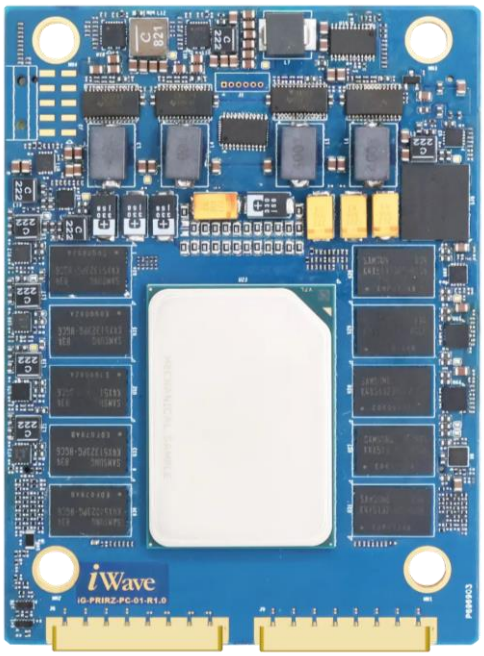
iG-RainboW-G67M

Agilex™9 R17B Direct RF System on Module

The Agilex™ 9 SoC FPGA-based System on Module integrates the AGRW014 device in the R17B package, combining powerful processing with advanced wideband RF capabilities. It features a quad-core 64-bit ARM® Cortex®-A53 processor running up to 1.4 GHz and up to 1.4 million Logic Elements for extensive FPGA programmability.

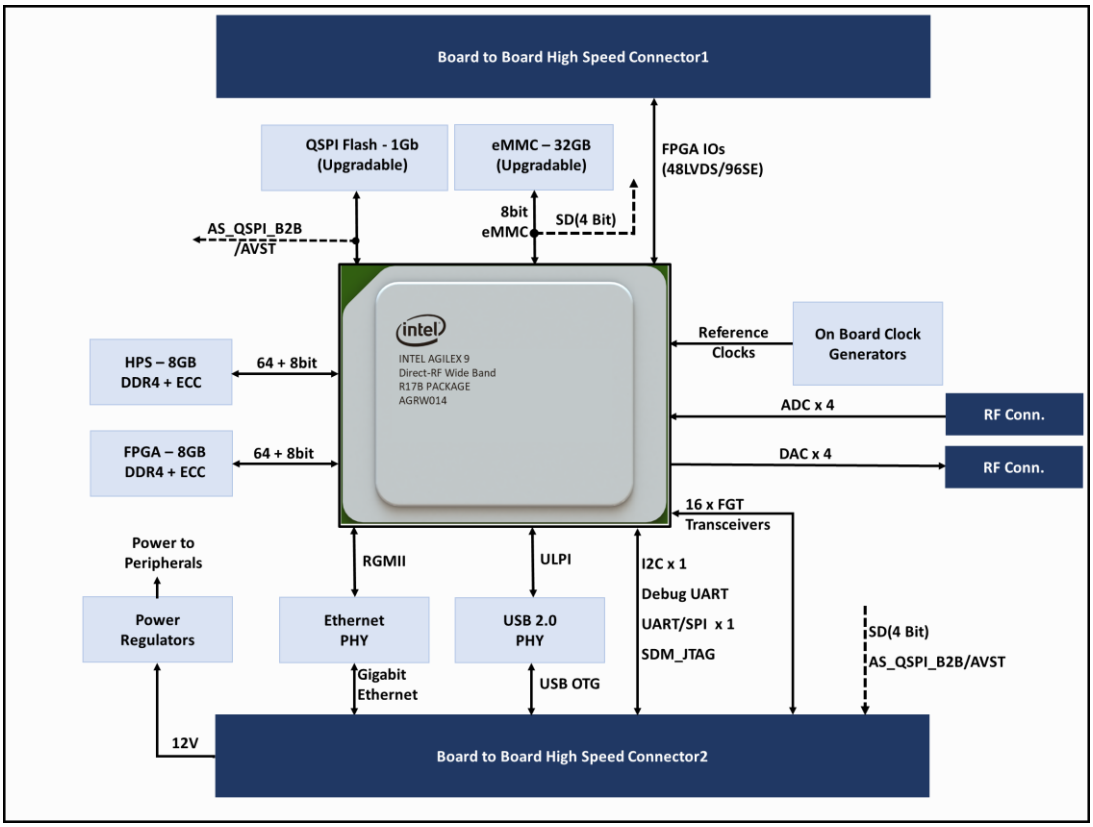


Designed for high-performance RF applications, the module includes integrated 64 Gsps RF-ADCs and RF-DACs with up to 36 GHz bandwidth, and 16 transceivers supporting 32 Gbps (NRZ) and 58 Gbps (PAM4) for high-speed connectivity. With 8GB ECC DDR4 for both HPS and FPGA, this SoM is ideal for phased array systems, radar, aerospace, defence, and high-speed data aggregation.

