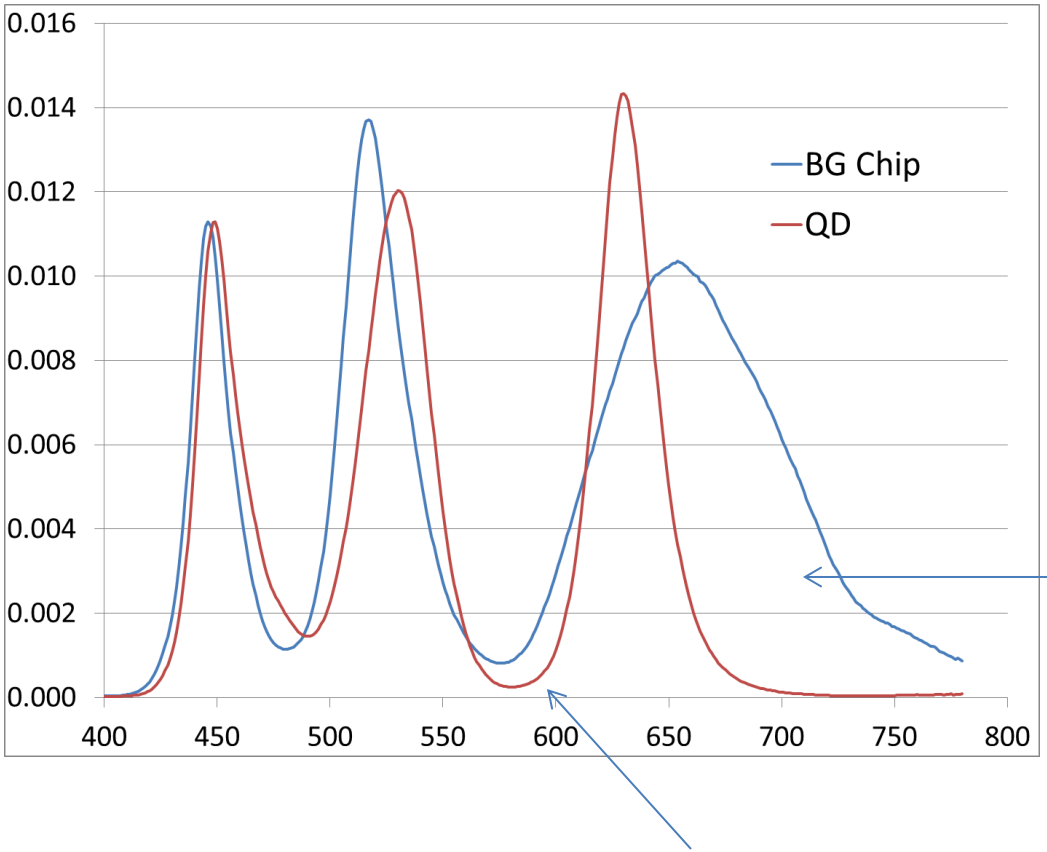
Color IQ Advantage

QDV-Dell February 2014

Executive Summary

- QD Vision Color IQ™ Optics provide the most efficient, tunable spectrum for wide color gamut displays
- Edge illumination design is inherently efficient, and cost effective
- LCD systems with Color IQ Optics are lower power with better color performance.
- Visual impact of Color IQ saturated color exceeds that of GB-r LED systems (despite similar gamut overlap numbers)

