

Datasheet

LNF-VTL_WR10A

WR-10 Precision Cryogenic Noise Source



Product Features

RF Bandwidth	65-118 GHz
Waveguide Flange	UG387/U
Return Loss	Better than 20 dB
Accuracy	≈ 1 K
Temperature sensor	DT-670A1-SD
Heater	50 Ω
DC Connectors	9-pin female Nano-D

Absolute maximum ratings

Parameter	Max
Heater voltage	5 V
Heater current	100 mA
Temp sensor reverse voltage	40 V
Temp sensor current	1 mA
Operative temperature when cooled down at or below 15 K	300 K
Storage Temperature	70 C

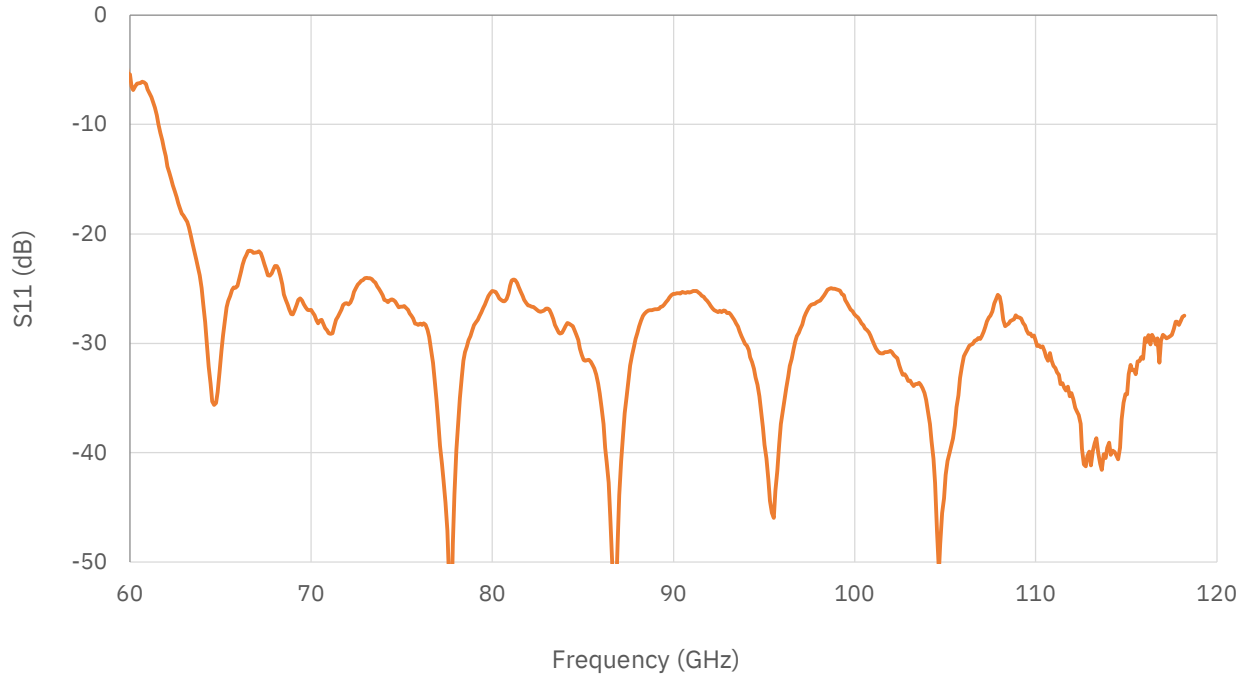
Typical Characteristics

Parameter	Value	Unit
Return Loss 65-75 GHz	20	dB
Return Loss 75-118 GHz	25	dB
Temp sensor current	10	μA
Heater power for $T_H = 30$ K ($T_{amb} = 5$ K)	~ 2-3	mW

LNF-VTL_WR10A is a precision cryogenic noise source with very high accuracy. It is based on a variable temperature waveguide termination with a WR-10 port. The termination is made of a crystal quartz chip with a resistive film, a 50 Ohm heater resistor and a precision temperature sensor. The chip is thermally isolated from the module and can thus be heated with minimal influence on the waveguide block temperature. However, the chip is thermally connected to the incoming wiring. Therefore, it is imperative that the incoming wires are properly grounded to the base temperature. The block has to be cooled down to 50 K or lower to ensure proper functionality. The temperature sensor is a Lakeshore DT-670A1 series which requires a suitable temperature monitor to supply a constant current of 10 μA, to measure the voltage and display the corresponding temperature. Typically, a temperature regulator is used to both monitor the temperature and regulate it by applying a voltage to the heater resistor.

