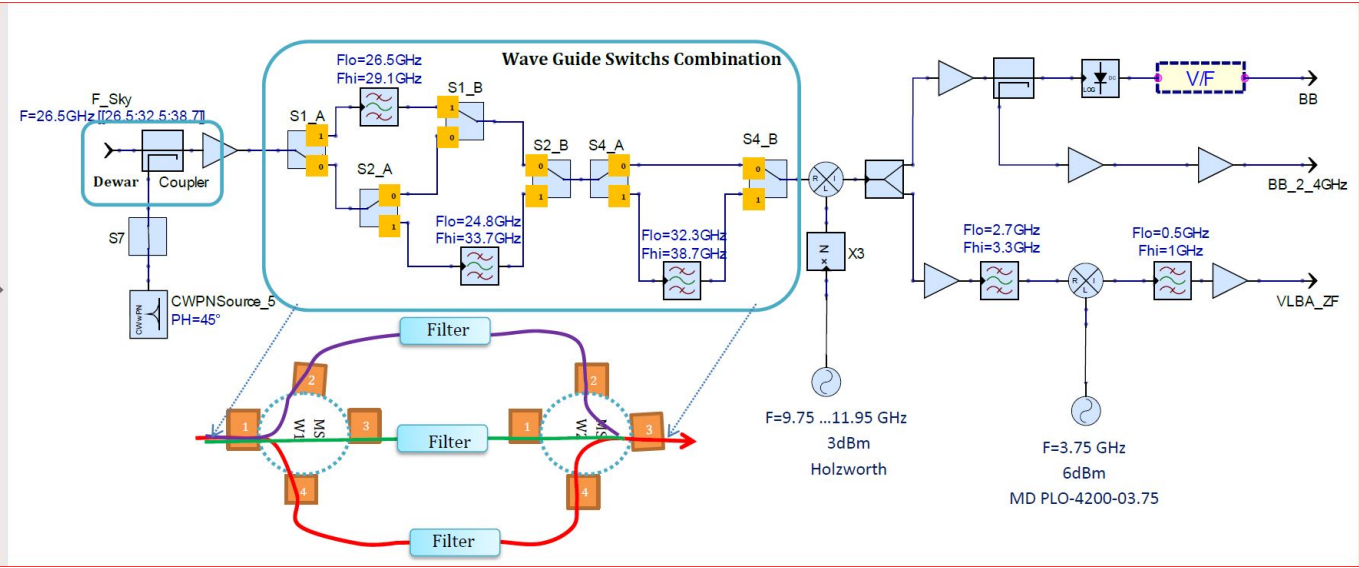


Technical Documentation of the 1cm Receiver 27 - 38 GHz (P10mm)

