

Instrumentation Radar System

The industry standard in high-performance RCS and antenna measurements

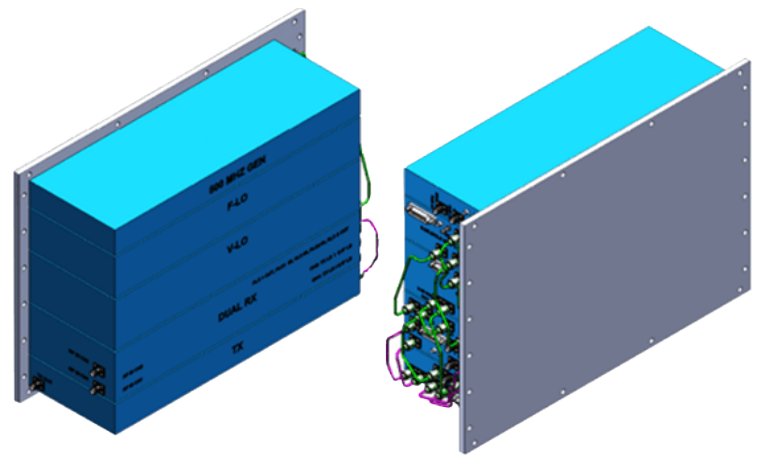
- Highspeed ISAR, CSAR, LSAR, and Doppler measurements
- Dynamic RCS measurements of moving targets
- Automated calibration utilities
- Real-time dynamic processing and imaging
- Versatile diagnostics
- Simultaneous, scalable monostatic/bistatic measurements
- Unsurpassed reliability
- Environmentally versatile
- Fast, full polarization-matrix measurements
- Remote operations ready
- Ultra compact with high performance
- Guaranteed 10 year supportability

BlueMax Now

BlueMax G7 is a high-performance, wide-band Pulsed IF system capable of a pulse repetition frequency (PRF) above 2 MHz, selectable between 1 Hz to 5 MHz with multiple range gates, multiple receive channels, and great frequency agility. When maximum data throughput or a very high sample rate is required, BlueMax G7 is the answer. Redundant dual independent receive channels allow faster polarimetric measurements and use with multi-channel antennas such as tracking antennas.

RF System

BlueMax G7 uses a common IF architecture for configuration to any desired frequency coverage. New frequency bands are added with the appropriate frequency-specific converter/HPA/LNA subsystem. Numerous loop modes at different stages in the IF and the RF circuits channel the transmit signal to the receiver allowing fast fault isolation and convenient diagnosis of system health. An optional synthetic target generator steps up system-level diagnostics to distinguish system problems from external errors.



Signal Detection

Multiple, independent RF digital converters sample radar returns at user-specified range gates providing continuous, over-sampled I/Q signal acquisitions with sub-pulsewidth range steps. Refined BlueMax G7 RF circuitry coupled to the over-sampling data converters enables signal capture with rise/fall times ≤ 2 ns. The BlueMax G7 wideband RF subsystems and data converters provide >90 dB dynamic range on single samples and ≥ 120 dB dynamic range within a coherent processing interval.

Digital System

The interface between the user-interface computer and the system hardware is digital via gigabit Ethernet. All system timing and control signals, receive-data processing and data storage are high-speed digital. The digital subsystem leverages the latest Xilinx RFSoc RF converter technology that provides unmatched multichannel RF performance and an industry standard interface for waveform generation and high speed signal capture.

BlueMax G7 System Specifications

RF Performance

Receiver bandwidth	1-500 MHz in 8 steps	Isolation	Up to 120 dB
Receiver sensitivity	-91 dBm	Linearity	0.2 /10 dB, 2° /10 dB
Dynamic range	≥80 dB single pulse	Transmit power	SSPA, TWTA, array
System noise figure	<5 dB typical	Frequency stability	5x10 ⁻⁹ per day
Resolution	0.001 dB, 0.01°	Variable LO source	Internal subsystem
Pulsed waveforms	Sequential, custom, hopped, and jittered	Multiple pulses in air	Up to 256
Complex waveforms	Intrapulse modulation, pulse compression	Multiple frequencies	Range specific architectures
Phase shifter	18-bit (0.001°)	Phase code waveform	Lintek, circle, bi-phase, fixed and custom

Measurement Capabilities

Frequency coverage	0.1 - 20 GHz
	0.3-100 GHz ⁰
Waveforms	32 simultaneous, independent
Range gates	Continuous
Tx/Rx polarizations	HH, VV, HV, VH
Receive channels	Up to 10 simultaneous

Data Acquisition

Detection method	I/Q
A/D conversion	>16 bits equivalent
Output data format	All industry formats
Samples per second	>1 Gsps
Maximum frequencies	128 K
Storage Rates	Up to 10 Mb/s

Collection Computer

Hardware	High-end high performance personal computer
Real-time displays:	2-D, 3-D, Polar, Pixel, Waterfall, Global plots
Storage	Up to 10 Mb/s

