

MSIM OLED Simulation

◆ Electrical simulation

- Current --> Recoupling --> Light emission
- Model extraction provided
 - ☞ J-V Model (J: current density)
 - ☞ L-V Model (L: luminance)

◆ Optical simulation

- Light emission --> Final output light
- Four (4) modes for simulating transmission rate of luminance based on Fresnel analysis.

OLED J-V Model Extraction

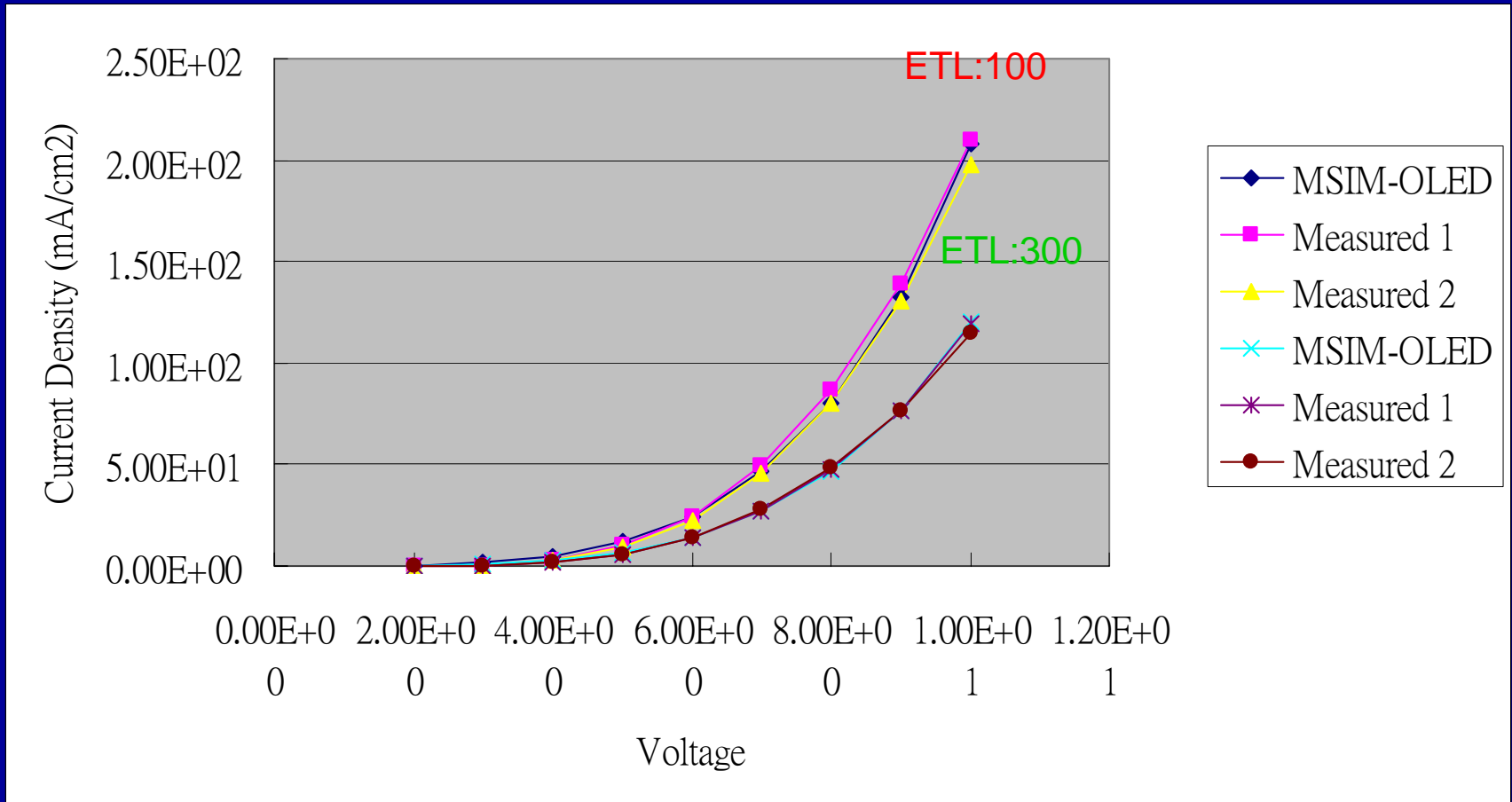
- ◆ Given values
 - Number of layers
 - Layer material electron work functions (hole and electron)
 - Layer material mobility (hole and electron)
- ◆ Control values
 - Layer thicknesses
- ◆ Measure values
 - J-V data with various control values
- ◆ Extracted values
 - Parameters for J-V model

OLED L-V Model Extraction

- ◆ Given values
 - Number of layers
 - Layer material electron work functions (hole and electron)
 - Layer material mobility (hole and electron)
 - Layer material refractive index (real and imaginary)
- ◆ Control values
 - Layer thicknesses
- ◆ Measure values
 - J-V data with various control values
 - L-V data with various control values
- ◆ Extracted values
 - Parameters for J-V model
 - Parameters for luminance efficiency ($L = J * \text{Efficiency}$)

J-V Extraction Result

ETL:300 & 100



Luminance Efficiency Plot

At Fixed Current Density

- ◆ Fixed at $J = 100\text{mA}/\text{cm}^2$

