

## Ordering Information

SKU	Description	UPC
100804	Barebones	0616469146496

## Description

Nooelec SAWbird+ H1t Barebones is a premium SAW Filter & Cascaded Ultra-Low Noise Amplifier (LNA) Module for Hydrogen Line (21cm) applications with a center frequency of 1420MHz.



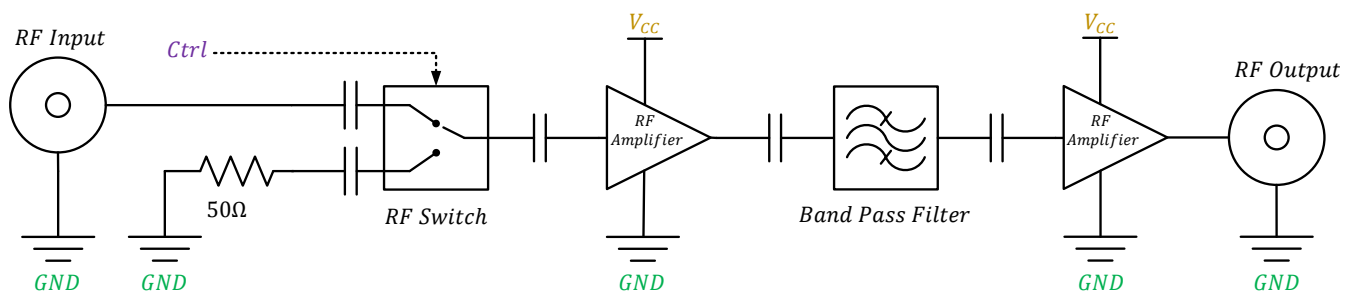
## Features

- +40dB of RF gain at 1420MHz
- 65MHz 3dB bandwidth
- 1.05dB noise figure at 1420MHz
- 50Ω gain block
- +3.3V-5V single supply
- 125mA Current Draw

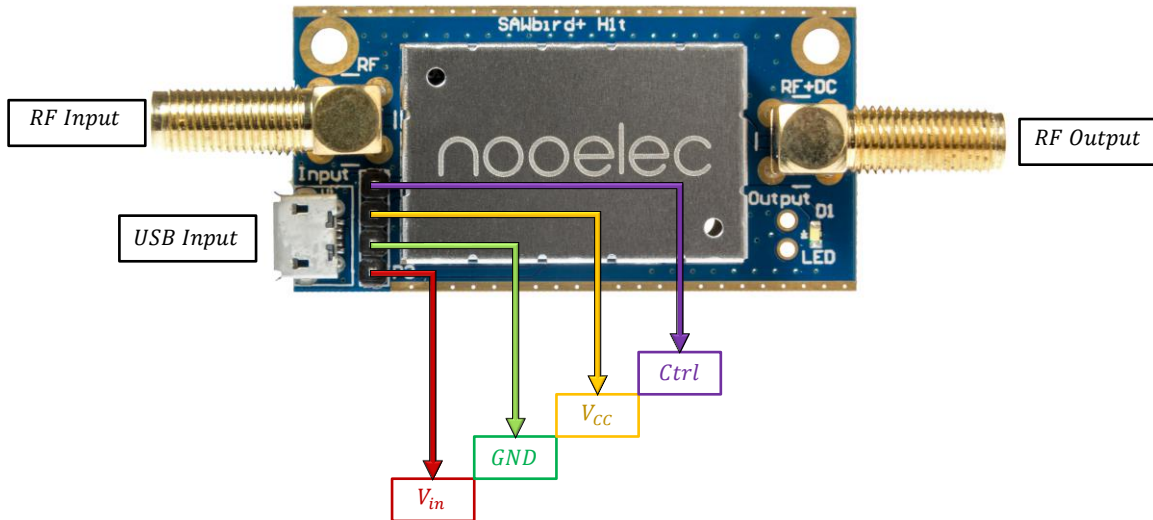
## Applications

- Radio astronomy
- Hydrogen line detection
- 21cm band reception
- Noise-sensitive applications

## Simplified Schematic



## Pin Configuration and Functions



Pin	Function	Type	Description
$V_{in}$	Voltage Input	Input	+5 Volts input pin to power the device*
$GND$	Common Ground	-	RF and DC reference voltage
$V_{cc}$	Voltage Output	Output	Logic High output voltage
$Ctrl$	Switch Control	Input	Control Pin of the internal switch

Connecting the  $Ctrl$  pin to the  $V_{cc}$  will disconnect the RF SMA input and connects the input of the SAWbird+ H1t to an internal 50 $\Omega$  resistor.

\* The SAWbird+ H1t allows for 3 different power options (USB, Pin Header and Bias-Tee). At any given time not more than one option should be used.