Comparison of Spectral Quality



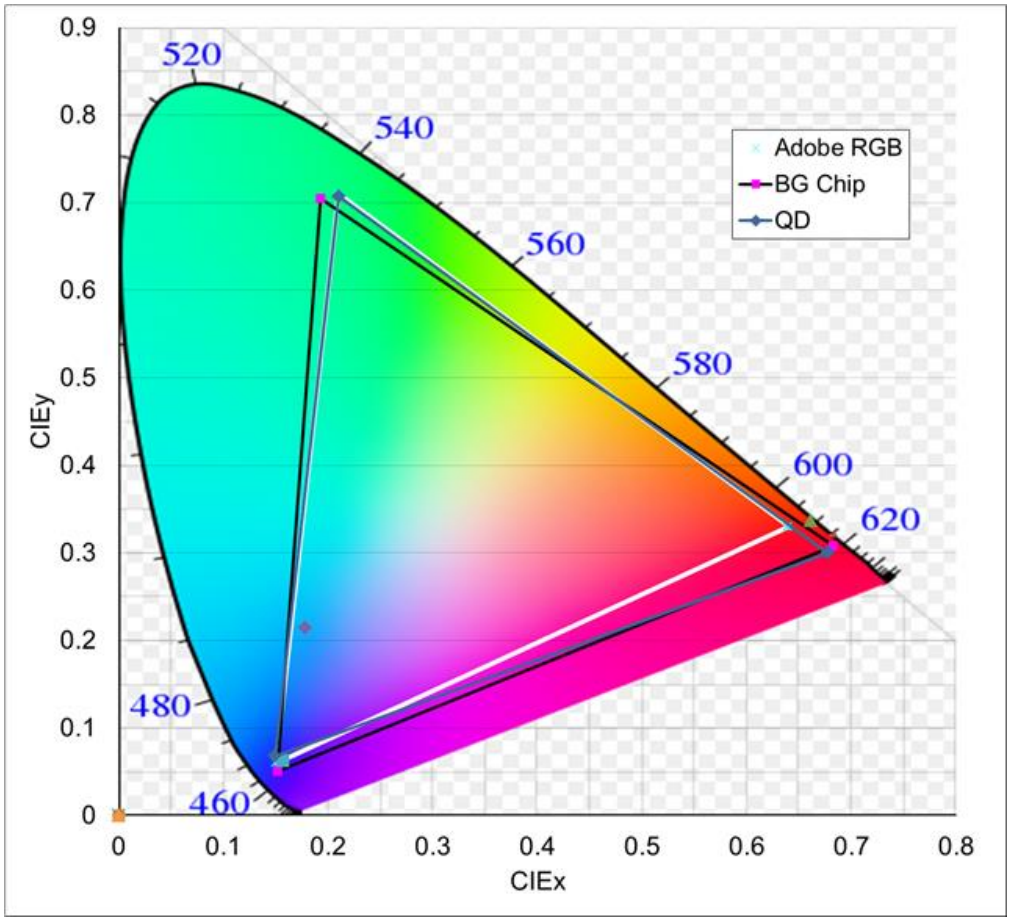
QDS have less leakage between green and red channels!

- Narrow emission enables wide color gamut
- QD solution has very narrow green and red emission
- QDs have improved spectral efficiency over BG-r
  - Red phosphor wastes lots of light in near IR
- **Different spectra result in visual color differences despite similar color gamut specs**

Adobe Overlap Performance

- Tuned QDs match Adobe green point
- QD solution outperforms BG-r solution on Adobe overlap

	Adobe RGB		QD		GB-r	
	x	y	x	y	x	y
R	0.640	0.330	0.677	0.300	0.683	0.308
G	0.210	0.710	0.210	0.707	0.193	0.705
B	0.150	0.060	0.149	0.068	0.152	0.051



