## 3.7 Device Emulation

Don't forget to set your calibration schedule – we recommend monthly as a minimum. The monitor will switch itself on at the scheduled time, warm up, self-calibrate, then power back down. Settings as follows:

Would you like to set up a colour mode in your EIZO ColorEdge monitor, to match e.g. a laptop screen, tablet device or mobile phone? This will let you preview your content / see how it will look on these devices.

#### You will need:

- 1. An EIZO current ColorEdge monitor connected to a computer with ColorNavigator 6 or 7 running.
- An external sensor E.g. X-Rite i1Pro / Pro2 / Monitor, X-Rite ColorMunki, Klein K-10, Photo Research PR-655 / PR-680, Konica Minolta CS-1000 / CS-1000A / CS-2000 / CS-2000A, Colorimetry Research CR-250
- 3. The device you want to measure and emulate: Any monitor or mobile media device, that has connectivity to the internet and a web browser installed.

#### HOW TO RUN MEDIA DEVICE MEASUREMENT AND EMULATION

The long way (visit the end of this doc for the quick way)

#### FIRST - MEASURE THE DEVICE

Launch ColorNavigator >> Select preferences

W ColorNavigator 7					2
ColorEdge C	G277(329720	65)			0
Monitor settings	✓ Tools ✓	Preferences			
Color mode					
Custom	STD	FINE ART LAB PRIN	ITING		
Adobe RGB	STD		Target	Result	
sRGB	STD	Brightness Black level	80 cd/m <sup>2</sup> Minimum	80.9 cd/m <sup>2</sup>	
EBU	STD	Contrast ratio White point	x: 0.3457 v: 0.3585	x: 0.3455 v: 0.3584	
REC709	STD	Gamma (EOTF)	2.20	4999 K	
SMPTE-C	STD	Priority Gamut	Fixed gamma Native		
DCI	STD	R		x: 0.6750 y: 0.3150	
Rec709_ADV	ADV	B Gamut Clipping	Off	x: 0.1527 y: 0.0645	
CAL2	ADV	Gamue Cipping	01		
CAL3	ADV	Calibrate	Manual adjustment	^	

#### Select Device Measurement, then close the window



### Go to Tools and select Device Measurement

or settings 👻 taols 🗸	Preference s			
olor mode System Inform	nation			
ustom Test pattern	ART LAB PRINT	NG		~
Device measu	rement	Target	Result	
RGB STD	Brightness Black level	80 cd/m <sup>2</sup> Minimum	80.9 cd/m <sup>2</sup>	
80. 510	Contrast ratio White point	x: 0.3457 y: 0.3585	х: 0.3455 у: 0.3584 4999 К	$\sim$
IEC709 STD	Gamma (EOTF)	2.20		
MPTE-C STD	Priority Gamut	Fixed gamma Native		
CL STD	R		x: 0.6750 y: 0.3150	
iec709_ADV ADV	6 Gamut Clioning	off	x: 0.1527 y: 0.0645	

# Select New measurement

₩ ColorNavigator 7			×				
Measurement result	Details						
	No. Color patch	Measured XYZ					
	Measurement patch						
New measurement	Status						
Add measurement values	Execution date	and the second					
	Use the ICC profile created or me	asurement results to emulate devices.					

ColorMunki, i1 Pro, I Pro 2 and Monitor (XRGA) can measure up to 1331 (11 x 11 x 11) patches.

I am using a ColorMunki for this guide, on a CGX monitor.

#### Select 3D-LUT type ICC Profile, 1331 patches



#### Initialise the sensor





Go to the device (I am using my laptop screen for this guide). Launch a browser window, and enter the above mentioned URL



Please place the measurement device on this page.

De-activate any power savings settings on the device's OS, place the measurement device (eg, ColorMunki) on the screen, then click the Measure button in CN. The browser will display each colour patch, and you will be able to follow which patch is being measured via the ColorNavigator window (estimated time for medium level 3D LUT measurement is 1h 15 mins).



ColorNavigator 7

1	Measurement settings	To measure t	he device, click "Measure".		
2	Measurement device sel ection				~
3	Measurement device op eration mode change	No.	Color patch	Measured XYZ	
4	Preparation for measure	1	000	0.03 0.05 0.04	
	l ment	2	0 0 26	0.11 0.08 0.48	
5	Measure	3	0 0 52	0.39 0.18 1.94	
6	Measurement complete d	4	0 0 78	0.92 0.39 4.70	
		5	0 0 104	1.73 0.70 8.94	
		6	0 0 130	2.84 1.13 14.75	×
			ure the selected color patches		Measure
		1485 / 1485 Measureme	i ents finished		3 .
		۲.			>

