



Zynq UltraScale+ RFSoc Kit Selection Guide



Zynq® UltraScale+™ RFSoc Boards & Kits Portfolio

Gen 1
4GHz

ZCU111
Evaluation Kit



ZU28DR

Application Development & Performance Evaluation of:
ADCs: 8x 12-bit 4.096GSPS
DACs: 8x 14-bit 6.554GSPS
SD-FEC: 8

Production Available



Avnet RFSoc Kit
Development Kit



ZU28DR

Wireless Application Development Leveraging:
Xilinx ZCU111 Evaluation Kit
Avnet Qorvo 2x2 Small Cell RF Front End 1.8GHz Card
Avnet RFSoc Explorer with MATLAB® and Simulink®

Production Available



Gen 2
5GHz

ZCU1285
Characterization Kit



ZU39DR

Ideal for Tone Testing & Data Sheet Verification of:
ADCs: 16x 12-bit 2.220GSPS
DACs: 16x 14-bit 6.554GSPS

Production Available



Gen 3
6GHz

ZCU208
Evaluation Kit



ZU48DR

Application Development & Performance Evaluation of:
ADCs: 8x 14-bit 5.0GSPS
DACs: 8x 14-bit 10.0GSPS
SD-FEC: 8

Production Available



ZCU216
Evaluation Kit



ZU49DR

Application Development & Performance Evaluation of:
ADCs: 16x 14-bit 2.5GSPS
DACs: 16x 14-bit 10.0GSPS

Production Available



DFE
7.125GHz

ZCU670
Evaluation Kit



ZU67DR

Ideal for 5G Wireless NR Application Evaluation:
ADCs: 8x 2.95GSPS and 2x 5.9GSPS
DACs: 8x 10GSPS

Pre-Production Available



Zynq UltraScale+ RFSoc Boards & Kits: Resources

| | | Gen 1 (4GHz) | | | Gen 2 (5GHz) | Gen 3 (6GHz) | | DFE (7.125GHz) |
|-----------------------------|--|-------------------|-------------------|---------------------|---------------------|--|---------------------|----------------------------|
| Feature | | ZCU111 | Avnet Dev Kit | ZCU1275 | ZCU1285 | ZCU208 | ZCU216 | ZCU670 |
| Xilinx Device | Zynq UltraScale+ RFSoc | ZU28DR | ZU28DR | ZU29DR | ZU39DR | ZU48DR | ZU49DR | ZU67DR |
| | System Logic Cells | 930k | 930k | 930k | 930k | 930k | 930k | 489k |
| | Package, Speed, and Temperature Grade | 2FFVG1517E | 2FFVG1517E | 2FFVF1760E | 2FFVF1760I | 2FSVG1517E | 2FFVF1760E | 2FSVE1156I |
| RF-ADC w/DDC | # of 12-bit ADCs (Max Rate) | 8R (4.096GSPS) | 8R (4.096GSPS) | 16R (2.058GSPS) | 16R (2.220GSPS) | - | - | - |
| | # of 14-bit ADCs (Max Rate) | - | - | - | - | 8R (5GSPS) | 16R (2.5GSPS) | 8 (2.95GSPS) 2 (5.9GSPS) |
| RF-DAC w/DUC | # of 14-bit DACs (Max Rate) | 8T (6.554GSPS) | 8T (6.554GSPS) | 16T (6.554GSPS) | 16T (6.554GSPS) | 8T (10GSPS*) | 16T (9.85GSPS) | 10 (10GSPS) |
| RF Data Converter | Interpolation / Decimation | 1, 2, 4, 8 | | | 1, 2, 4, 8 | 1, 2, 3, 4, 5, 8, 10, 12, 16, 20, 24, 40 | | |
| Error Correction | Soft-Decision FEC (SD-FEC) | 8 | 8 | - | - | 8 | - | - |
| Boot / Code Storage | SD Boot | Yes | | | Yes | Yes | Yes | Yes |
| | QSPI Boot | Yes | | | Yes | Yes | Yes | Yes |
| | JTAG Boot | Yes | | | Yes | Yes | Yes | Yes |
| Communications & Networking | RJ-45 | 1 | 1 | - | - | 1 | 1 | 1 |
| | SFP/SFP+/zSFP+/SFP28 | 4 | 4 | - | - | 4 | 4 | 4 |
| | USB 3.0 | 1 | 1 | - | - | 1 | 1 | 1 |
| | USB-UART/JTAG | 1 | 1 | 1 UART, 1 JTAG | 1 UART, 1 JTAG | 1 | 1 | 1 |
| | QSPI | 2 | 2 | 1 | 1 | 2 | 2 | 2 |
| | I2C | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Control & User Interaction | Bullseye Connector ADC/DAC | - | - | 2 | 2 | - | - | - |
| | Bullseye Connector GTY | - | - | 4 | 4 | - | - | - |
| | Bullseye Connector GTR | - | - | 1 | 1 | - | - | - |
| | PMBus | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Debug | JTAG PC4 Header | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Expansion Connectors | FMC+ | 1 | 1 | 1 HPC, 1 LPC | 1 HPC, 1 LPC | 1 | 1 | 1 |
| | RFMC | 2 RFMC 1.0 | 2 RFMC 1.0 | - | - | 2 RFMC 2.0 | 2 RFMC 2.0 | 2 RFMC 2.0 |
| | PMOD | 2 | 2 | - | - | - | 2 | 2 |
| Memory | PS DDR4 | 4GB 64-bit | 4GB 64-bit | - | - | 4GB 64-bit | 4GB 64-bit | 4GB 64-bit |
| | PS DDR3 | - | - | 2GB 64-bit | 2GB 64-bit | - | - | - |
| | PL DDR | 4GB 64-bit | 4GB 64-bit | - | - | 4GB 64-bit | 4GB 64-bit | 4GB 64-bit |
| | SD CARD | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | M.2 SATA Connector | Yes | Yes | - | - | Yes | Yes | Yes |
| Add-on Cards | Breakout Balun Card | XM500 (4GHz 8T8R) | XM500 (4GHz 8T8R) | RF100 (4GHz 16T16R) | RF200 (5GHz 16T16R) | XM655 (6GHz 16T16R) | XM655 (6GHz 16T16R) | XM755 (7.125GHz 16T16R) |
| | Loop Back Card | - | - | - | - | XM650 (16T16R) | XM650 (16T16R) | XM650 (16T16R) |
| | Clock Module Card | - | - | CLK101, CLK103 | CLK101, CLK103 | CLK104 | CLK104 | Optional CLK104 |
| | Qorvo 2x2 1.8GHz Card | - | 1 | - | - | - | - | - |
| Software Tools | Avnet RFSoc Explorer for MATLAB® and Simulink® | - | Yes | - | - | - | - | - |
| | RF Analyzer | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | RF Evaluation Tool | Yes | Yes | - | - | Yes | Yes | - |
| | Power Advantage Tool | Yes | Yes | - | - | Yes | Yes | Yes (Stand-alone) |
| Design Files | Reference Designs | Yes | Yes | - | - | Yes | Yes | Yes |

* 10GSPS capable with SCD silicon