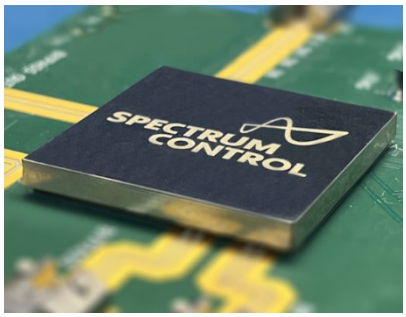
PRODUCT DATASHEET

18 – 40 GHz Block DownConverter RF+™ System-in-Package

SCRS-00-1001

New RF+ SiP offers high-fidelity millimeter wave block conversion in a high-volume package, down-converting wideband mmWave signals covering 18 - 40 GHz into the standard 2 - 18 GHz band

Spectrum Control is redefining how developers design and build modern RF and digital systems with fully embedded, system-ready solutions. Miniature & integrated, software-instrumented, with dramatically reduced cost and development time and no performance trade-offs



The Smarter Way to Build RF+Digital Systems

Our RF+ SiPs offer a complete platform for mixed signal integration in small surface-mount packages: high fidelity signal conditioning, power supply & distribution, and digital tuning, command & control.

- Miniaturization and integration of system functions saves valuable board space without compromising performance
- Pre-engineered system blocks significantly reduce engineering time
- Volume-ready surface mount solutions simplify manufacturing
- Applications include wireless comms, test & measurement, and aerospace & defense.

These compact SiPs to help you minimize space and maximize performance. Whether you are working with 3UVPX, VNX or custom form factors our SiPs help densify your designs.

- Simplified design and rapid development
- Software-instrumented for tuning and control
- Unified power regulation, power conversion, and power routing
- Streamlined component sourcing
- Two-channel mmWave block downconverter
  - Input Channel 1: 18-26 GHz
  - Input Channel 2: 26-40 GHz
- Integrated power supply generated from a single +9VDC input
- Integrated digital gateway with customizable parallel or serial interface to control and provide status of
  - Filter Bands
  - Amplifier Gain
  - Digital Attenuators
  - Regulators (ON/OFF, Sequencing)
  - RF Detector Thresholds
  - Temperature
- On-board memory provides storage capacity for calibration data to support optimal performance over wide temperature ranges
- Designed for high volume production and optimized to minimize supply chain risk
- US-manufactured and sourced
- Custom configurations available

RF+Digital™

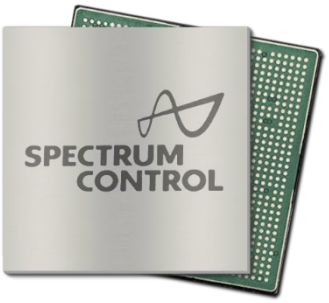
Approved for Release: June 2025

email: SciBlocks@am.spectrumcontrol.com

Specifications

SCRS-00-1001

Description	Specification Band 1	Specification Band 2	Units
Input Frequency Range	18 - 26	26 - 40	GHz
LO Frequency	10.75		GHz
Output Frequency Range	6.25 - 14.25	3 - 17	GHz
Gain	22-28		dB
Gain Flatness	+/- 3		dB
Noise Figure	7	9	dB
OP1dB	10	10	dBm
OIP3	19	20	dBm
Input Gain Control	26		dB
Input Gain Control Step Size	0.5		dB
Output Gain Control	26		dB
Output Gain Control Step Size	0.5		dB
Attenuator Settling Time	1		us
Switching Speed Fast Mode	100		ns
Switching Speed Low Spur Mode	10		us
Current (+9VDC), All Amplifiers Active	1700		mA
Current (+9VDC), Unused Band Amplifiers Disabled	1300		mA
Operating Temp. Range	-40 to +85		°C



SCRS-00-1001 includes

- Intel FPGA integrated
- 13 Voltage Regulators
- 11 RF Amplifiers
- 2 Digital Attenuators
- RF detector
- 11 RF Filters

Available Part Numbers

Part Number	Description
SCRS-00-1001	**2-Channel mmWave Block DownConverter (Ch1: 18-26 GHz, CH2: 26-40 GHz)**
SCRS-00-1003	2-Channel mmWave Block UpConverter (Ch1:18-26 GHz, CH2: 26-40 GHz)
SCRS-00-1002	X-Band Transceiver Front End
SCRS-00-XXXX	Custom solutions include Wideband RF Front End, X-Band RF Front End, Switched Filter Banks, Frequency Converters, Power Amplifiers, or your custom IMA

