

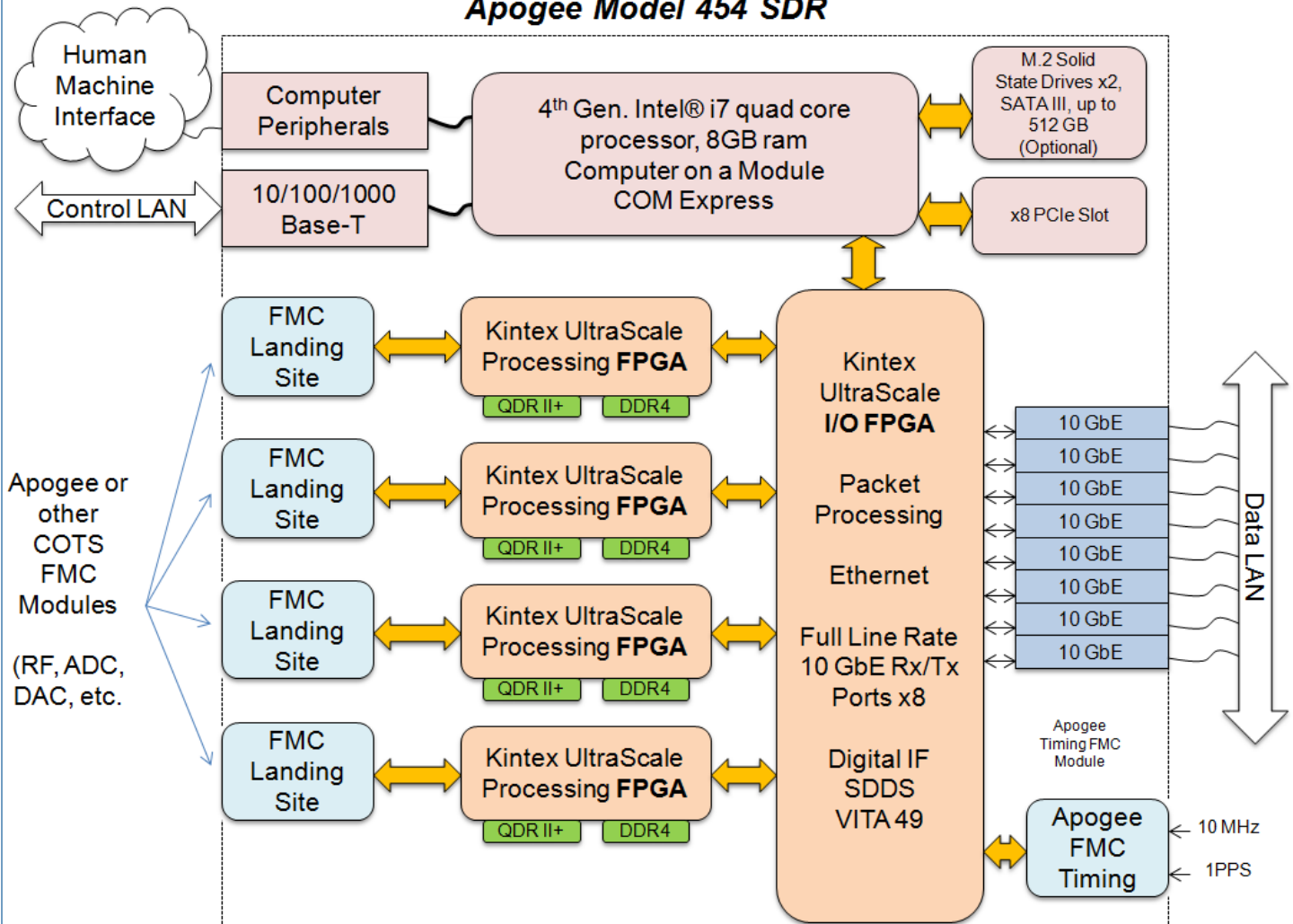
• Applications

- COMINT / SIGINT
- Software Defined Radio
- SATCOM
- Demodulation / Modulation
- VSAT
- Wireless
- 3rd Party Developers