Highlights

- Agilex™9 SoC FPGA R17B Package – AGRW014 Wideband Device
- Quad-core 64-bit ARM® Cortex®- A53 up to 1.4GHz
- 8GB DDR4 for HPS, 8GB DDR4 for FPGA – both with ECC
- 32GB eMMC Flash and 256MB QSPI Flash
- 16 x FGT transceivers up to 58Gbps PAM4
- ADC x 4 & DAC x 4 with sampling rate up to 64Gsps
- Up to 1,437,240 Logic elements
- Compact Module with form factor of 82mm x 110mm

Block Diagram



Technical Specifications

CPU	Agilex 9 R17B Direct RF Soc FPGA • Quad-core 64-bit ARM® Cortex®-A53 up to 1.4GHz • Up to 1,437,240 Logic elements • 16 x FGT Transceivers up to 58Gbps PAM4 • ADC x 4 & DAC x 4; Sampling rate up to 64Gsps
Memory	• HPS 72bit DDR4 (8GB) • FPGA 72bit DDR4 (8GB) • HPS 8bit eMMC (32GB Upgradable) • SDM QSPI Flash (1Gb Upgradable) • 2Kb I2C EEPROM
On SOM Features	• Gigabit Ethernet PHY x 1 • USB2.0 OTG through On SOM PHY x 1 • On Board Clock Generators • FAN Header x 1
Board to Board Connector Features	**HPS/SDM Interfaces** • RGMII Gigabit Ethernet x 1 Port (through On-SOM Gigabit Ethernet PHY)

Board to Board Connector interfaces	• I2C Interface x 1 • Debug UART x1 • JTAG Interface x 1 • Active Serial/AVST x 1 (Optional) **HPS to FPGA Interfaces** • H2F I2C x 1 **FPGA Interfaces** • General Purpose Transceivers x 16 (up to 58Gbps – PAM4) • FPGA IO's (48LVDS/96SE) **RF Connector Interfaces** • ADC x 4; with 10-bit resolution, 36GHz Bandwith and Sampling rate up to 64Gsps • DAC x 4; with 10-bit resolution, 36GHz Bandwith and Sampling rate up to 64Gsps
OS Support	Linux BSP, Quartus
Operating Temp.	-40°C to +85°C (Industrial Grade)
Form Factor	82mm x 110mm
Power Input	12V input through Board-to-Board Connector-2
Environment Spec.	REACH & RoHS3 Compliant

Ordering Information

TBD	AGRW014 R17B Agilex 9 Wideband RF SOM with 8GB HPS DDR4, 8GB FPGA DDR4, 32GB eMMC and 256MB QSPI on SOM

Product accessories

Agilex 9 R17B Direct RF SoM 3U VPX

The Agilex 9 R17B Direct RF based 3U VPX integrates Altera's Agilex 9 AGRW014 device. It comes in slot profile of SLT3-PAY-1F1U1S1S1U1U4F1J-14.6.13-n.

Thermal Solutions

For a High-Power System on Module such as the Agilex 9 AGRW014 based SOM, thermal design is very important factor. iWave Supports Heat Sink Solutions for the SOM.

Applications

- **Industrial HMI & Automation**

  Enables seamless interaction between humans and machines in automation and smart systems supporting management and security.

- **Smart city & Home appliance**

  Improves energy efficiency, security, and control in smart buildings. Facilitates secure data transmission and edge computing for management.

- **Industry**

  AI applications on industries helps in improving efficiency, increasing productivity & quality.

- **Camera Applications**

  Enhances real-time data collection and detection in security and surveillance.

- **Phased Array Radar & Electronic Warfare**

  Leverages real-time beamforming and high-throughput RF data acquisition for advanced defense and aerospace systems.

- **Wireless Infrastructure & 5G/6G**

  Supports Massive MIMO, digital beamforming, and wideband signal processing in next-generation telecom networks.

A Global Leader in Embedded Systems Engineering and Solutions

Since 1999, we have pioneered leadership in embedded systems technology, establishing ourselves as a strategic embedded technology partner for advanced solutions. Our comprehensive portfolio encompasses ARM and FPGA System on Modules, COTS FPGA solutions, and ODM solutions which include Telematics, Gateways & HMI Solutions.

Beyond our robust product ecosystem, we provide comprehensive ODM support with specialized custom design and manufacturing capabilities, enabling customers to accelerate and optimize their product development roadmaps. With a strategic focus on industrial, automotive, medical, and avionics markets, we deliver innovative technology solutions to global clients.

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