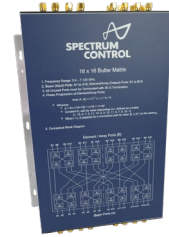


Butler Matrices



Spectrum Control's Butler Matrices are high-performance beamforming networks that enable precise signal distribution and phase control across multi-channel RF systems. Designed for MIMO test environments, they deliver optimized signal conditioning for maximum throughput across wireless technologies from **0.5 to 7.125 GHz**.



- **Designed for Accuracy:** High phase accuracy and amplitude balance for precise channel control.
- **Built for Scalability:** Multi-port configurations support up to 16 x 16 MIMO systems
- **Optimized Performance:** Low loss, high isolation signal distribution for reliable testing
- **Simplified Integration:** Compact modular design for efficient RF system integration

Challenge	Our Solution	System Impact
Varying basic MIMO systems with limited channels	4x4 Butler Matrix for controlled signal distribution	Reliable small-scale MIMO testing with accurate channel emulation
Scaling to more complex multi-channel environments	8x8 Butler Matrix for expanded channel count	Improved throughput testing and multi-channel validation
Supporting large, high-density MIMO and advanced beamforming systems	16x16 Butler Matrix for full-scale multi-channel signal distribution	Scalable system architecture and comprehensive performance validation

Where Spectrum Delivers Value: High-performance beamforming and signal distribution that enable accurate MIMO testing, improves system fidelity, and accelerates wireless system validation.

Applications



Test &
Measurement



Electronic
Warfare



Radar

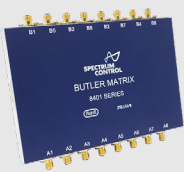
4x4 Butler Matrix



Enables precise signal distribution and phase control for small-scale MIMO and beamforming systems.

- 4 input / 4 output ports with defined phase relationships
- 0.5 to 7.125 GHz frequency coverage
- Low insertion loss, high isolation
- Ideal for basic MIMO testing and antenna validation
- Compact form factor for space-constrained test setups

8x8 Butler Matrix



Expands channel capacity for more complex multi-path and multi-device testing environments

- 8 input / 8 output ports for increased channel density
- Broadband operation across wireless test bands
- Improved beamforming resolution and coverage
- Supports multi-user and throughput testing
- Scalable architecture for mid-size MIMO systems

16x16 Butler Matrix (8401-16-5)



Delivers full-scale beamforming and high-density signal distribution for advanced MIMO systems

- 16 input / 16 output ports for maximum scalability
- High phase accuracy and amplitude balance
- Enables comprehensive system validation and performance testing
- Supports 5G applications

NEW!! 16x16 Butler Matrix (8401-16E)



Delivers full-scale beamforming and high-density signal distribution for advanced MIMO systems

- 16 input / 16 output ports for maximum scalability
- High phase accuracy and amplitude balance
- Enables comprehensive system validation and performance testing
- Supports WiFi 6e, WiFi 7 applications



About Spectrum Control

Spectrum Control is a mission-focused technology company delivering innovative, adaptable solutions across RF, optical, power, digital, and EMI protection that go beyond specifications to support system performance and program success.

RF Signal Chain

Power/Protect/
Interconnect

Communications
& Data Layer

To learn more about these products or
Spectrum Control email us at
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