

**General Description**

Sporian Microsystems has developed a state of the art ultra-broad range hyperspectral radiometer (SpecIQ<sup>™</sup>). Currently-available systems with similar spectral capabilities are cost prohibitive for wide scale use. SpecIQ<sup>™</sup> overcomes prior limitations to provide broad spectral bandwidth at consumer-friendly prices.

Hyperspectral imaging is a non-destructive, real-time detection tool for industrial and environmental sensing and inspection processes. It allows the rapid spatial assessment of grade, defects, contamination, and composition of raw, mixed, and processed materials. SpecIQ<sup>™</sup> is designed to be ultra light, portable (if desired), and deployable in a wide range of applications.

Hyperspectral imaging (HSI), where imaging and spectral scanning are combined to provide spatially represented data, provides large amounts of information beyond what the human eye can detect. Hyperspectral data supports a variety of materially-focused analyses including classification, change detection, anomaly detection, target detection, and broad area search. It has been applied to a wide range of sensing, agriculture, industrial, surveying, and resource exploration applications.



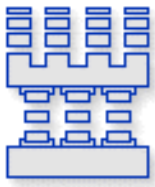
**Potential Applications**

- **Precision Agriculture**
  - Early detection of crop stress and disease
  - Evaluation of water and nutrient needs
  - Monitoring pesticide and fertilizer application
- **Food Processing & Quality Inspection**
  - Quality control
  - Foreign materials detection
  - Safety and pathogen detection
- **Earth Sciences**
  - Forestry
  - Fire risk assessment
  - Mining and exploration
  - Environmental pollution detection
  - Natural disaster surveying
- **Process Control and Materials Identification**
  - Waste sorting
  - Hazardous materials detection
  - Infrastructure inspection

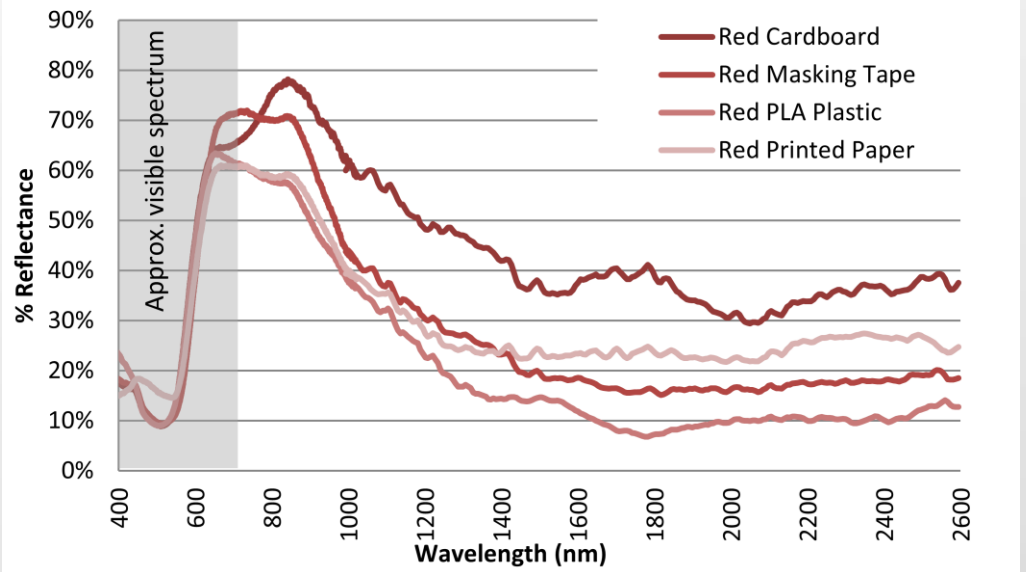
**Key Features**

- Compact
- Wide continuous spectral range
- Narrow spectral bandwidths over complete range
- Low cost
- Potential for handheld, fixed position, or drone-mountable final format.

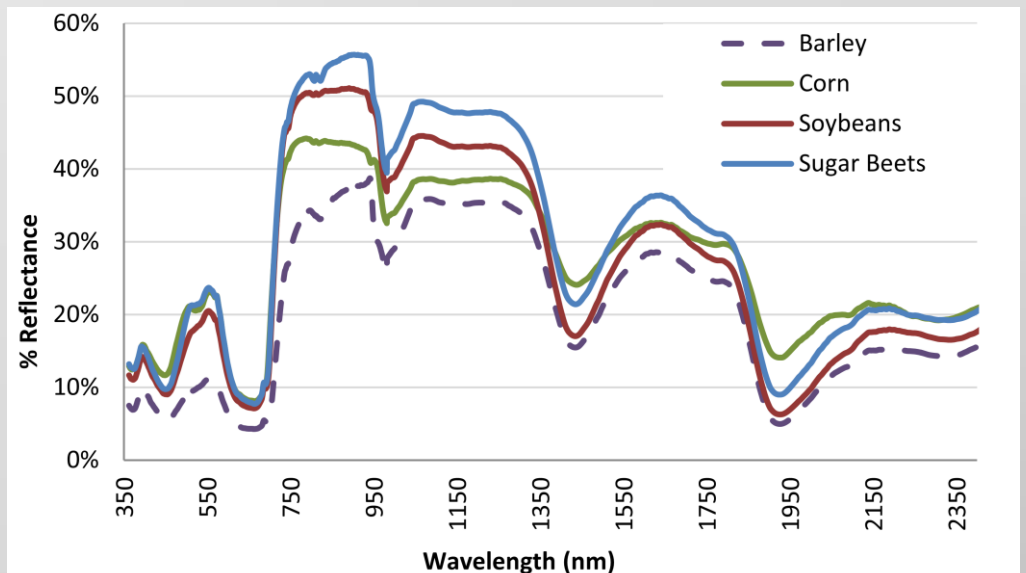
Specification	
Wavelength Range (nm)	330-2600
Spectral Resolution - full range UV-NIR/NIR-SWIR (nm)	<3.0 / <5.5
Spectral Bandwidths - full range UV-NIR/NIR-SWIR (nm)	<1.5 / <3.2
Wavelength Reproducibility (nm)	<0.1
Wavelength Accuracy UV-NIR/NIR-SWIR (nm)	± 0.2
Min Integration Speed UV-NIR/NIR-SWIR (ms)	<0.015/ 0.256
Cal Accuracy (NIST) 400nm, 700 nm, 2200 nm	<4%
Instrument Dimension	~3.8x3.2x1.8 in
System Mass (kg)	<0.24
Capable of onboard data storage	Yes
Support spatial/temporal sync of data	Yes



Comparison of hyperspectral measurements of four red-colored materials that appear identical to the human eye (above), but are clearly distinguishable with additional spectral information (right).



Measured spectral reflectance for healthy barley, corn, soybean, and sugar beet leaves.



Sporian Microsystems, Inc. is ready to help you with off-the-shelf or custom solutions to meet your spectral needs. Contact Sporian to explore advanced spectroscopic solutions for your specific applications.