

# Technical Data Sheet

## QDot™ SharpGreen Perovskite QDs Polymer Film

Version 3.0

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### Introduction and product highlights

QDot™ SharpGreen Perovskite QDs Film are a polymer composite with embedded QDot™ SharpGreen QDs. It is designed to be used in LCD backlighting units and sensor devices for X-rays and UV lights. QDot™ SharpGreen Film has green emission 520-535 nm (depending on the concentration), high PLQY (up to 80-100 %) and narrow FWHM (< 20-25 nm). Film has high reliability under heat, light and humidity. It retains > 70-80 % of initial photoluminescence within 1000 hours of exposing by heat (85 °C and blue light 10 mW/cm<sup>2</sup> exposure) and high relative humidity (90 % RH at 60 °C).

QDot™ SharpGreen Film offers the following advantages:

1. QD LCD backlighting film for higher color gamut displays with magenta or blue+green LEDs (> 80 % Rec 2020 coverage). Cadmium free, RoHS compliant (Pb content less 1000 ppm)
2. Next generation scintillation film for X-ray imagers or UV sensors
3. Bright green emission at 520-535 nm, narrow full width at half maximum (FWHM < 20-25 nm) and high photoluminescence quantum yield (PLQY up to 80-100 %), short PL lifetime < 10 ns
4. High reliability under heat, humidity and high flux, in compliance with display standards