## Recommended Operating Conditions

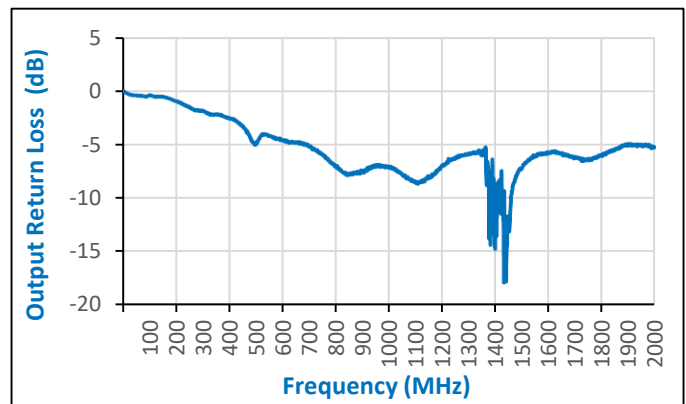
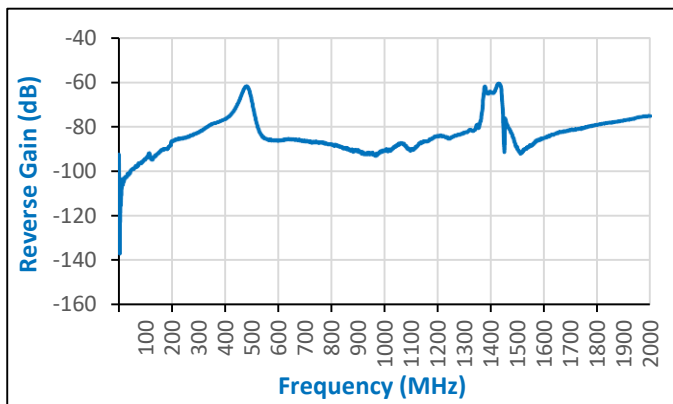
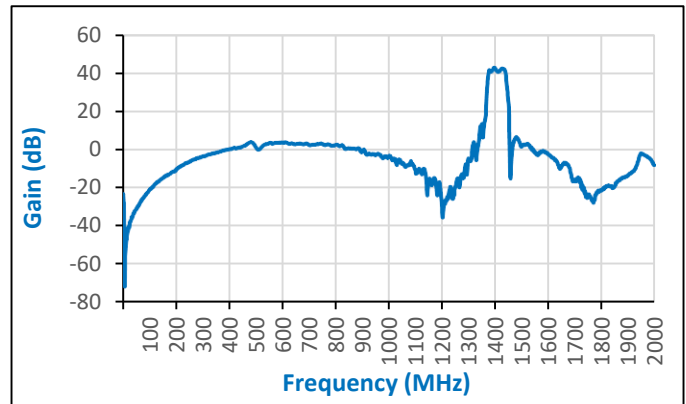
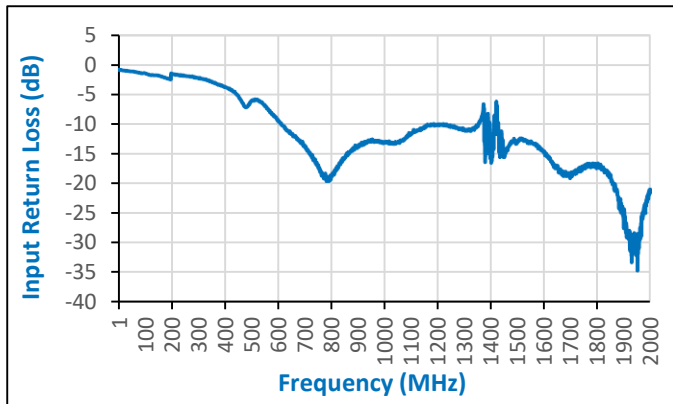
Parameter	Symbol	Min	Typical	Max	Unit
Input Voltage	$V_{in}$	3.3	5	5.5	Volts
Input Power	$P_{in}$	-	-	0	dBm
Ctrl Voltage	$V_{ctrl}$	GND	-	$V_{cc}$	Volts