ColorNavigator 7



😽 ColorNavigator 7

	<b>B</b> - t- 11-				
Measurement result	Details				-
iMac 24" Gen 2	No.	Color	patch	Measured XYZ	Ê
	1	0	0 0	0.03 0.05 0.04	
	2	0	0 26	0.11 0.08 0.48	
	3	0	0 52	0.39 0.18 1.94	
	4	0	D 78	0.92 0.39 4.70	
	5	0	D 104	1.73 0.70 8.94	
			1 1 20	304 1 12 14 75	
	Measurement	patch	1331 patches for 3D-LUT typ	e ICC profile (11 x 11 x 11)	
	Status		1485 / 1485		
	Gradient band	ing	None		
	Saturated high	nlights	None		
	Execution date	2	2020-03-19 13:44		
Add measurement values	Use the ICC pro	file crea	ated or measurement results t	o emulate devices.	

×

>

easurement result		Details				
iMac 24" Gen 2	Renam	ie in the second se	plor	patch	Measured XYZ	
	Re-me	asure	0	0 0	0.03 0.05 0.04	
	Calcul	ite average data	0	0 26	0.11 0.08 0.48	
	Export		· •	0 52	0.39 0.18 1.94	
		4	0	0 78	0.92 0.39 4.70	
		5	0	0 104	1.73 0.70 8.94	
				n 190	7 04 1 13 14 TE	
		Measurement	patch	1331 patches for	3D-LUT type ICC profile (11 x 11 x 11)	
		Status		1485 / 1485		
		Gradient bandi	ng	None		
		Saturated high	lights	None		
		Execution date		2020-03-19 13:44	1	

W ColorNavigator 7

Measurement result	Details					2
iMac 24" Ger	₩ ColorNavigator 7				×	n
	Save the measurement res	ults as an ICC p	orofile.			
	Measurement result	iMac 24" Ger	12			
	Grid point number (B2A)	33				
						1)
				ок	Cancel	
	Execut	ion date	2020-03-19 13:44			
Add measurement	values 🔨 Use the	ICC profile crea	ated or measuremen	t results to emu	ate devices.	

gator 7		×		^
				×
r 🛧 📘	≪ Windows > System32 > spool > drivers > color v ♂			م
• Nev	v folder		<b>I</b> :: <b>-</b>	?
PC .	^ Name ^ Date modified	Туре	Size	1
Objects	AdobeRGB1998.icc 17/03/2015 1:34 AM	ICC Profile		1 KB
ktop	AppleRGB.icc 17/03/2015 1:34 AM	ICC Profile		1 KB
uments	A BlackWhite.icc 17/03/2015 1:34 AM	ICC Profile		2 KB
unicities unicities	CG247X(26089077)06rsl print.icc 11/02/2020 10:17 PM	ICC Profile		9 KB
vnioads	CG247X(26089077)07DCl.icc 11/02/2020 10:17 PM	ICC Profile		9 KB
sic	CG247X(26089077)08Photo Edit.icc 27/02/2020 10:27 PM	ICC Profile		9 KB
ures	CG247X(26089077)10Matte.icc 27/02/2020 10:30 PM	ICC Profile		9 KB
205	CG247X(26089077)045800 Lab.icc 27/02/2020 10:24 PM	ICC Profile		9 KB
(C:)	CG277(32972065)01Custom.icc 20/02/2020 2:50 PM	ICC Profile		9 KB
adia (\\WD	M CG277(32972065)02Adobe RGB.icc 6/12/2019 12:05 PM	ICC Profile		9 KB 🗤
CTOBACE				
ile name:	iMac 24 Gen 2.icc			~
e as type:	ICC Profile (*.icc)			~
ders		Save	Cance	

Please also leave a copy of your profile on your desktop, otherwise you won't be able to access it later.

#### SECOND - SET UP THE TARGET

# Select Target Management



## Create a new target

arget						2
	EDITING		EDITING	-		EDITING
	Print Proofing	ADV]		120 cd/m <sup>2</sup>	120.0 cd/m <sup>2</sup>	
			Black level	Minimum	0 10 cd/m <sup>2</sup>	
In	use		Contrast ratio	MILITION	1140+1	
	Custom 00000001	STD	White point	6500 K	v: 0 3127 v: 0 3293	
			trinke peaks	0500 H	6504 K	
	Adobe RGB_0000001	STD	Gamma (EOTF)	2.20		
		1000	Priority	Standard		
	sRG8_0000001	STD	Gamut	Native		
	TRACE MERCHANNER		R		x: 0.6754 y: 0.3144	
	2.20	STD	G		x: 0.2117 y: 0.6997	
		_	В		x: 0.1524 y: 0.0624	
	REC709_00000001	STD	Gamut Clipping Adjustment date	Off 2019-09-19 09	-44	
	0001	STD	riggin from the state			

