**Low Noise Amplifier (LNA), Digital Attenuator, Mixer & Local Oscillator VHF Front End for Si473x Radios**

*Nancy Gail Daniels – AD5EU*

Graphical user interface, application

Description automatically generatedThis module is intended as a VHF (from 30MHz – 210MHz) front end to Si473x based radios. It incorporates a 22db low noise amplifier (Mini-Circuits PGA-103), a digital RF attenuator (Peregrine PE4312), a mixer (Analog Devices AD831) and a local oscillator (Silicon Labs Si5351). RF inputs and outputs utilize SMA connectors and system interface is provide by a 6 pin 0.1” (2.5mm) Dupont style header. The module is 55mm x 45mm with four M3 mounting holes

The LNA front end incorporates ESD protection at the antenna and stabilizing network. The attenuator provides from 0-32 dB of attenuation in 0.5 dB steps. The attenuator is controlled via I2C utilizing a MCP23008 I2C to parallel expander with selectable I2C address. The local oscillator supports either a standard 25MHz crystal and/or optional TXCO. It also provides an external user programmable clock. An on board power supply provides -5V for bipolar operation of the mixer.



Block Diagram

Diagram, schematic

Description automatically generated

PCB Front Side

A picture containing text, parking, meter, green

Description automatically generated

PCB Rear Side

Graphical user interface

Description automatically generated