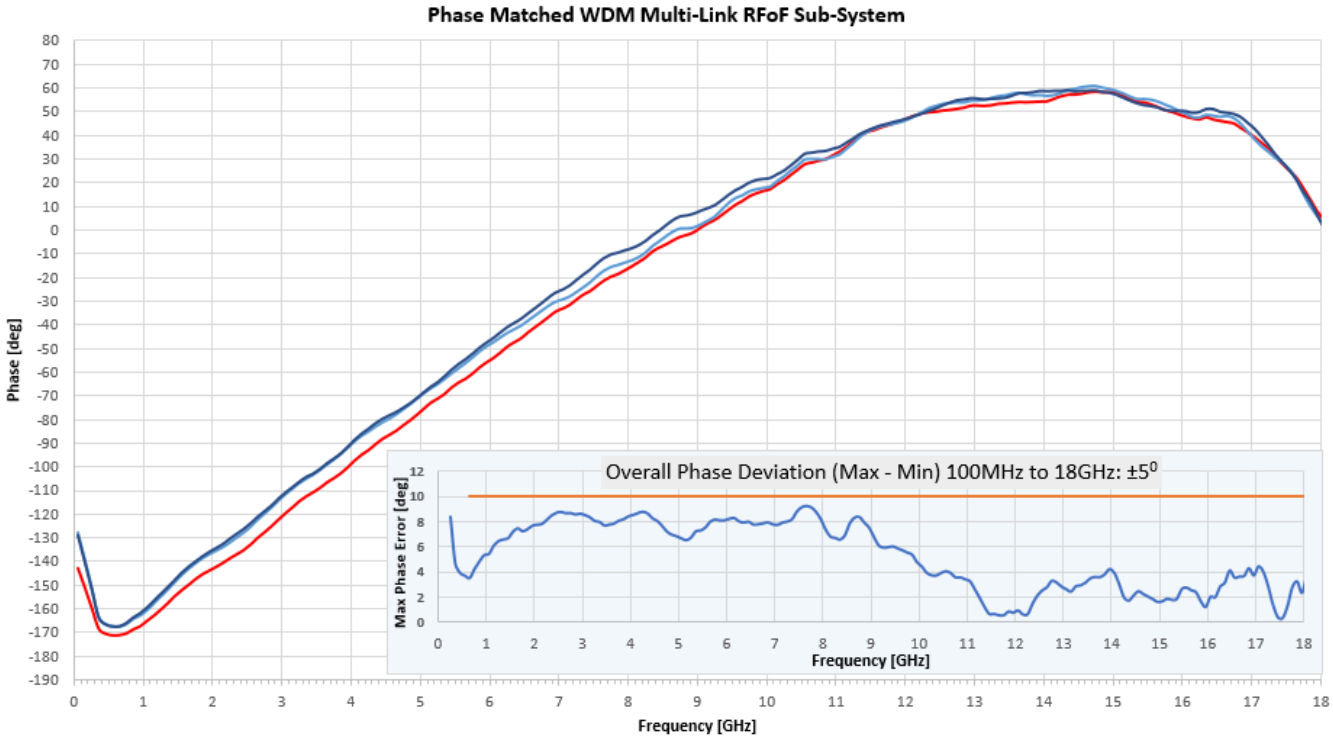
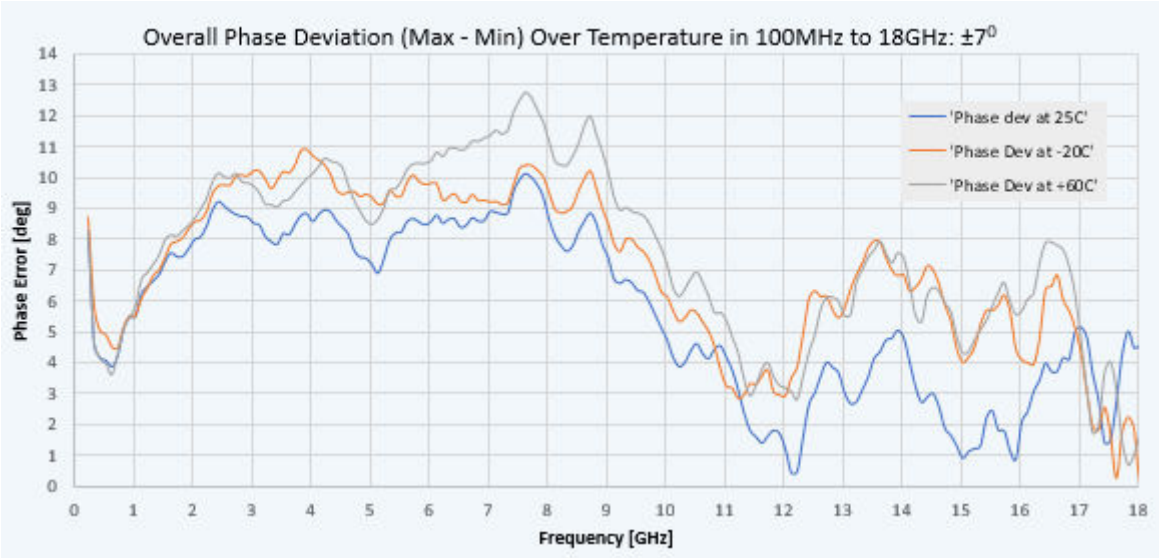
HSFDR Phase Matched 18GHz RF over Fiber System Test Results





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