

RANGER

AIRSPY

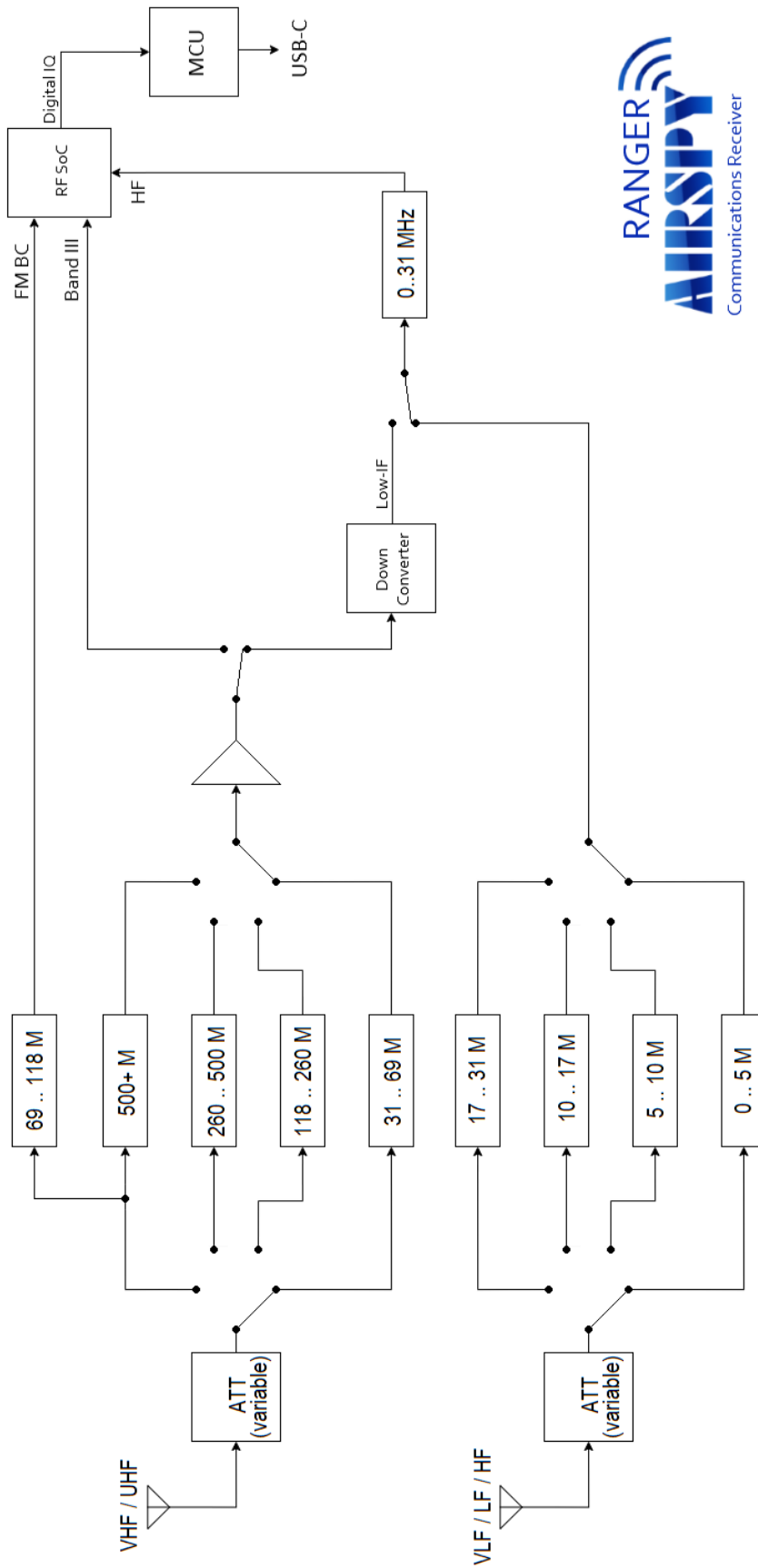
Communications Receiver



Technical Specifications

- Frequency Coverage: 0.5 kHz - 1.750 GHz
 - HF: 0.5 kHz - 31 MHz
 - VHF-I: 31 - 66 MHz
 - VHF-II: 66 - 118 MHz
 - VHF-III: 118 - 260MHz
 - UHF: 260 - 1750 MHz
- Sensitivity (MDS @ 500 Hz BW)
 - HF: -141.0 dBm Typ.
 - VHF/UHF: -142.5 dBm Typ.
- Linearity (at maximum gain)
 - HF: +15 dBm IIP3
 - VHF: +5 dBm IIP3
 - UHF: 0 dBm IIP3
- Blocking Dynamic Range (BDR)
 - HF: 110 dB
 - VHF/UHF: 95 dB
- Reciprocal Mixing Dynamic Range (RMDR)
 - HF: 89 dB at 20 kHz separation
 - VHF: 82 dB at 50 kHz separation
 - UHF: 74 dB at 50 kHz separation
- Input Impedance
 - VHF/UHF: 50 ohms
 - VLF/LF/HF: 1k ohms
- Selectivity
 - RF Preselectors
 - Polyphase Harmonic Rejection Mixer
 - IF Filters
 - Sigma Delta Modulator
 - DDC
- Image Rejection
 - HF/FM: 120 dB (Zero-IF)
 - VHF/UHF: 75+ dB (Low-IF)
- Architecture
 - HF/FM Broadcast: Direct Conversion (Harmonic Rejection Zero-IF)
 - VHF/UHF: Double-Conversion (RF to Low-IF to Zero-IF)
- RF Filtering
 - HF: 5 Preselection Filters
 - VHF/UHF: 5 Preselection Filters
- Gain Control
 - Smart AGC with real time optimization of the gain distribution
 - User controlled Attenuators with 4 dB steps and 0 - 28 dB range
- Bias-Tee
 - User controllable for HF and VHF/UHF
 - HF Bias-Tee bypass switch for the best VLF sensitivity
- Connectors
 - HF: SMA (+15 dBm Max)
 - VHF/UHF: SMA (+15 dBm Max)
 - Ref. Clock: MCX (10 MHz)
 - USB: Type C
- ESD/RF protection with double BAV99 and fast TVS diodes in the RF ports
- ESD protection with USB TVS chip in the USB port
- Up to 710 kHz alias and image free output for 912 KSPS IQ
- High Dynamic Range HF/IF circuit based on 2 x Sigma Delta ADCs @ 36 MSPS followed by a Digital Down Converter (18-bit DDC) and controlled by the Core AGC
- 0.5 ppm high stability, low phase noise VC-TCXO with software-controlled DAC
- Low phase noise PLL (-110 dBc/Hz @ 1kHz separation @ 100 MHz)
- No drivers required - 100% Plug-and-play on 10 and 11. Open-source user mode driver for Linux and other platforms.
- Operating Temperature: -20°C to +48°C
- Ultra small Form Factor with RF tight CNC enclosure

Block Diagram



Dynamic Performance

Two-tone Interference Free Signal Strength (IFSS) test using 2 x Agilent E4433 fed through a Mini-Circuits ZFRSC-42-S+ and JFW 50DR-077. Front-end set at the maximum gain (0 dB attenuation.) X axis is the input power; Y axis is the IM3.