A High Performance Mixed-Signal / Network Appliance

The Model 454 is an extremely high throughput mixed-signal and network based FPGA processing unit. The unit can be populated with up to four industry standard FPGA Mezzanine Cards (FMC) and has four of the latest generation Xilinx Kintex Ultrascale FPGAs populated on the main board. Processed data is routed to the Ultrascale I/O FPGA where it is packetized into Digital IF and sent out one or more of the units 10 Gigabit SFP+ ports. The unit can also ingest network data, apply advanced Digital Signal Processing algorithms in the FPGAs, and return the processed data back to the network. The Model 454 can also receive timing information and apply it across the DSP applications that require precise timestamps or other types of data correlation. Command and control is via a dedicated 100/1000 Base-T command and control port. Apogee provides a full software ICD with each application that is delivered.

Apogee Model 454 SDR



Model 454 Application Examples

L-Band
C-Band

Network Data,
Digital IF

RF/Analog
In/Out



High Channel Count
Digital Tuners

DVB - DVB-S2X
Demodulators

Wideband Equalizers

Interference
Cancellation

Digital IF to Analog
Output – Feed
legacy modems

SATCOM Receive
and Transmit

SATCOM
Modulators /
Demodulators

Model 454 Key Specifications

User FPGAs.....	x4, Xilinx Kintex Ultrascale p/n XCKU115-2FLVF1924EES9850
Per FPGA DDR Memory.....	x1, 8GB DDR4 Memory Module (upgradeable to x2 8GB DDR4 modules)
Per FPGA QDR Memory.....	x2, 72-Mbit QDR® II+ SRAM Four-Word Burst (upgradeable to four memories per FPGA) QDR's can also be upgraded in size to 144-Mbit, for a total of 576-Mbit per FPGA
Computer on a Module (COM Express).....	4th Gen. Intel® i7 quad core, 8GB RAM
FMC Landing Sites.....	x4, ANSI/ VITA 57.1 FPGA Mezzanine Card (FMC), High Pin Count (HPC)
10 Gigabit I/O.....	x8 bidirectional ports (SFP+), full line rate, Ethernet-MAC-UDP-IP (optional TCP/IP) Supports up 512 independent Multi-cast Sessions
Solid State Drives (optional).....	x2, M.2 SATA III, up to 512 GB per drive
PCIe.....	x1, x8 PCIe slot with two GPU AUX power connectors
Timing (optional).....	Dedicated 5th FMC landing site can be populated with Apogee FMC Timing Module (p/n 454-0103-01) , 10 MHz and 1PPS Reference Input and Output ports
External Ports.....	10/100/1000 Base-T Control, eSATA, USB 2.0, VGA
3rd Party.....	Available 3rd Party Application Developers Kit
Built-In Self Test.....	Puts the unit in a looping test that verifies Memories, High Speed GT Interconnects, and SFP+ (when cables placed for loopback). Reports any errors to a log file
Form Factor/Environmental.....	19" 2U rack mount (24" depth), 0-50C Operation Range (TBD), less than 500 Watts power
Power.....	90–264 Vac, 47–63 Hz, Power Factor Corrected, Humidity 5%–90% Non-condensing



Apogee Applied Research, Inc. provides engineering services and hardware systems to commercial and government end users. Our main area of expertise is ultra high bandwidth Software Defined Radios. Apogee systems feature advanced Digital Signal Processing techniques and the ability to process a wide variety of signal types.

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Our leadership team has over 45 years combined experience in the field of Digital Signal Processing, and a reputation for outstanding customer service long after the sale. We have a proven track record of delivering systems on time and exceeding customer expectations from concept to delivery.

We're on the Web

www.apogee-ar.com

Apogee's Dayton Facility

- **Engineering**
- **Laboratories**
- **Production**
- **Test**

