



Matchstiq Z3u

High Performance

Space-Based Missions

Open Architecture

Spectrum Dominance

Small Form Factor

Low SWaP SDR Platform Products



Scalable SWaP vs Capability

Z2

45MHz – 6GHz
1R1T
50MHz BW
AMD Zynq 7010
~2.5W P_{diss}



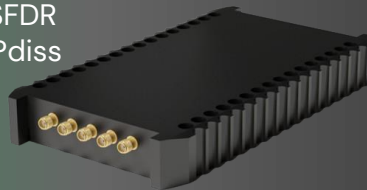
Z3u

45MHz – 6GHz
2R0T or 1R1T
50MHz BW
AMD Zynq US+ ZU3
GPSDO
<6W P_{diss}



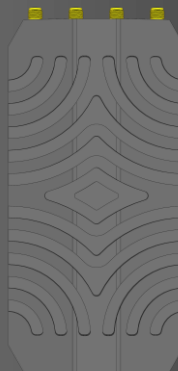
V40 Concept

1MHz – 9GHz
1R1T or 2R2T
50MHz – 1GHz+ BW
70dB SFDR
<40W P_{diss}



Z4 Concept

10MHz – 6GHz
Four Rx Four Tx
50MHz BW
70dB SFDR
<15W P_{diss}



NDR325

20MHz – 6GHz
Four Rx
500MHz BW
80dB SFDR
67W P_{diss}



NV800

10MHz – 6GHz
Eight Rx
50MHz BW
70dB SFDR
<30W P_{diss}



SWaP

Capability

Matchstiq Z3u

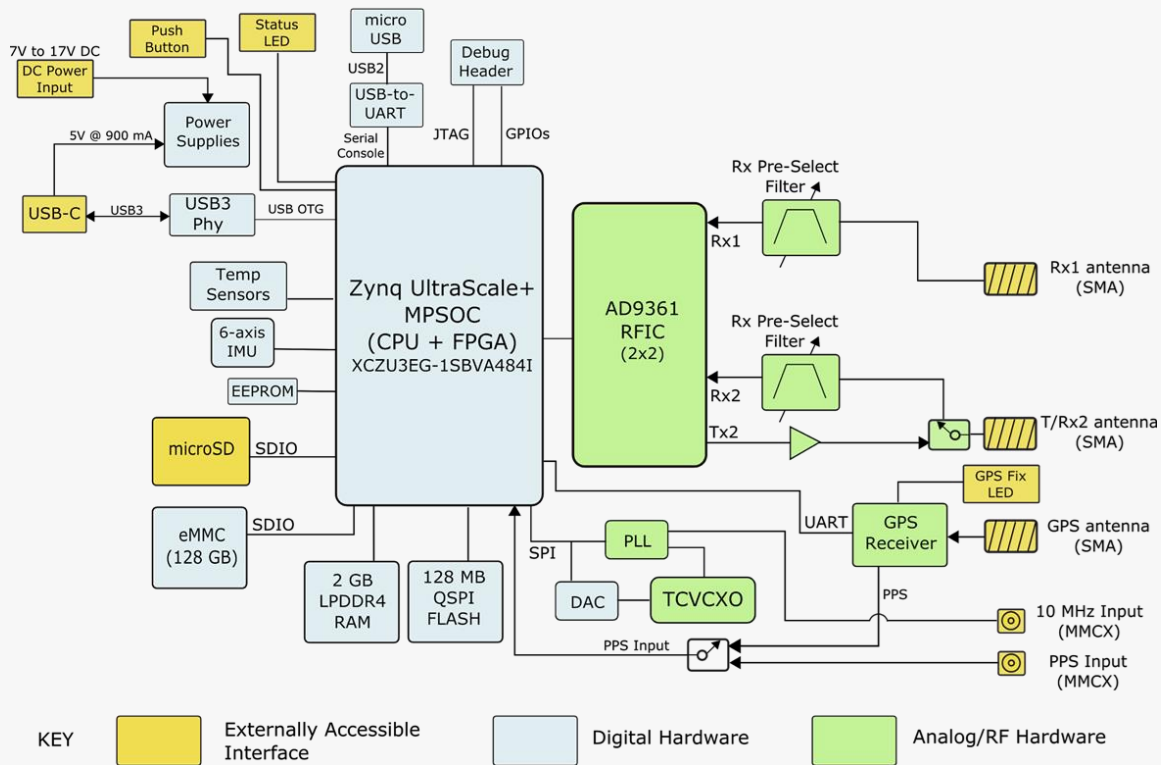


Fully Housed SDR Module

- Provides RF Coverage from 70MHz – 6GHz
 - Up to 50MHz BW on Receive and Transmit
 - 12b ADCs & DACs
