RX down converter

10.368 GHz
1.3 db nf

PMA-183PLN+

BFCN-1052+

LTC5549

MAX2870 PLL

REGULATORS

12V DC

10 MHz

4 GHZ

2.368 GHz to Pluto

TRIPLEXER

Imr240
TX up converter

- **LTC5549**
- **BFCN-1052+**
- **AVA-183A+**
- **QPA-2611**

- 2.368 GHz from Pluto
- 4 GHz
- 10 MHz
- 12V DC

**Max2870 PLL**

**REGULATORS**
Proposed Modules

- **Mixer/LO Module: -11 dbg, RF 8-14 GHz, IF 0.5-6 GHz, estimated BOM $75**
  - LTC5549 bilateral mixer & LO amplifier/doubler
  - MAX2870 PLL
  - Seeduino XIAO for PLL programming and status reporting
  - SMT filter on mixer RF & IF (optional) ports (mini-circuits BFCN footprint)
  - SMA connectors for RF, IF and PLL reference, solder pads for DC power and status data
  - Linear voltage regulators for 10-15v supply

- **LNA Module: 24 dbg, 1.3 db nf, 6-18 GHz, estimated BOM $50**
  - PMA-183PLN+ Amplifier
  - Linear voltage regulator for 10-15v supply
  - SMA connectors RF in/out, solder pads for DC power

- **PA Module: 45 dbg, >2W out saturated, 8-12 GHz, estimated BOM $80**
  - AVA-183A+ driver, QPA-2610 PA
  - Switching regulator for 10-15v supply
  - SMA connectors RF in/out, solder pads for DC power

- **Quadplexer Module, estimated BOM $25**
  - SMA in/out
  - SMA out/in: >=1GHz,>=10 MHZ &<&=40 MHz
  - Solder pads for DC out/in 2A
  - Solder pads for Data in/out <= 100 KHz >= 1 KHz
Transmit power levels

- Pluto -2 dbm (capable of +2 dbm @ 2.4 GHz)
- ERA5 +14 dbm (16 dbg @ 2.4 GHz)
- 4plexer +12 dbm (-2 dbg)
- LMR400 +6 dbm (-6 dbg, 100’)
- 4plexer +4 dbm (-2 dbg)
- Mixer -7 dbm (-11 dbg @ 10GHz)
- Cable + PCB + Wilk -12 dbm (-5 dbg @ 10 GHz)
- AVA183 +1 dbm (13 dbg @ 10 GHz)
- QPA2610 +33 dbm (32 dbg @ 10 GHz)
Receiver NF

• 24 dbg @ 1.3 db nf
• -11 dbg mixer
• 6 dbg @ 3.5 db nf “cable”
• 3.5db nf Pluto
• Cascade => 1.5 db nf
BOM cost

- Mixer ~$75
- LNA ~$50
- PA ~$80
- 4plexer ~$25
- Transceiver : Mixer + LNA + PA = $205
- Repeater: 2x Mixer + LNA + PA + 4x 4plexer = $380