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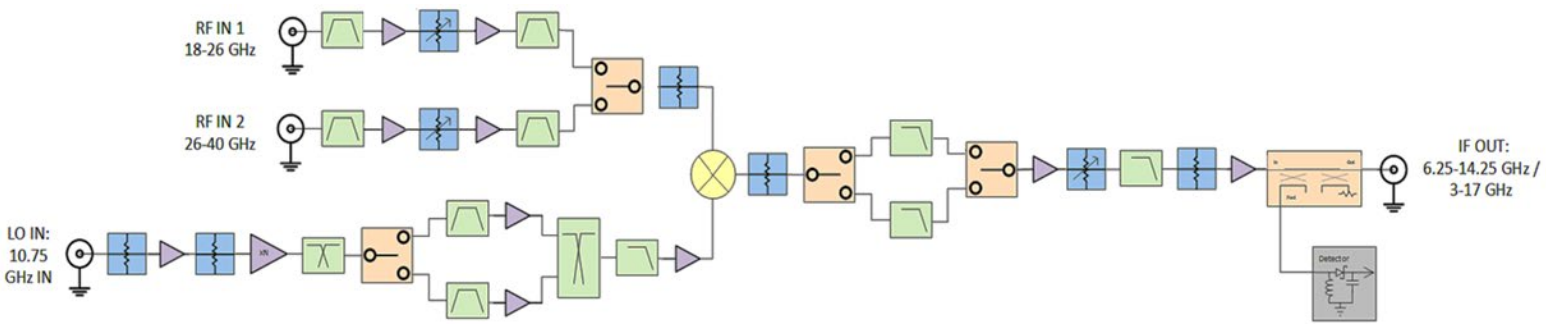
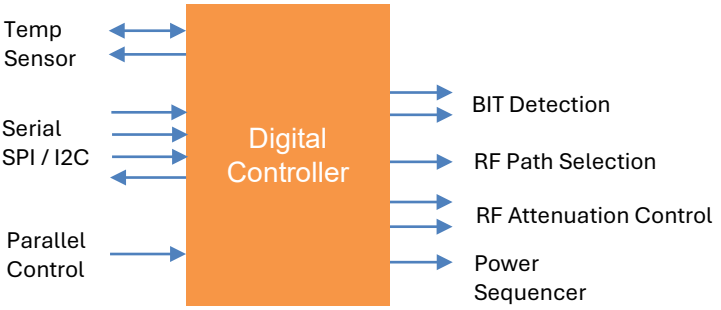
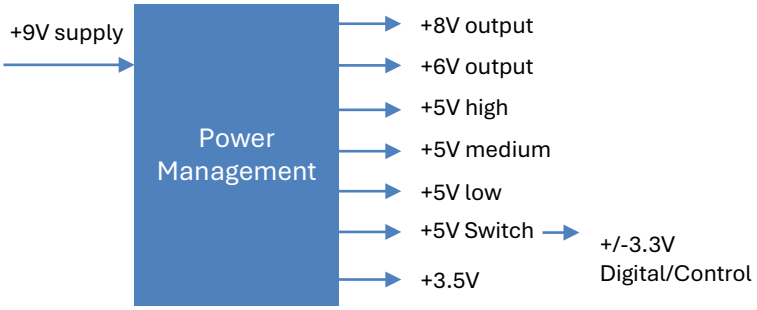
Functional Block Diagram



