



# Radio Spectrum Processor 1A

## 14-bit SDR



The SDRplay RSP1A is a major upgrade to the popular RSP1—it is a powerful wideband full featured 14-bit SDR which covers the RF spectrum from 1kHz to 2GHz. All it needs is a PC and an antenna to provide excellent communications receiver functionality. Combined with the power of readily available SDR receiver software (including 'SDRuno' supplied by SDRplay) you can monitor up to 10MHz of spectrum at a time. Documented API allows developers to create new demodulators or applications around the platform.

### KEY BENEFITS

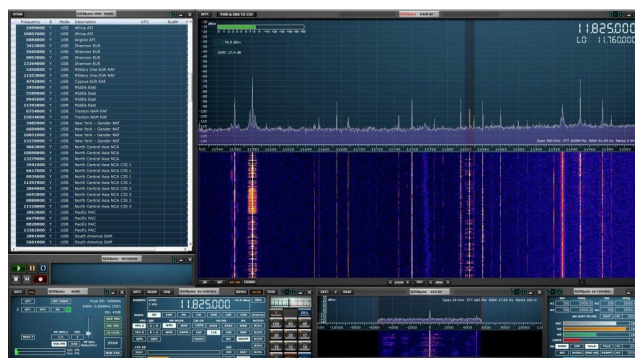
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- Covers all frequencies from 1kHz through LF, MW, HF, VHF, UHF and L-band to 2GHz, with no gaps
- Excellent dynamic range for challenging reception conditions
- Low levels of spurious responses
- Works with all the popular SDR software (including HSDR, SDR Console, Cubic SDR and SDRUno)
- ExtIO based plugin available
- Software upgradeable for future standards
- Strong and growing software support network
- API provided to allow demodulator or application development
- Multiplatform driver and API support including Windows, Linux, Mac, Android and Raspberry Pi 2/3
- Up to 16 individual receivers in any 10MHz slice of spectrum using SDRUno
- Calibrated S meter and power measurements with SDRUno
- Ideal for monitoring of ISM/ IoT/ Telemetry bands <2GHz
- Ideal for portable operation

### KEY FEATURES

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- Continuous coverage from 1kHz to 2GHz
- Up to 10MHz visible bandwidth
- Powers over the USB cable with a simple type B socket
- 14-bit ADC silicon technology (not another 8 bit dongle!)
- 11 high-selectivity, built in front-end preselection filters
- Software selectable AM/FM and DAB broadcast band notch filters
- Software selectable multi-level Low Noise Preamplifier
- Bias -T power supply for powering antenna-mounted LNA
- RF shielding layer inside case
- SDRUno—World Class SDR software for Windows
- Documented API for new apps development
- Single SMA antenna socket covering entire frequency range





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### SPECIFICATIONS

#### General

- Weight 110g
- Size: 95mm x 80mm x 30mm
- Low Current: 185 mA (excl bias T)

#### Connectivity

- Single 50Ω RF connector (SMA)
- USB 2.0 (high speed) type B socket

#### Frequency Range

- Continuous coverage 1kHz – 2GHz
- Frequency Tolerance: 0.5ppm (max)

#### ADC Characteristics

- Sample frequency 2 – 10.66MSPS
- 14 bit native ADC (2 – 6.048MSPS)
  - 12-bit (6.048- 8.064 MSPS)
  - 10-bit (8.064- 9.216MSPS)
  - 8-bit (> 9.216 MSPS )

#### Bias T

- Software Selectable 4.7V @ 100mA

#### Reference

- High Stability 0.5PPM TCXO
- In-field trimmable to 0.01ppm.

