Instrument Inspector

Instrument Inspector is for understanding instruments. These are technical devices that many people trust, although we often encounter problems. Even if we use one Instrument, we may feel uncertainty in certain situations. Everyone has probably found out that performing procedures does not always end in success.

Just as we should learn to understand the process of vision - what and how our eye and brain process it better - we should also become familiar with measuring instruments.
Both are not perfect.

Instrument Inspector

The instruments vary. Some of the differences are obvious and expected. It results from different assumptions. However, many differences are caused by factors that are difficult to understand.

Instrument differences

- M-conditions requirements
- UV component
- Temperature stabilisation
- Voltage stabilisation

Source of light

- No real D50 - in best case simulator

- no perfect solution
- smaller slit/higher amplification

Monochromator

- No real D50 - in best case simulator

- single or multiple
- signal/noise ratio

Sensor

- Limed (single point calibration

- Manufacturer's trying to match other instruments
- Simultaneous m-condition readings

Processor

- Output data are manipulated

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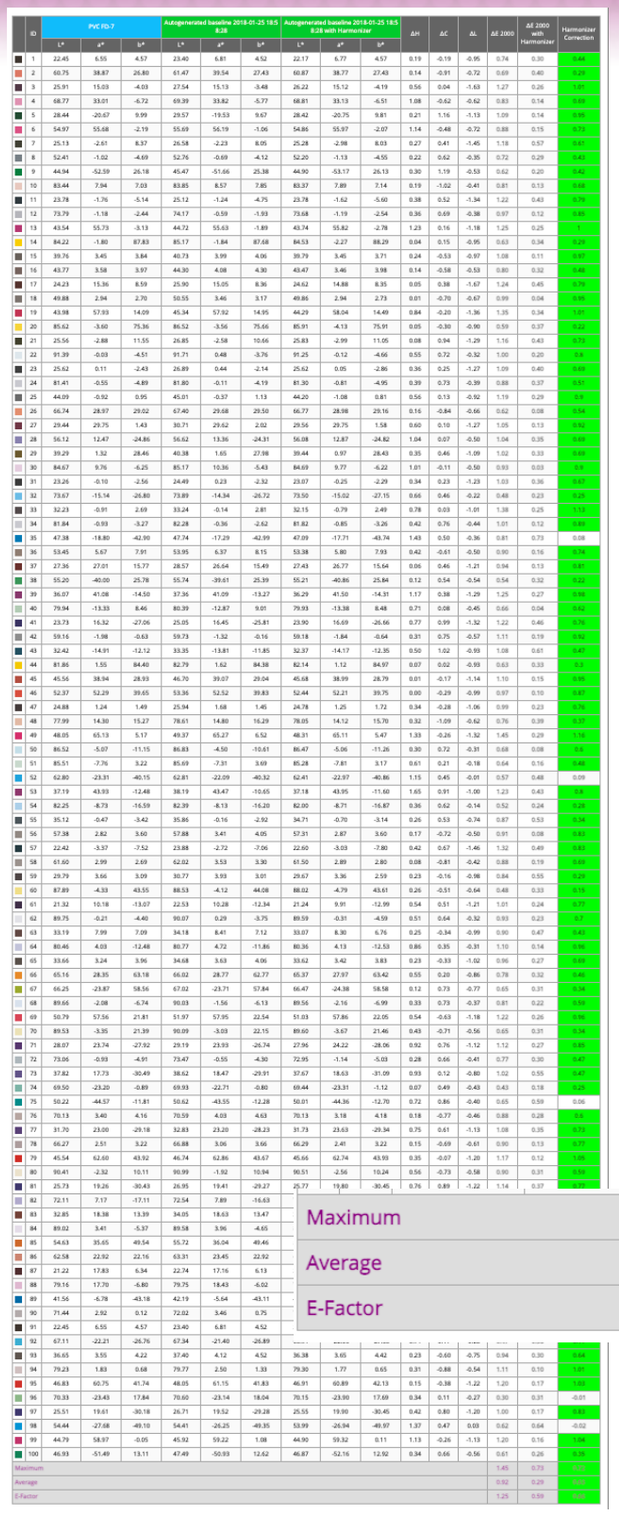
Color Industry

There are no absolute color standards. BCRA is not real.

There is no one Standard Instrument that all others can simply match.

There is no one standard geometry, measurement mode, measurement condition, or color specification.