#### Match colours with another display device

% ColorNavigator 7



×

#### Load an ICC profile



Scroll down to the bottom of the drop down box: Loan an ICC profile



# Navigate to your desktop and select your profile (eg, iMac 24 Gen 2.icc for this example) >> Click OK

W ColorNavigator 7



## Click Advanced Settings...

ColorNavigator 7

16 ColorNavigator 7				$\times$
1 Purpose selection	Select an ICC profile for the	target.		
2 Target creation method selection	ICC profile iMac 24" G	en 2		~
3 ICC profile selection	Denice Emulation	ICC profile	Target	
4 Set target name	Brightness	69.00 cd/m <sup>2</sup>	69 cd/m <sup>2</sup>	
	White point	x: 0.3157 y: 0.3311	x: 0.3157 y: 0.3311 Advanced Settings	
	<		2	>

Pur	W ColorNavigator 7		×	
Targ sele	Emulation detail set	tings		
ICC		Preserve RGB Numbers		
Set 1		Specify how to perform color transformation on the RGB values outputted from the video card. - On: The colors are directly transformed into the defined emulation color		ř.
		space - Off: The colors are transformed into the colour space of the monitor and the transformed into the defined emulation color space	n	ed Set
	СММ	Microsoft ICM	*	
		Select CMM to be used for color space transformation.		
	Rendering Intent	Perceptual	~	
		Select the color space transformation method used in CMM.		
		OK Cancel		



W ColorNavigator 7

– – – ×



ColorNavigator 7						_ 0	×
		2.20					^
	•	u*					
	•	LUT					
		Import LUT file					
Priori		Standard					
	, _	Grav balance					
		Gray balance					
		Fixed gamma					
Gam	ıt 🔴	Native					- 1
	•	Standard value	(				- 1
		Adobe RGB	R x: 0.6400 y: 0.3300				- P
			5 x: 0.2100 y: 0.7100				
				der the second s			~
					OK	cance	



Back to home screen. Select a Color Mode bucket, then select iMac Gen2. The Color Mode name will change.

W ColorNavigator 7					×
ColorEdge CG27	77(32972065	5)			0
Monitor settings	Tools 🗸	Preferences			
Color mode					
Custom	STD	iMac 24 Gen2			♥ ☆
Adobe RGB	STD		Target	Result	
sRG8	STD	Brightness Black level	69 cd/m <sup>2</sup> Minimum		
EBU	STD	Contrast ratio White point	x: 0.3157 y: 0.3311	· · · · · · · · · · · · · · · · · · ·	
REC709	STD	Gamma (EOTF) Priority	LUT Gray balance		
SMPTE-C	STD	Gamut	x: 0.6486 y: 0.3317		
Þa	STD	G B	x: 0.2922 y: 0.6059 x: 0.1516 y: 0.0604		
Rec709_ADV	ADV	Gamut Clipping	off		
iMac 24 G2	(ADV)		The monitor is not ca	slibrated. Calibrate it.	8
CAL3	[809]	Calibrate De	tait.		

Go ahead and calibrate. Use the same device from which you made the initial measurement.

#### CHEATS VERSION - Quick way.

Not as perfect with all the individual patches, but still pretty good for a gamut/brightness emulation.

ColorNavigator 7 × ColorEdge CG277(32972065) 2 iMac 24 Gen2 Target Result 69 cd/m<sup>2</sup> Brightness 69.3 cd/m<sup>2</sup> Black level Minimum 0.11 cd/m<sup>2</sup> Contrast ratio 602:1 x: 0.3157 y: 0.3311 x: 0.3157 y: 0.3310 White point 6332 K Gamma (EOTF) LUT Priority Gray balance Gamut x: 0.6486 y: 0.3317 x: 0.6486 y: 0.3313 x: 0.2922 y: 0.6059 x: 0.2916 y: 0.6065 x: 0.1516 y: 0.0604 x: 0.1533 y: 0.0600 Gamut Clipping Off ~

ColorNavigator 7

Targ	jet						0
		EDITING	ADV.	EDITING			EDITING
	-				Target	Result	
		FINE ART LAB PRINTING	ADV	Brightness	120 cd/m <sup>2</sup>	120.0 cd/m <sup>2</sup>	
		Print Proofing	[ADV]	Black level	Minimum	0.10 cd/m <sup>2</sup>	
			(COLA)	Contrast ratio		1149 : 1	
	In	use		White point	6500 K	x: 0.3127 y: 0.3293	
		Custom 00000001	570		-	6504 K	
		Custom_coucour	310	Gamma (EOTF)	2.20		
		Adobe RGB_0000001	STD	Carry	Native		
				R	in the second se	x:0.6754 v:0.3144	
		sRGB_0000001	STD	G		x: 0.2117 y: 0.6997	
		Rood Minimum 6500 K		в		x: 0.1524 y: 0.0624	
		2.20	STD	Gamut Clipping	off		
			100.00	Adjustment date	2019-09-19 09:44		
	npon_	- 001	STD				
Ċſ	eate a	new target					
	1/1 Larr						Details
		3.					