#### Maximum recommended input power

- 0dBm continuous, 10dBm for short periods

#### Typical Noise Figures

- 18dB @ 2MHz
- 15dB @ 12MHz
- 15dB @ 25MHz
- 15dB @ 40MHz
- 3.3dB @ 100MHz
- 3.3dB @ 200MHz
- 7.7dB @ 386MHz
- 3.6dB @ 660MHz
- 5.0dB @ 1500MHz
- 6.3dB @ 1800MHz

#### IF Modes

- Zero IF, All IF bandwidths
- Low IF, IF bandwidths ≤ 1.536MHz

#### IF Bandwidths (3dB)

- 200kHz
- 300kHz
- 600kHz
- 1.536MHz
- 5.0MHz
- 6.0MHz
- 7.0MHz
- 8.0MHz

#### Front End Filtering

Automatically configured front end filtering:

#### Low Pass

- 2MHz

#### Band Pass

- 2-12MHz
- 12-30MHz
- 30-60MHz
- 60-120MHz
- 120-250MHz
- 250-300MHz
- 300-380MHz
- 380-420MHz
- 420-1000MHz

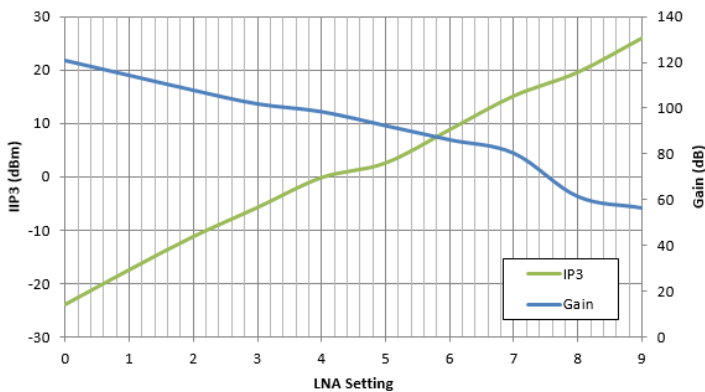
#### High Pass

- 1000MHz

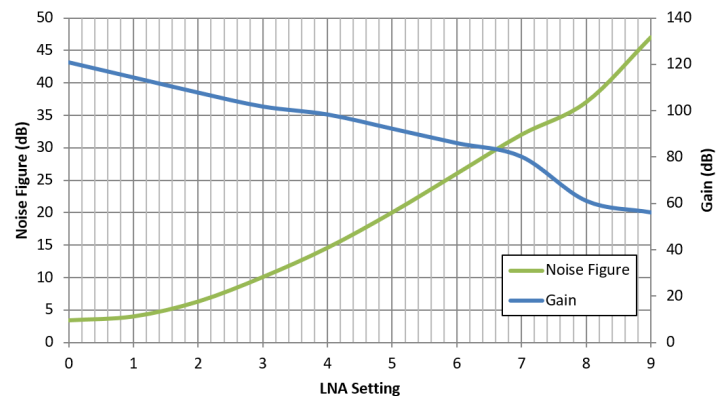
#### Notch Filters

- FM Filter:  
>50dB 85 – 100MHz
- MW Filter:  
>30dB 660 – 1550kHz
- DAB Filter:  
>30dB 165 – 230MHz

Gain and IIP3 Vs LNA Setting @ 100MHz



Gain and Noise Figure Vs LNA Setting @ 100MHz



### SDRuno FEATURES

- Multiple 'Virtual Receivers' which allow for simultaneous reception and demodulation of different types of signals within the same receiver bandwidth.
- A selectivity filter with an ultimate rejection greater than 140dB.
- A unique distortion-free double stage AGC with fully adjustable parameters.
- Multiple notch filters with BW adjustable down to 1Hz, Notch Lock feature.
- A unique synchronous AM mode with selectable/adjustable sidebands, dedicated PLL input filter, and selectable PLL time constants.
- SNR (stereo noise reduction), featuring a proprietary noise reduction algorithm for stereo broadcast.
- AFC for FM signals.
- Calibration for receiver frequency errors.
- Class leading audio quality
- Calibrated S meter and power measurements
- RDS support with "DX Mode" for low signal environment
- Active Noise cancelling
- CAT and Omnirig control
- SSB/AM and Synchronous AM modes
- WBFM and NFM with AFC