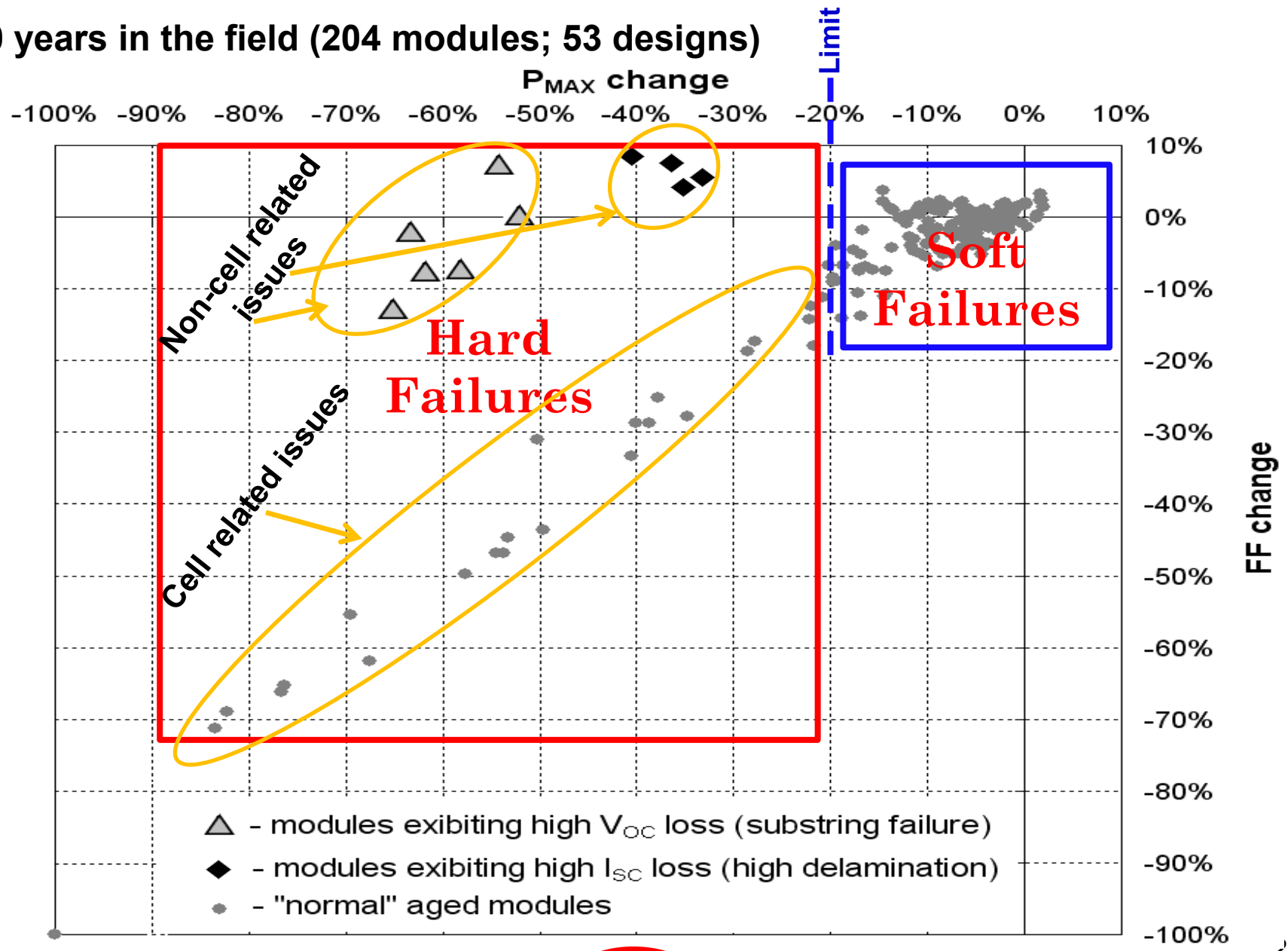


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# Field Failure Classifications: Hard & Soft Failures – Some Thoughts!