% ColorNavigator 7





ColorNavigator 7

1 Purp	ose selection	Measure the monitor.	
2   Targe select	et creation method tion		
3 Meas ection	surement device sel n		
4 Meas	urement device op on mode change		
5 Meas	urement (Red)		
6 Meas	surement (Green)		
7 Meas	surement (Blue)	Display red (255, 0, 0) on the target monitor.	
8 Meas	surement (White)	XYZ 11	
9 Set ta	arget name	Coordinate x y:	
		<	12.

ColorNavigator 7		×
1 Purpose selection	Measure the monitor.	
2 Target creation method selection		
3 Measurement device sel ection		
4 Measurement device op eration mode change		
5 Measurement (Red)		
6 Measurement (Green)		
7 Measurement (Blue)	Display green (0, 255, 0) on the target monitor.	
8 Measurement (White)	xyz 24.15 50.13 8.13 13.	
9 Set target name	Coordinate x: 0.2931 y: 0.6083	
	<	14. >

W ColorNavigator 7 Purpose selection Measure the monitor. Target creation method selection Measurement device sel ection Measurement device op eration mode change Measurement (Red) Measurement (Green) Display blue (0, 0, 255) on the target monitor. Place the measurement device on it and click "Measure". Measurement (White) 12.98 5.63 65.96 XYZ Coordinate x: 0.1535 y: 0.0666 9 Set target name

ColorNa	vigator 7		×
- 1	Purpose selection	Measure the monitor.	
2	Target creation method selection		
3	Measurement device sel ection		
4	Measurement device op eration mode change		
5	Measurement (Red)		
6	Measurement (Green)		
7	Measurement (Blue)	Display white (255, 255, 255) on the target monitor.	
8	Measurement (White)	xyz 68.04 71.33 74.83	
9	Set target name	Brightness 71.3 cd/m <sup>2</sup> Measure	
		< 18.	>

ColorNavigator 7

27.0					
1	Purpose selection	Set the name of the target.			
2	Target creation method selection	Target name 71cd_Min	nimum_(0.3177,0.3330)	_2.20_00000001	
3	Measurement device sel ection	Brightness	Target 71 cd/m <sup>2</sup>		
4	Measurement device op eration mode change	Black level	Minimum		
5	Measurement (Red)	White point	x: 0.3177 y: 0.3330		
6	Measurement (Green)	Priority	Standard		
7	Measurement (Blue)	R	x: 0.6491 y: 0.3314		
8	Measurement (White)	G	x: 0.1535 y: 0.0666		
9	Set target name	Gamut Clipping	Off		
					Customize target
					Finish

Customize Target so that you can name both the target and the colour mode something meaningful.

W ColorNavigator 7	-		$\times$
iMac Gen2 Color mode type - 20.	Set mode name iMac Gen2	•	
Preset target 💊			
Brightness	Standard Input		
	60 70 80 90 100 110 120 80 cd/m <sup>2</sup>		
	Manual cd/m <sup>2</sup>		
	Minimum		
	Maximum		
Black level	O Minimum		
	Manual		
	21. ок <sub>Саг</sub>		

Click OK, close the windows and return to the home screen.

Allocate the new target to one of the color mode buckets, then calibrate as usual.

I used the built in sensor to calibrate, and then I used the ColorMunki to calibrate.

I found that the built in sensor gave me a better result (slightly closer match). Go figure.

10 ColorNavigator 7					×
ColorEdge CG2	77(3297206	5)			Ø
Monitor settings 🗸 🗸	Tools 🗸				
Color mode					
Custom	STD	iMac Gen2			<b>∨</b> ຜ
Adobe RGB	STD		Target	Result	<u>~</u>
		Brightness	71 cd/m <sup>2</sup>		
sRGB	STD	Black level	Minimum		
ERII	570	Contrast ratio			
600	510	White point	x: 0.3177 y: 0.3330		
REC709	STD	Gamma (EOTF)	2.20		
		Priority	Standard		
SMPTE-C	STD	Gamut			
		R	x: 0.6491 y: 0.3314		
DCI	STD	G	x: 0.2931 y: 0.6083		
		B	x: 0.1535 y: 0.0666		
Rec709_ADV	ADV	Gamut Clipping	Off		
iMac 24 G2	ADV]		The monitor is not c	alibrated. Calibrate it.	~
iMac Gen2	ADV	Calibrate	Details 🔨		