

Scintillation Detectors integrated with Silicon Photomultiplier (SiPM)

As more scintillation detectors are shifting to silicon photomultipliers (SiPMs) from photomultiplier tubes (PMTs) due to the inherent advantages of compactness, ruggedness, low voltage and magnetic field insensitivity, Saint-Gobain Crystals has developed unique integrated solutions to truly leverage the value of SiPMs.

FLEXIBLE DESIGN:

Saint-Gobain SiPM based sensors have been designed for maximum flexibility with multiple options to meet your needs. Products range from upgraded versions of basic detectors with PMTs and integrated analog electronics to fully integrated, plug and play detectors with MCAs and a digital readout. Options include:

- **Functionality ranging from basic counters to analog and digital spectroscopy**
- **Modular construction to add capability to meet connectivity and environmental requirements**
- **Wide range of performance levels (power, resolution, etc.)**
- **Scalable for range of sensor sizes and applications**

FULLY OPTIMIZED TOTAL SENSOR SOLUTION:

Using our expertise with detector processing and packaging and optical analysis, Saint-Gobain has developed cost effective solutions to provide excellent performance, including optimization of:

- **Number and location of SiPMs for required performance**
- **Detector packaging to match SiPM configuration**
- **Gain compensation over a wide temperature range**

RUGGEDNESS:

Saint-Gobain, an acknowledged leader in building long lasting, rugged radiation detectors, has leveraged our expertise to develop industry-leading SiPM integrated solutions. Features include:

- **Designed for and evaluated under ANSI N42.34**
- **Option for water tight package and connectors**
- **Long lasting hermetic sealing technology**

**SAINT-GOBAIN HAS THE SiPM
INTEGRATED SOLUTION TO MEET YOUR
NEEDS, RANGING FROM STANDARD
CONFIGURATIONS TO HIGHLY
CUSTOMIZED APPLICATIONS**



Developed in partnership with



CRYSTALS

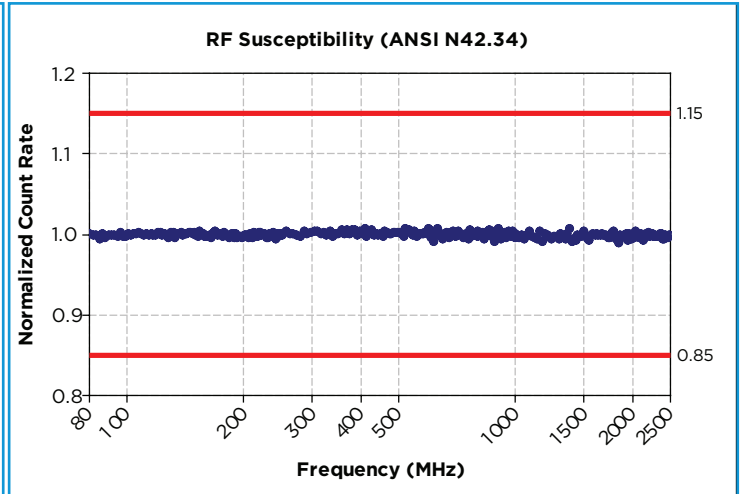
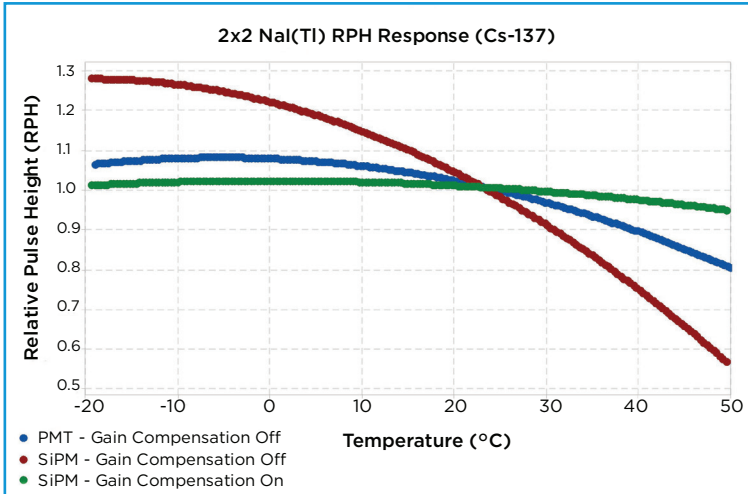


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Scintillation Detectors Integrated with SiPM

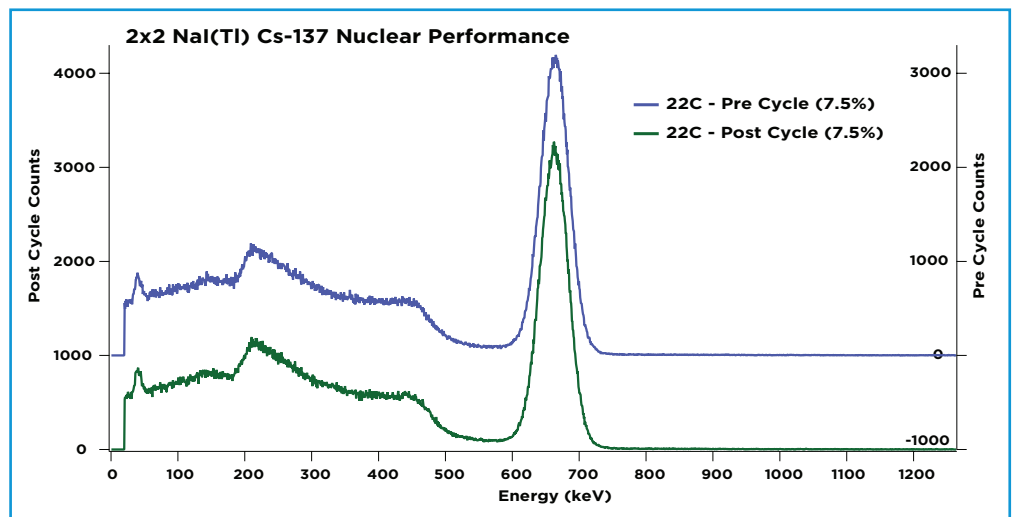
Saint-Gobain Crystals SiPM based technology has been successfully evaluated under the following ANSI N42.34 conditions:

Temperature (-20°C to 50°C)	Section 7.1
Humidity (to 93% relative)	Section 7.3
Moisture & Dust	Section 7.4
Electrostatic Discharge (up to 6kV)	Section 8.1
RF Susceptibility (20V/m @ 80MHz to 2500MHz)	Section 8.2



Gain compensation technique addresses the SiPM temperature dependence and closely matches the PMT curve. This allows for a plug and play compatibility with existing control schemes. Gain compensation parameters can also be adjusted to address specific customer needs.

Performance of SiPMs and low noise electronics is unaffected when exposed to a RF field of 20V/m from 80MHz to 2500MHz.



Cs-137* nuclear performance before and after ANSI N42.34 thermal cycling (-20°C to 50°C @ 10C/hr).

*Tested with a Cs-137 encapsulated metal source.

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Saint-Gobain Crystals

www.crystals.saint-gobain.com

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