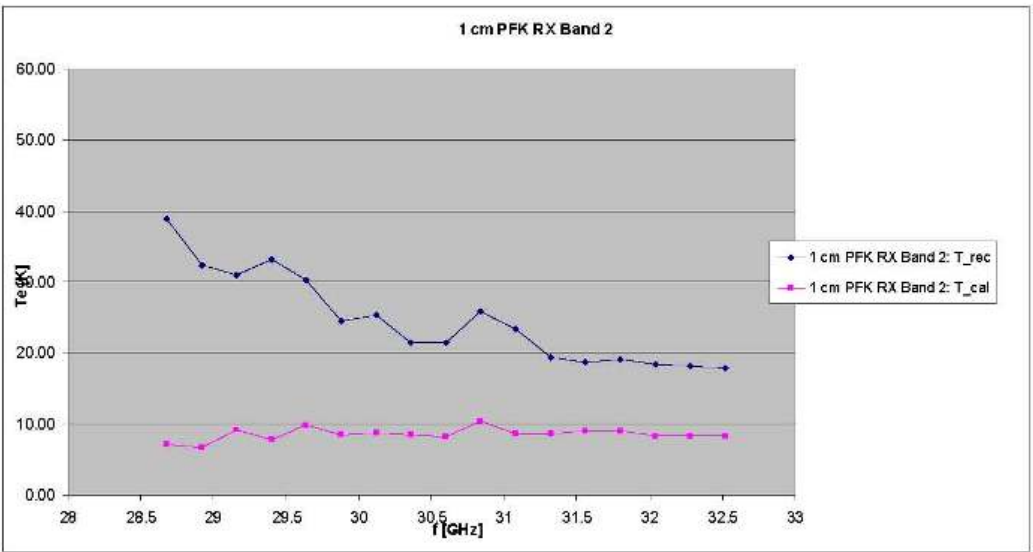
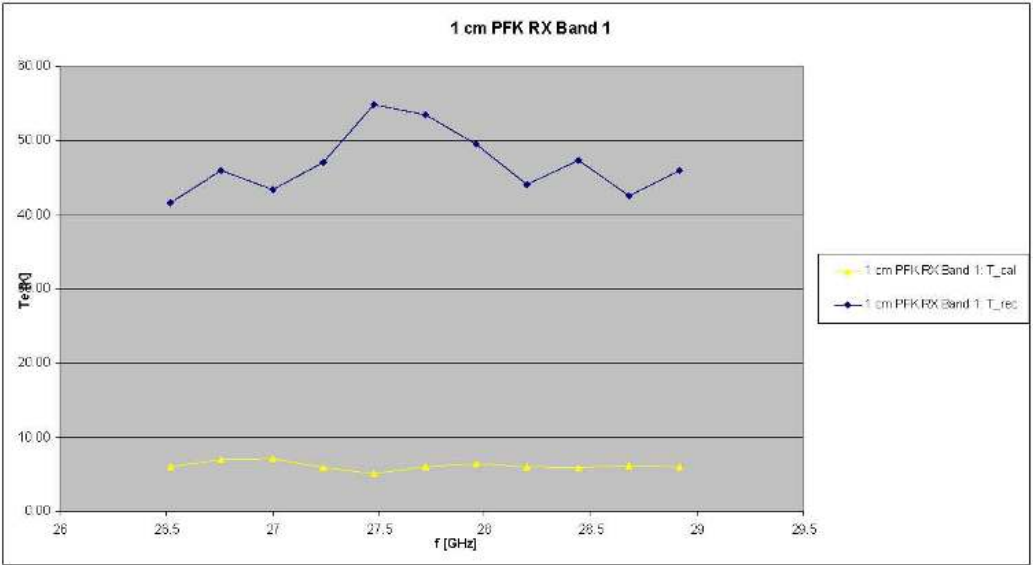
Type	HEMT cooled		
Channel	1		
Receiver Noise Temperature	10-40 K		
Bandwidth RF-Filters	See below filter combination		
Polarization	Linear		
Calibration	Noise Diode		
Feed	Primary Focus Horn		
Frequency Range	26.5 - 38.7 GHz		
1.IF	2 - 4 GHz (Broadband)		
1.Synthesizer	Holzworth HSM12001	Frequency 9.75 - 11.95 GHz	
Band 1	26.4 - 29.1 GHz	$LO1 = 3*(9.75 - 10.7 \text{ GHz}) = 29.25 - 32.1 \text{ GHz}$	LSB
Band 2	28.5 - 33.7 GHz	$LO1 = 3*(10.5 - 11.9 \text{ GHz}) = 31.50 - 35.7 \text{ GHz}$	LSB
Band 3	26.4 - 29.1 GHz	$LO1 = 3*(9.77 - 11.9 \text{ GHz}) = 29.31 - 35.7 \text{ GHz}$	USB
2.IF	500 - 1000 MHz		
2.Local Oscillator	fixed Phase Locked Oscillator	$LO2=3.75 \text{ GHz}$	

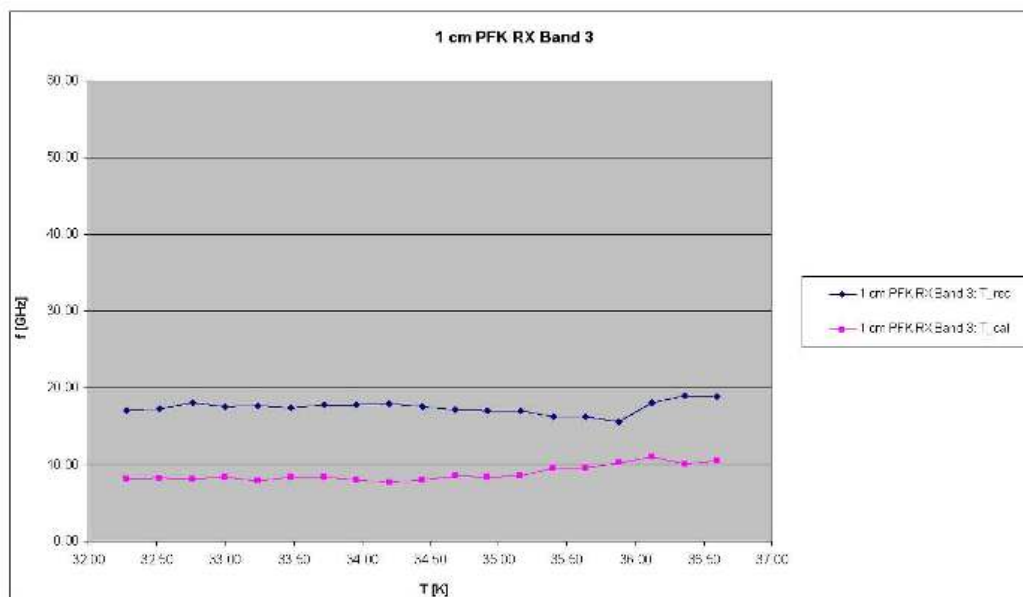
Block Diagram



Simplified Block Diagram of [p10mm_receiver_withholzworth.pdf](#), (ZMK on 26.03.2021)

Receiver Noise Temperature





Comments

This system is equipped with 3 RF-Filters to suppress mirror frequency reception. During observation, the filter and ULO settings have to be selected according to the observation frequency (see block diagram). In March 2007 the LNA was replaced by an InP-HEMT MMIC-amplifier designed for the 9mm receiver. Therefore the noise figure at low frequencies is not ideal. This system is part of the Primary Focus Multi Frequency Box #1 (PM 1).

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