 - Typical Rx NF 8dB, Rx IIP3 -10dBm
- Supports Multiple Modes of Operation
 - 1 Rx + 1 Tx, FDD or TDD
 - 2 Rx Phase Coherent
- Features & Interfaces
 - On Board GPSDO, Origin Spider ORG4033f
 - On Board Filtering & Amplification
 - AMD Zynq US+ ZU3 FPGA for Control & Processing
 - Ext 10Mz Input + PPS Input via MMCX Connectors
 - USB 3.0 Interface via USB-C
 - 128 GB eMMC Storage + microSD Card Slot
- Typical Power ~4W via USB-C or DC Input; 92mm x 70mm x 19mm



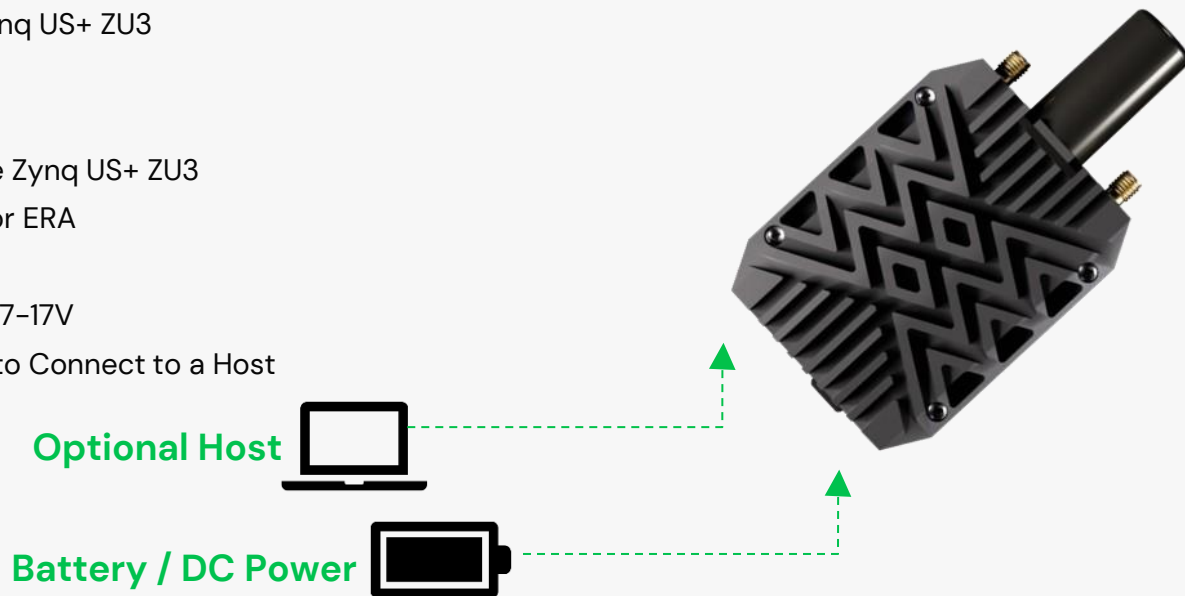
Z3u Block Diagram



Z3u Deployment

Mode 1 – Stand Alone

- Completely Stand Alone SDR
- Local Processing
 - Runs Ubuntu Linux on the Zynq US+ ZU3
 - Runs libsidekiq Locally
 - Option for OpenCPI Build
 - User Application Runs on the Zynq US+ ZU3
 - Epiq Solutions Skylight or ERA
 - 3rd Party Applications
 - Power Provided by DC Jack, 7-17V
 - USB-C Connector Available to Connect to a Host