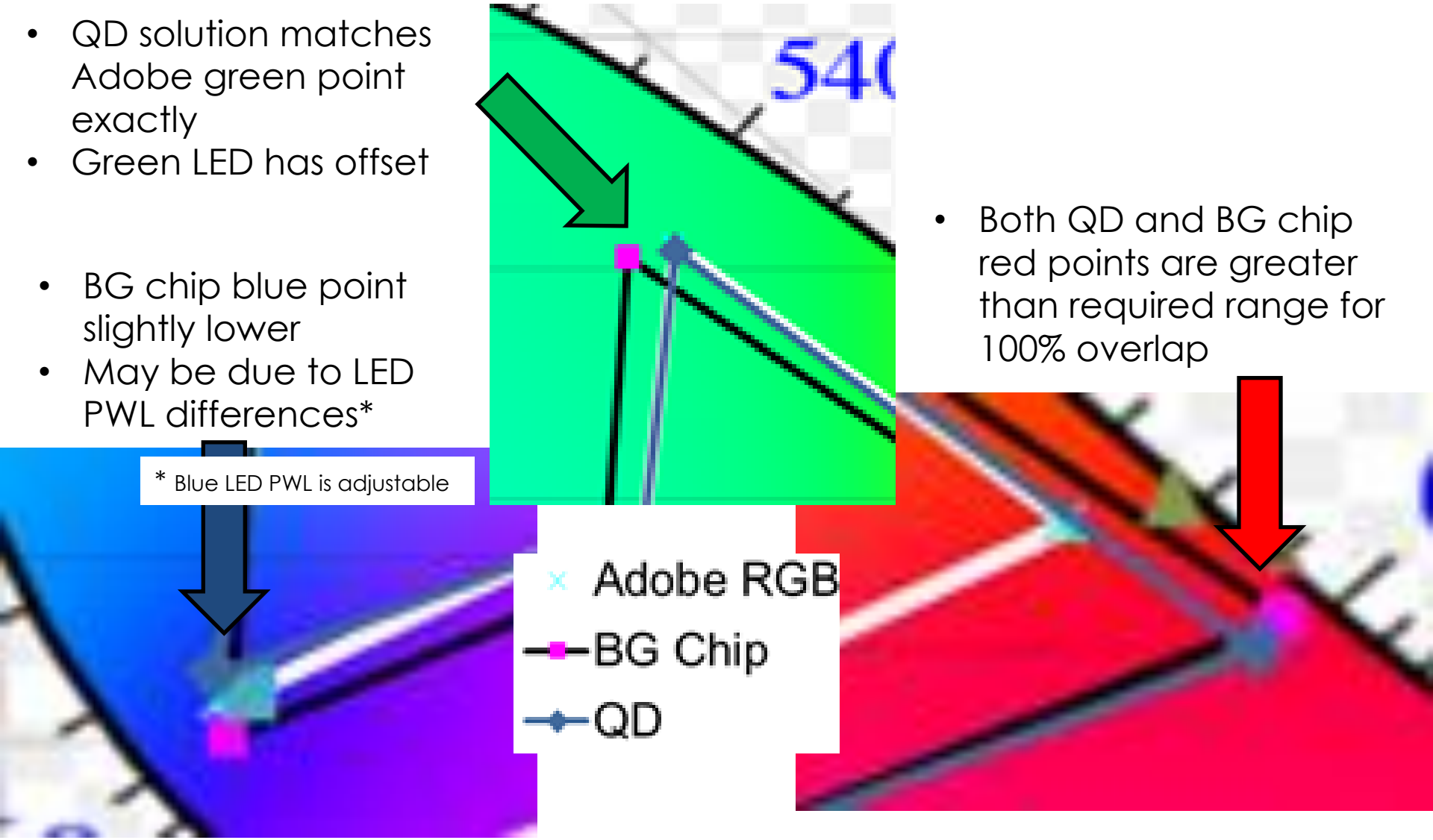
Adobe Overlap – Zoomed In

- QD solution matches Adobe green point exactly
- Green LED has offset

- BG chip blue point slightly lower
- May be due to LED PWL differences*

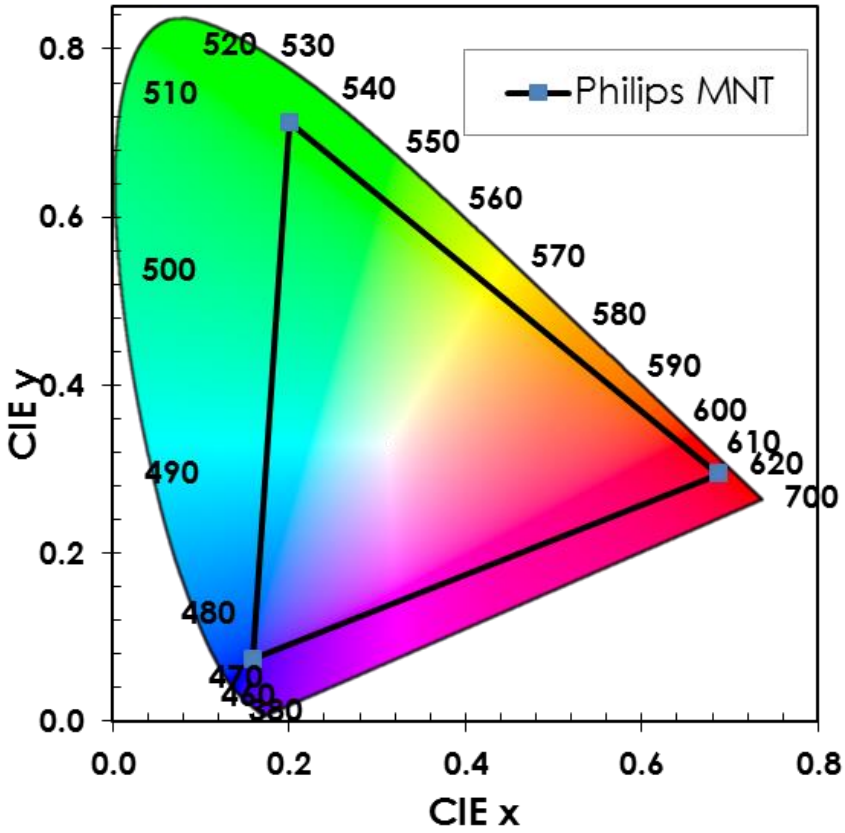
* Blue LED PWL is adjustable

- Both QD and BG chip red points are greater than required range for 100% overlap



