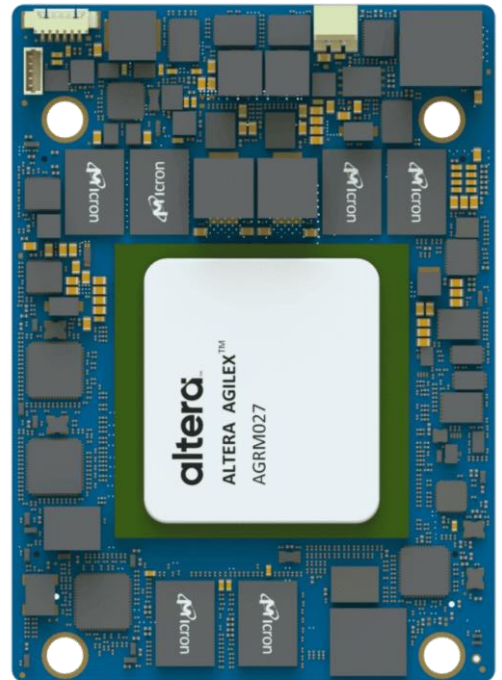


iG-G78M®

Agilex® 9 R31D Mid-band Direct RF System on Module

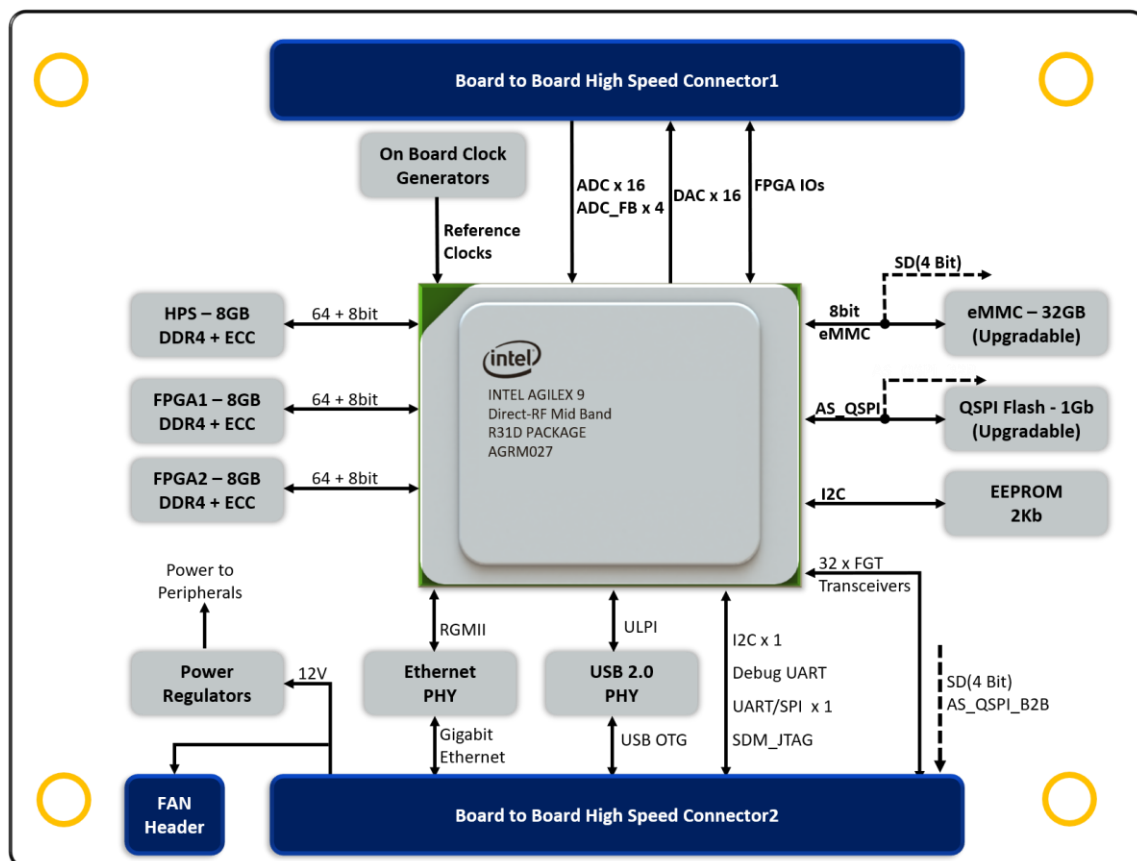
iWave's Agilex™ 9 Mid-Band Direct RF System on Module is a high-performance RF computing platform powered by the Altera Agilex™ 9 Mid-Band Direct RF SoC FPGA, the module combines integrated RF data converters, programmable FPGA fabric & Arm® processing to deliver low-latency, high-bandwidth signal processing for demanding RF workloads. The SoM integrates quad-core Arm Cortex®-A53 processing, onboard DDR4 memory with ECC, high-speed transceivers up to 58 Gbps & extensive high-speed I/O in a compact 82 × 110 mm form factor. By integrating RF data conversion & adaptive computing on a single platform, it simplifies system design, reduces development complexity & accelerates the deployment of advanced RF & edge computing applications.



Highlights

- ❖ Altera Agilex® 9 AGRM027 Direct RF Mid-band SoC FPGA Device
- ❖ Up to 2.7M Logic Elements, 17056 18x18 Multiplier
- ❖ 32x high-speed FGT transceivers up to 58 Gbps PAM4
- ❖ 20x ADC with Sampling rate up to 4Gsps
- ❖ 16x DAC with Sampling rate up to 12Gsps
- ❖ Industrial operating temperature range from -40 °C to +85 °C
- ❖ Form Factor: 82mm x 108mm (BRYNc)

Block Diagram



Technical Specifications

Agilex® 9 Mid-band Direct RF SoC FPGA	Hard Processing System (HPS) - Quad-core 64-bit ARM® Cortex®-A53 up to 1.4GHz Field Programmable Gate Array (FPGA) - Up to 2,692,760 Logic elements 32 x FGT transceivers up to 58Gbps PAM4 - ADC x 20 with Sampling rate up to 4Gsp/s - DAC x 16 with Sampling rate up to 12Gsp/s
Memory & Storage	8GB DDR4 with ECC for HPS (64bit + 8bit) 2 x 8GB DDR4 with ECC for FPGA (64bit + 8bit) 8bit eMMC (32GB Upgradable) - QSPI Flash (1Gb Upgradable) - EEPROM (2Kb Upgradable)
On SoM Features	1 x Gigabit Ethernet PHY 1 x USB2.0 through On SoM PHY

On SoM Features	- On Board Clock Generators - Fan header
Board to Board Connector 1	- ADC x 16 (up to 4 Gsp/s) - ADC FB x 4 (up to 4 Gsp/s) DAC x 16 (Up to 12 Gsp/s) - FPGA IOs (96LVDS/192SE)
Board to Board Connector 2	- Gigabit Ethernet x 1 Port - USB 2.0 OTG x 1 Port - I2C x 1 Port - Debug UART x 1 Port - UART (With CTS and RTS) x 1 Port - SDM JTAG x 1 port - High Speed Transceivers x 32 (up to 58Gbps – PAM4)
OS Support	Linux
Operating Temp.	-40°C to +85°C (Industrial Grade)
Form Factor	82 X 108 mm (BRYNc)
Power Input	12V input through Board-to-Board Connector2
Environment Spec.	REACH & RoHS3 Compliant

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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