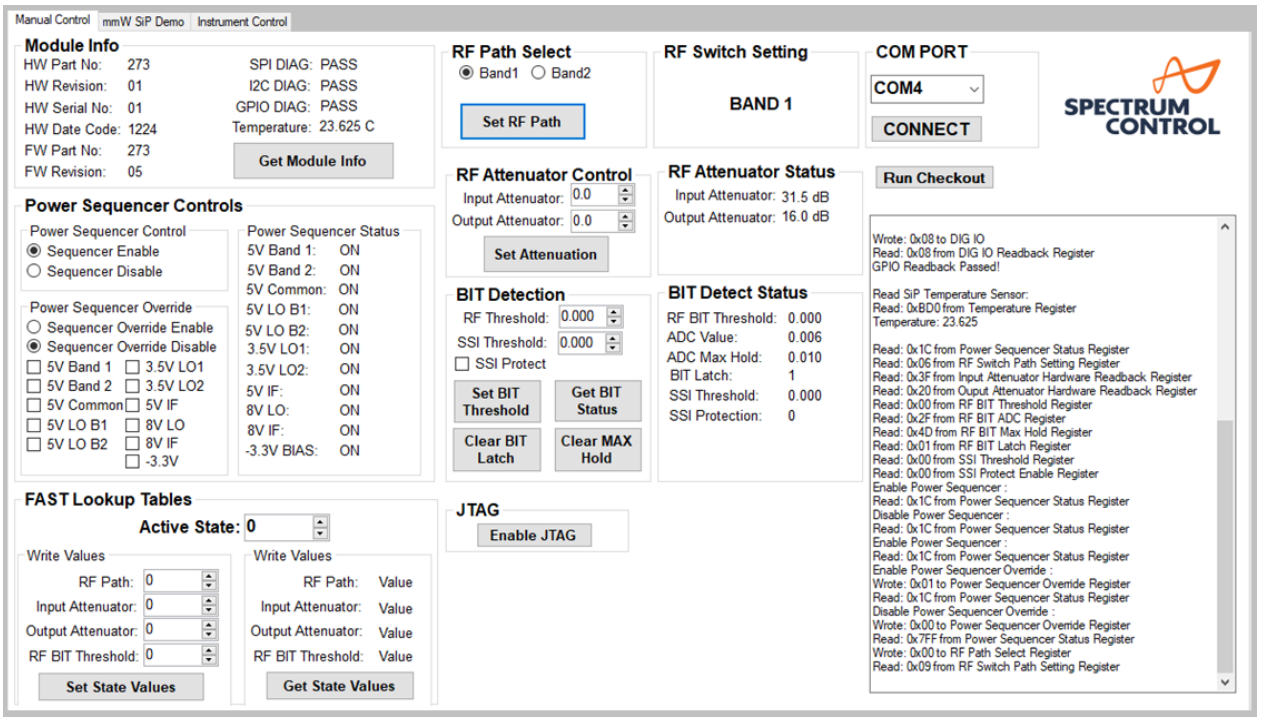
Software Control



Power Management



Software Graphical User Interface



SPECTRUM CONTROL

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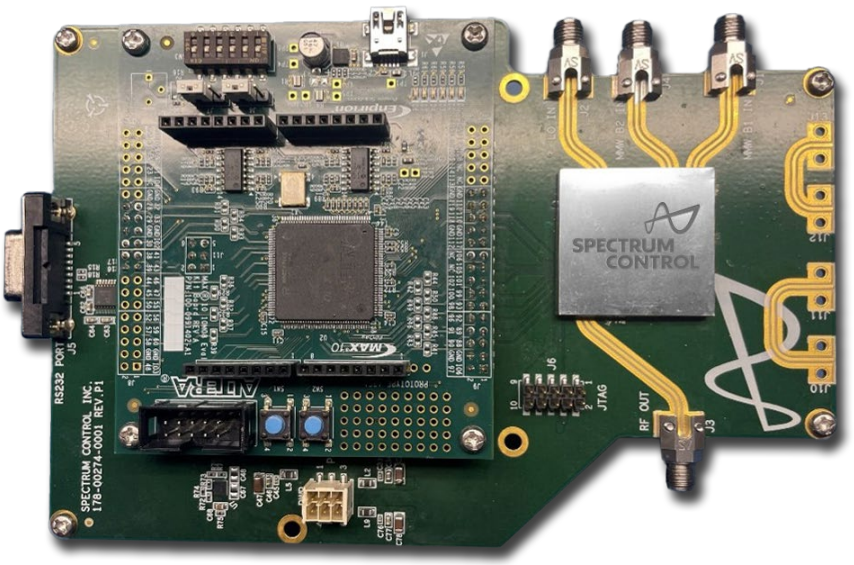
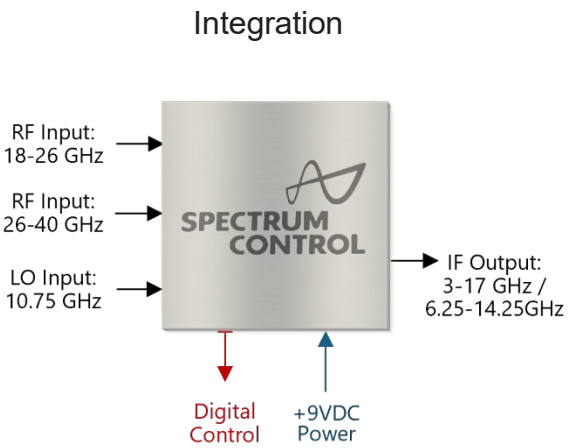
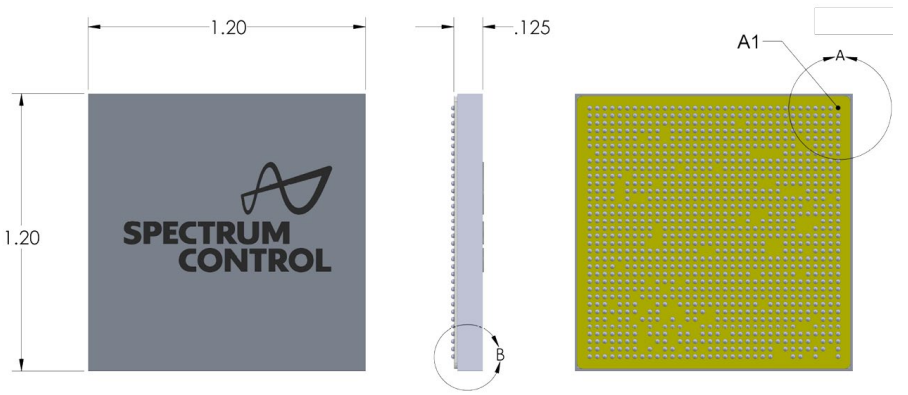
Test Fixture/Evaluation Board

SCRS-00-1001





Dimensional Drawings



NOTES:

1. All linear dimensions are in inches.
   All dimensions are nominal.
2. Dimensioning and tolerancing per ASME Y14.5M.
3. This drawing is subject to change without notice.
4. Dimension is measured at the maximum solder ball diameter

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