Philips 276E6ADSS Color Gamut Performance

- **99% Adobe RGB**
- **16:9 Full HD Resolution**
- **IPS-ADS Panel**
- **$350**



RGB Primaries

	R	G	B
CIE x	0.6875	0.2004	0.1588
CIE y	0.2941	0.7121	0.0739

	NTSC	DCI	Rec 2020	Adobe RGB	sRGB
xy Overlap	93.7%	92.2%	77.5%	98.6%	99.6%
xy Area	103.8%	108.0%	77.5%	108.6%	146.5%
u'v' Overlap	93.0%	94.4%	77.3%	97.0%	98.4%
u'v' Area	116.2%	106.1%	77.3%	114.2%	133.2%

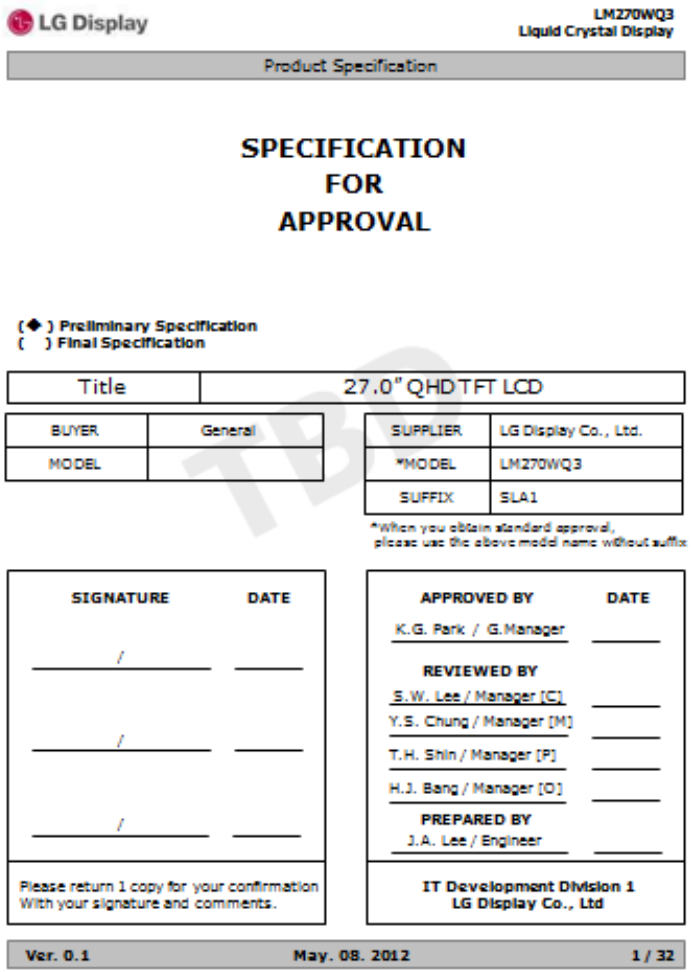
100% Adobe RGB MNT Comparison

Note:
All measurements made with out-of-the-box settings

	Dell U2713Hb	Philips 276E6
Technology	BG LED with Red Ph	Color IQ optic
Mode	Standard	Standard
Adobe RGB overlap %	99.3%	100%
Max. Luminance (nits)	297	306
Max. power consumed (watts)	59.4	40.1
Adjusted power for 300 nits (watts)	60	39.3
Nits/watt	5	7.6
Relative Efficiency (%)	65.8%	100%
MSRP (%)	$999.99	$350

Dell U2713Hb Uses BG-r Panels

- BLU technology:
  - Green + blue LED die with red phosphor
  - Relatively low efficiency
    - Green LEDs less efficient than blue
    - Thicker CFA reduces transmission
  - High-end, high-cost solution
    - Lower efficiency results in additional panel costs e.g. more LEDs, films, etc. to achieve target brightness



LG Display

LM270WQ3
Liquid Crystal Display

Product Specification

SPECIFICATION
FOR
APPROVAL

(◆) Preliminary Specification
( ) Final Specification

Title	27.0" QHD TFT LCD

BUYER	General
MODEL	

SUPPLIER	LG Display Co., Ltd.
*MODEL	LM270WQ3
SUFFIX	SLA1

*When you obtain standard approval, please use the above model name without suffix

SIGNATURE	DATE
/	
/	
/	

Please return 1 copy for your confirmation With your signature and comments.

APPROVED BY	DATE
K.G. Park / G.Manager	
REVIEWED BY	
S.W. Lee / Manager [C]	
Y.S. Chung / Manager [M]	
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