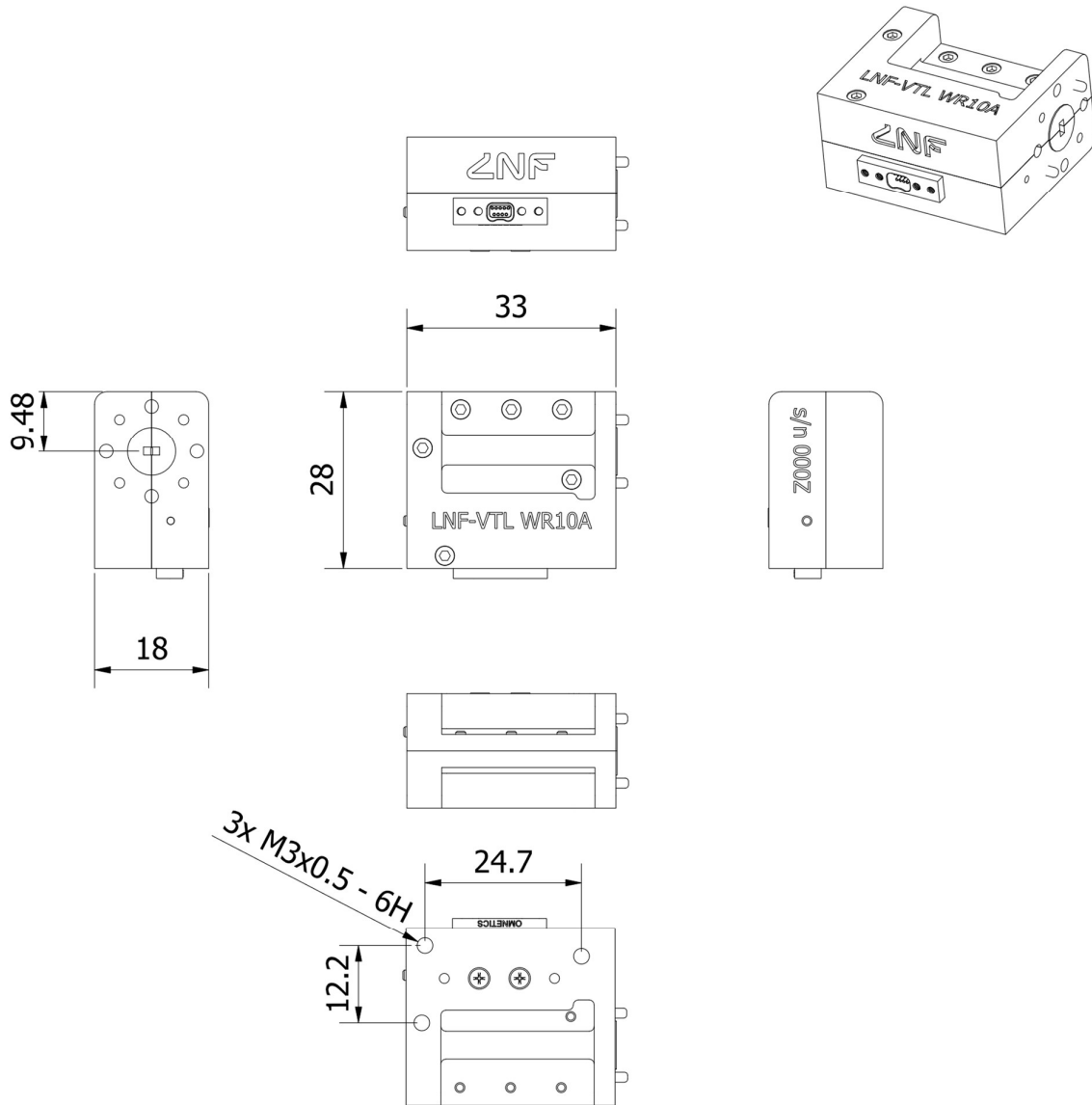
Measured data, $T_{amb} = 296\text{ K}$

S-parameters



Dimensions and wiring

Units: mm



Nano-D panel connector seen from outside the LNA