~20 years in the field (204 modules; 53 designs)



# Marking on the Product: Some Thoughts!

## Solar Water Heaters

- **Certification:** OG-100 of SRCC (Collector)  
OG-300 of SRCC (System)
- **Warranty:**  $\geq 10$  years on solar collector  
 $\geq 6$  years on storage tank  
 $\geq 2$  years on controls  
 $\geq 1$  year for piping and parts
- **Solar Factor:**  $\geq 50\%$



## Solar Photovoltaics

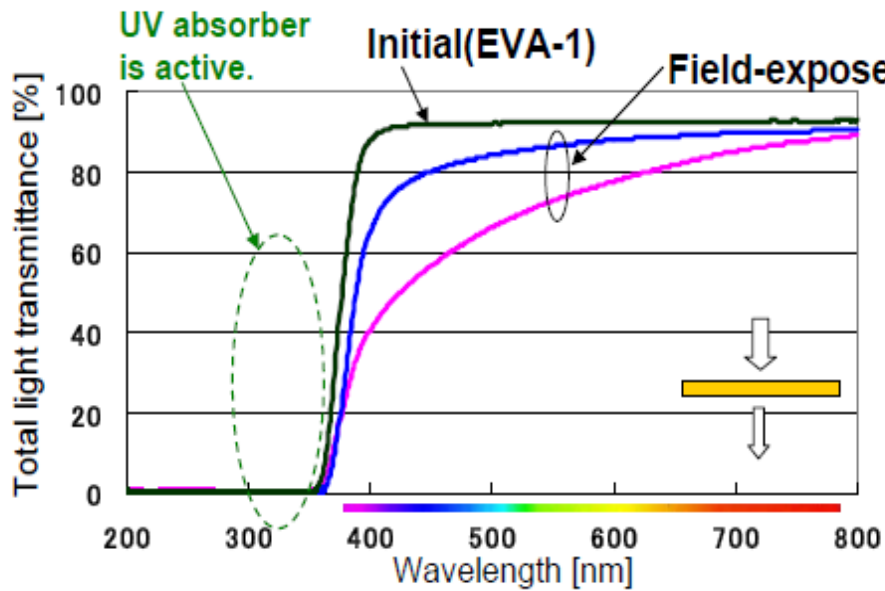
- **Certification:** Design Quality (*IEC 61215/61646*)  
Comparative Quality (*Extended/Sequential Testing?*)  
Manufacturing Quality (QA Guideline with HASA)  
Predicted Energy Yield (*kWh/kW based on IEC61853*)
- **Warranty:**  $\geq 20$  years on PV module  
 $\geq 10$  years on BOS



**Mark?**

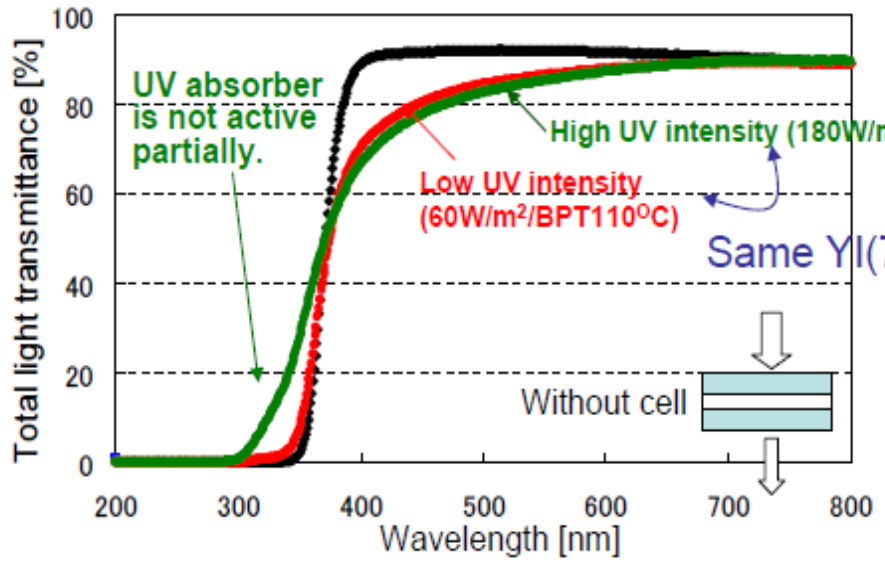


# Difference of transmittance spectra change



Transmittance spectra of EVA of modules **outdoor-exposed at Miyakojima for over 20y.**

This difference indicates that high UV intensity irradiation is not suitable for reliability test of lifetime prediction



Example of Transmittance spectra of EVA-1 exposed using XWOM with high and low intensities of UV rays.