Z3u Deployment

Phone or Tablet as Host

- Mobile, Small Form Factor SDR
- Z3u Mag-Mounts to Back of Phone or Tablet
 - Option to Screw Mount to a Tactical Radio
- Single USB-C Cable from Phone Provides Power & Data
- Z3u or Phone can Provide Application
 - Z3u Accessed as an IP Address from Phone
 - Application in an App or a Browser Window
 - Epiq Solutions Skylight or ERA Application
 - GNU Radio, SOAPY Interface, or Other Application
 - Embedded Application on Z3u
- Phone Capability for 4G/5G/WiFi Unaffected by Z3u
 - Simultaneous 5G Operation + SDR Application



Z3u Power Consumption for Example Configurations

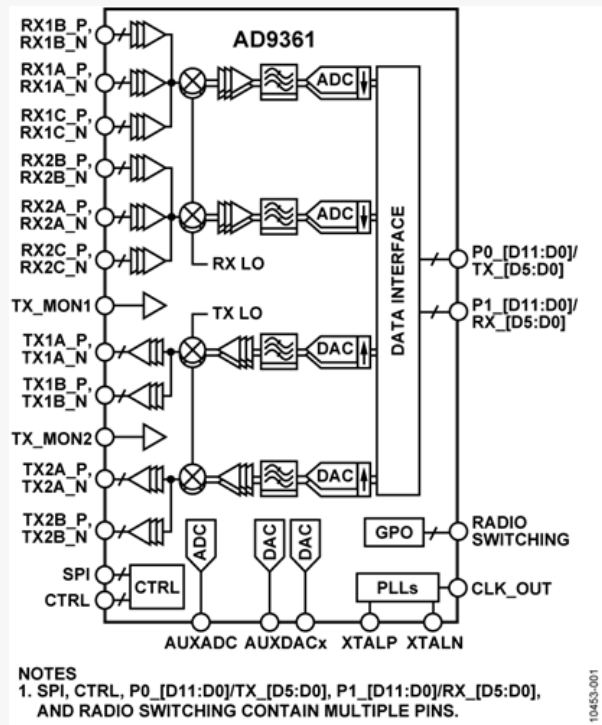


Mode	Details	Sample Rate	Power Consumption
Idle	2 / 1	2 / 2	1 / 1
	USB, GPS on, and antenna bias enabled	NA	2.36 W
	USB, GPS on, and antenna bias disabled	NA	2.31 W
	USB, GPS off, and antenna bias enabled	NA	2.21 W
	USB, GPS off, and antenna bias disabled	NA	2.15 W
1 Rx, 0 Tx	USB, GPSSDO enabled, GPS on, and antenna bias enabled	NA	3.17 W
	USB, GPS on, and antenna bias enabled	1 MSPS	3.61 W
	USB, GPS on, and antenna bias enabled	10 MSPS	3.76 W
2 Rx, 0 Tx	USB, GPS on, and antenna bias enabled	30 MSPS	4.06 W
	USB, GPS on, and antenna bias enabled	1 MSPS	3.81 W
	USB, GPS on, and antenna bias enabled	10 MSPS	4.11 W
0 Rx, 1 Tx	USB, GPS on, and antenna bias enabled	30 MSPS	4.46 W
	USB, GPS on, and antenna bias enabled	1 MSPS	3.26 W
	USB, GPS on, and antenna bias enabled	10 MSPS	3.56 W
1 Rx, 1 Tx	USB, GPS on, and antenna bias enabled	30 MSPS	3.91 W
	USB, GPS on, and antenna bias enabled	1 MSPS	3.61 W
	USB, GPS on, and antenna bias enabled	10 MSPS	3.86 W

Z3u Integrated RFIC – Analog Devices AD9361

Dual Rx, Dual Tx Transceiver

- RF Coverage
 - LO tuning from 70MHz – 6GHz
 - RF Input Frequencies from 45MHz – 6GHz
- Receiver Specifications
 - 12b ADCs, Typical NF 8dB, Typical IIP3 -10dBm
 - 50MHz Maximum Bandwidth per Receiver
- Transmitter Specifications
 - 12b DACs, Output Power +7dBm, Typical OIP3 +23dBm
 - 50MHz Maximum Bandwidth per Transmitter
- Advanced Features
 - Frequency Hopping
 - Multi-Chip Sync
- One AD9361 Devices is Integrated into the Z3u



Thank You

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