#### QD displays backlighting

Enhances color gamut for HDR displays



#### X-ray and UV sensors

High-efficiency scintillator material for X-ray imagers and UV sensors

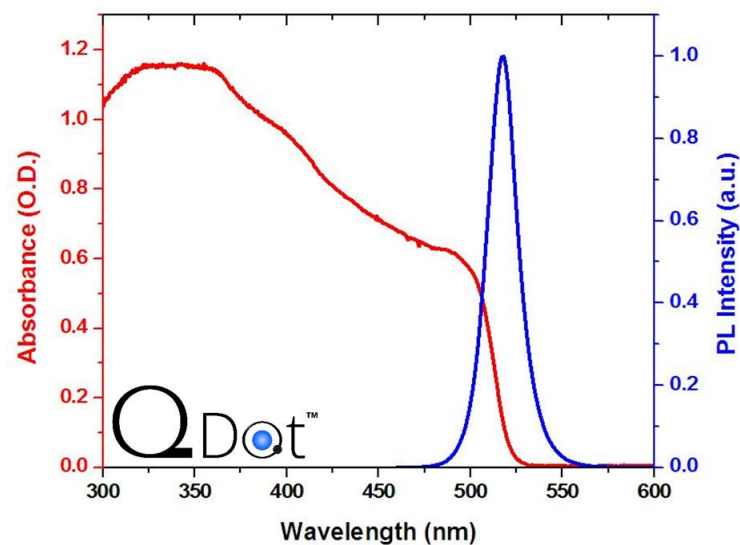


#### Specification of QDot™ SharpGreen Perovskite QDs Film



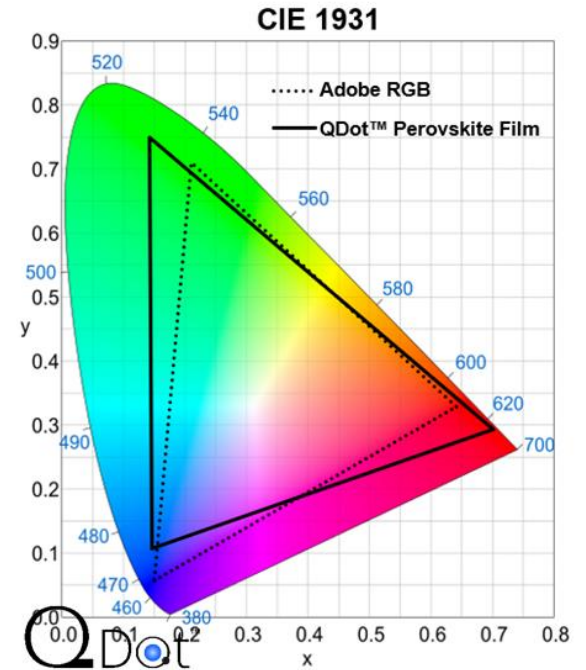
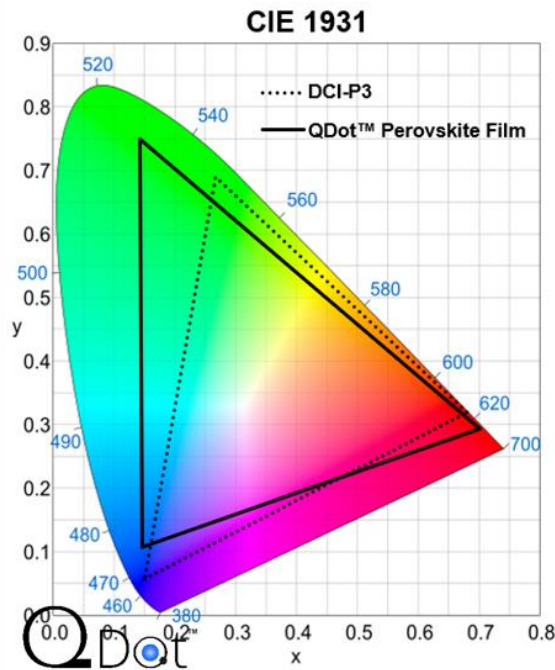
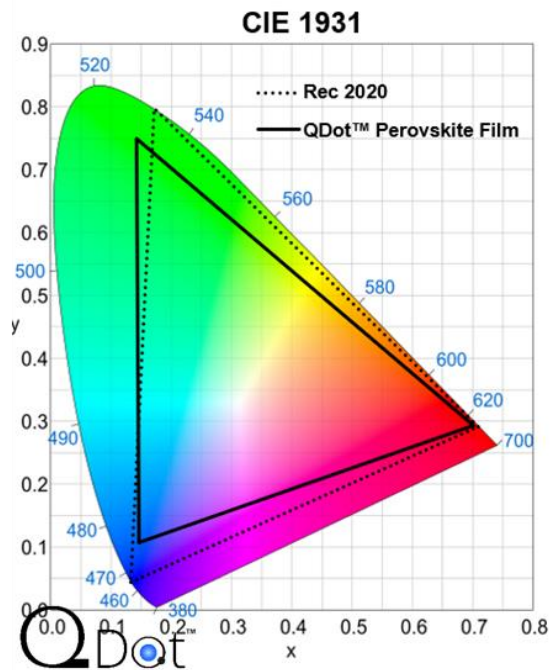
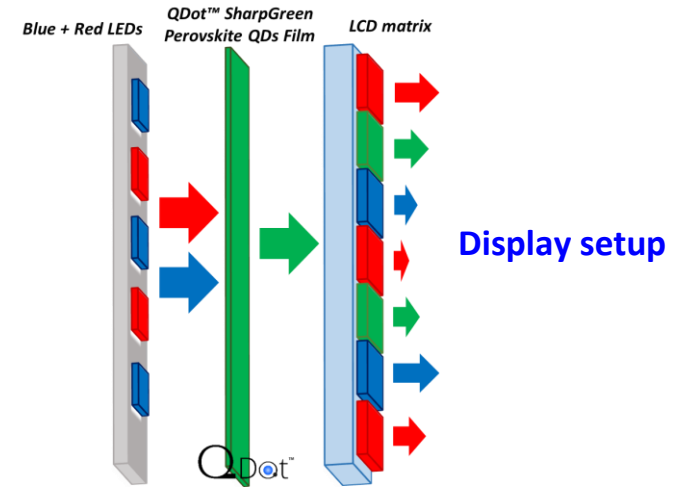
Catalog Number	QDot™ SharpGreen Film LCD	QDot™ SharpGreen Film Sensor										
Application area	LCD backlighting	X-ray scintillators, UV sensors										
QDs Type	QDot™ SharpGreen Perovskite QDs	QDot™ SharpGreen Perovskite QDs										
Polymer	Polymer resins											
Appearance	Yellow-greenish films											
QDs concentration	RoHS compliant (Pb content < 1000 ppm)	Up to 50 wt.%										
Emission peak	525 ± 3 nm	<table border="1"> <thead> <tr> <th>QDs wt. %</th> <th>0.5%</th> <th>5%</th> <th>10%</th> <th>50%</th> </tr> </thead> <tbody> <tr> <td>Em peak</td> <td>520 nm</td> <td>525 nm</td> <td>530 nm</td> <td>535 nm</td> </tr> </tbody> </table>	QDs wt. %	0.5%	5%	10%	50%	Em peak	520 nm	525 nm	530 nm	535 nm
QDs wt. %	0.5%	5%	10%	50%								
Em peak	520 nm	525 nm	530 nm	535 nm								
FWHM	≤ 25 nm	≤ 25 nm										
PLQY	> 70 %	> 70 %										
Film Sizes	Customized up to 30 cm x 25 cm											
Active layer thickness	260 μm (Customizable upon request)	Customized 100-500 μm										