## Electrical Specifications

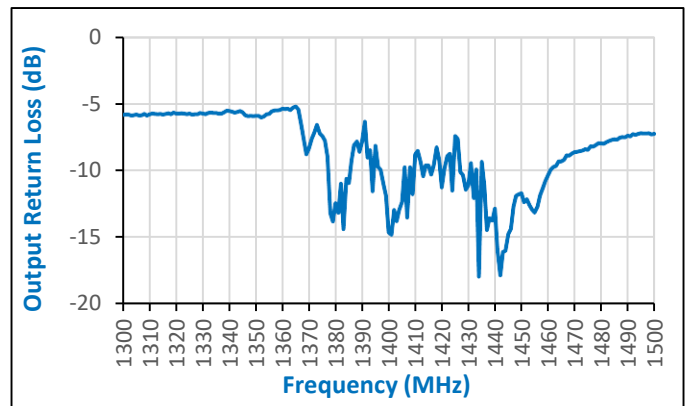
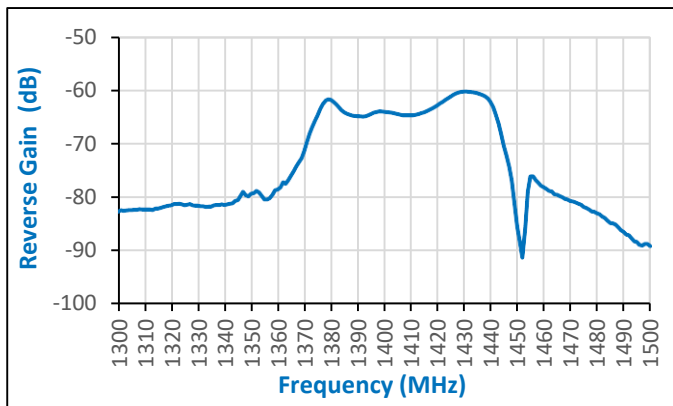
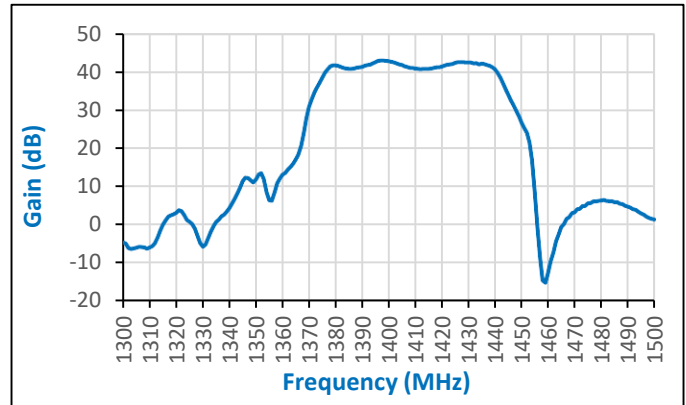
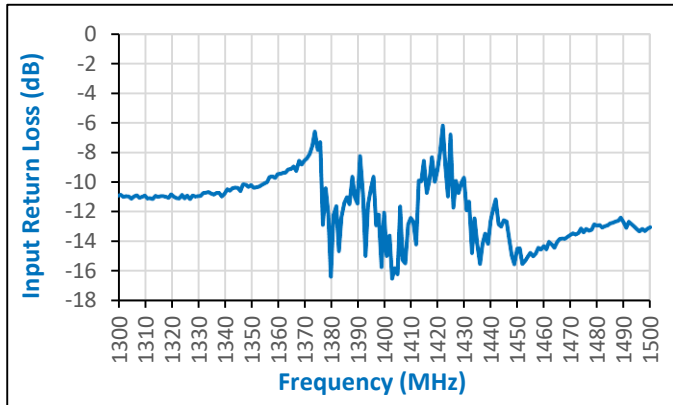
Test Conditions unless otherwise specified:  $V_{in} = +5$  Vdc, 50 Ohm system.

Parameter	Symbol	Min	Typical	Max	Unit
Frequency Range	$f_L - f_H$	1376	-	1441	MHz
3dB Bandwidth	$BW$	-	65	-	MHz
10dB Bandwidth	$BW$	-	75	-	MHz
Center Frequency	$f_o$	-	1408	-	MHz
Gain	S21	-	-	42	dB
Input Return Loss	S11	-	-	-10	dB
Output Return Loss	S22	-	-	-10	dB
Output P1dB	OP1dB	-	18	-	dBm
Noise Figure	NF	0.90	1.05	1.30	dB
Noise Temperature	$T_n$	67	79	101	K
Supply Current	$I_{supply}$	110	125	150	mA

## Electrical Characteristics Plots (1 MHz to 2000 MHz)



## Electrical Characteristics Plots (1300 MHz to 1500 MHz)



## Physical Specifications

Parameter	Value	Unit
Length	75 (2.95)	Millimeter (Inch)
Width	25 (0.98)	Millimeter (Inch)
Height	15 (0.59)	Millimeter (Inch)
Weight	14 (0.03)	Gram (Pound)

**Accessories**



<b>Male SMA to Male SMA Pigtail Cable</b>	<b>Female to Female Jumper Wire Harness</b>	<b>NESDR SMArTee - Premium RTL-SDR w/ Bias Tee</b>
<b>SKU: 100570</b>	<b>SKU: 100500</b>	<b>SKU: 100777</b>