Absorption and emission spectra

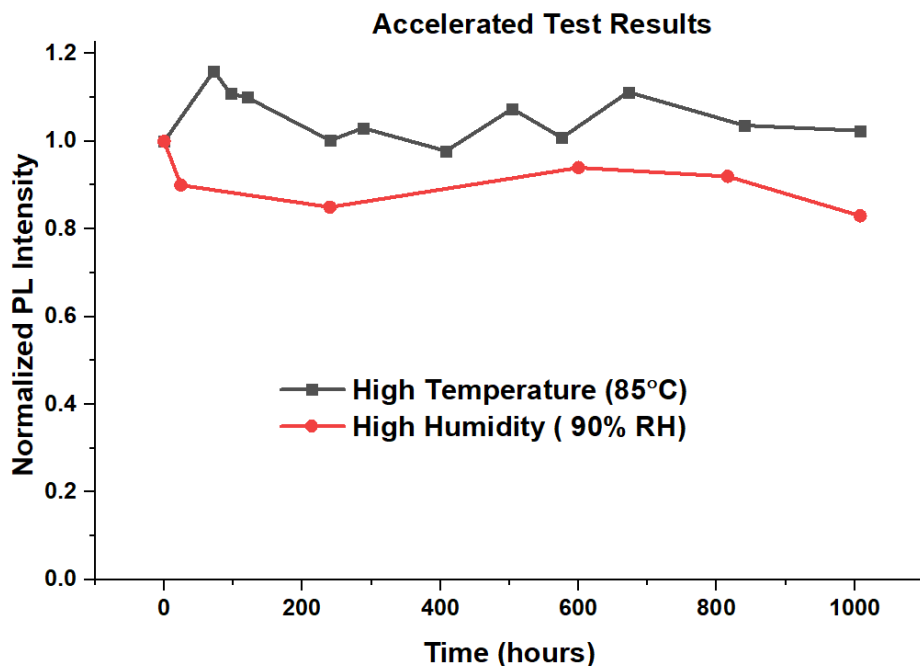


#### Typical Display Performance of QDot™ SharpGreen Perovskite QDs Film LCD (with blue+red LEDs backlighting)

Color Standard	Coverage	Ratio
Rec2020	> 80 %	> 83%
DCI-P3	> 90%	> 110%
Adobe RGB	> 95%	> 110%



**Reliability performance of QDot™ SharpGreen Perovskite QDs Film LCD**



Test Criteria	Test Conditions	Test Results
High Temperature	85°C/1000 hours	Luminance within ± 20%
High Humidity	95% RH/60°C/1000 hours	Luminance within ± 20%

**QUANTUM SOLUTIONS**

1 Venture Road, Southampton Science Park, SO16 7NP, Southampton, UK  
[www.quantum-solutions.com](http://www.quantum-solutions.com)  
 E-mail: [info@quantum-solutions.com](mailto:info@quantum-solutions.com), Tel.: +44 73 89826941

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[www.qdot.inc](http://www.qdot.inc)  
 Email: [info@qdot.inc](mailto:info@qdot.inc)