Instrument Inspector



	eXact Creator exact PVC	i1 Pro 2 Autogenerated baseline 2018-01-19 23:17:36	Konica-Minolta FD-7 PVC FD-7	Konica-Minolta FD-9 Autogenerated baseline 2018-01-18 11:40:55	X-Rite i1 Pro 2 sdruk PVC sd
eXact Creator exact PVC		Workflow = 7.55 H = 4.55 Instrument = 1.51 H = 0.91 Harmonizer = 66% Max = 1.87 Avg. = 0.87	Workflow = 4.40 H = 3.00 Instrument = 0.88 H = 0.60 Harmonizer = 47% Max = 0.99 Avg. = 0.61	Workflow = 3.75 H = 1.85 Instrument = 0.75 H = 0.37 Harmonizer = 103% Max = 0.80 Avg. = 0.51	Workflow = 8.40 H = 3.95 Instrument = 1.68 H = 0.79 Harmonizer = 113% Max = 2.07 Avg. = 0.63
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Maximum	1.45	0.73	0.72
Average	0.92	0.29	0.63
E-Factor	1.25	0.59	0.66

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Instrument issues

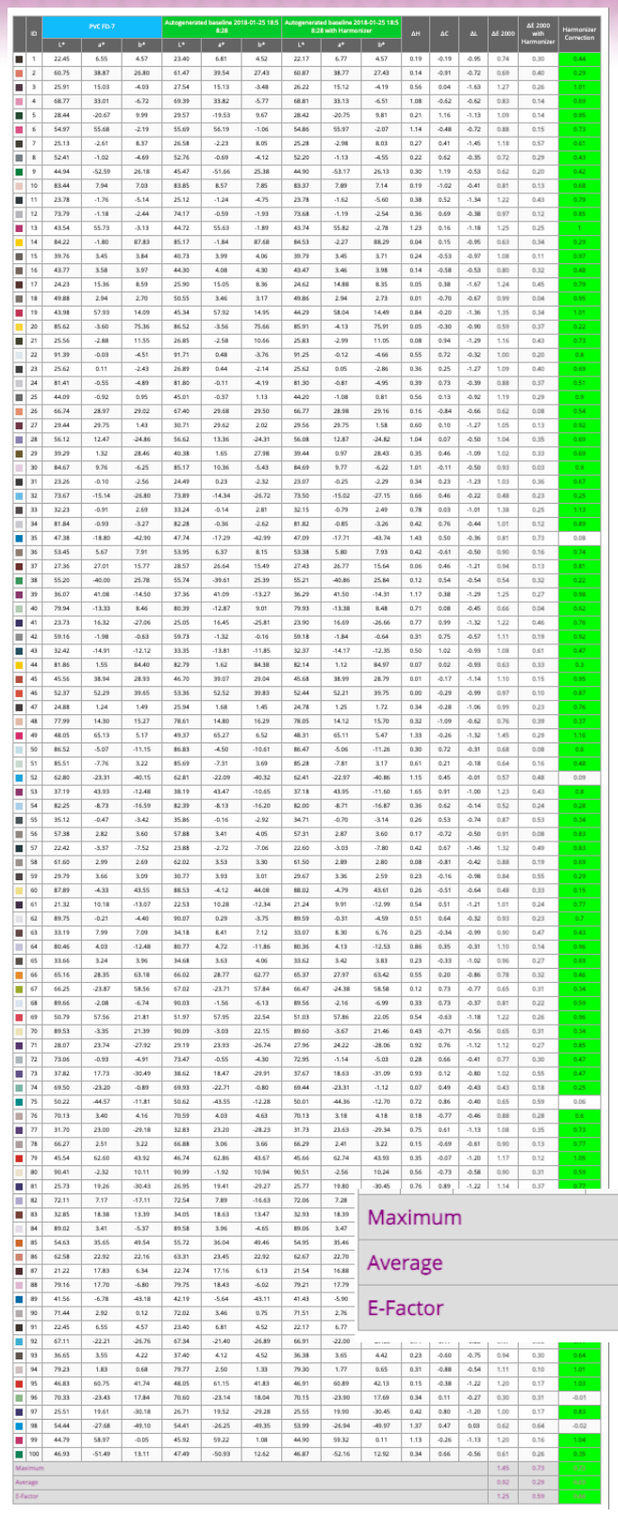
“Our products are the best - we cannot admit to mistakes and fix them because, we still want to sell this technology as it is.”

Major market players sometimes offer old solutions because they have already invested and now expect profits.

Same Instrument - different data

- Instrument repeatability
- Inter-instrument agreement
- Performance/Accuracy issue (speed)
- Illuminant simulator issues
- Scan vs. spot modes
- Scan options fast, contactless, up-down
- More than one calibration standard
- Single-point calibration
- Ruler may lift instrument
- Proper calibration

Instrument Inspector



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Harmonization

- Extremely demanding (averaging, long-term stability)
- Requires repeatable condition
- Substrate has a huge impact - two instruments can measure samples printed on one substrate very differently and similarly on another.
- Even the same material can be a problem - ceramic tiles have certain colors that show greater differences between instruments (red). (red).

Harmonization

- Some instruments can scratch targets - which requires printing more of them to replace a new one

- All settings (apertures, modes, options, measurement condition have to be defined)

- Baseline comparison should not show negative results.

- Data capturing mode can't be changed before tests (scan/spot)

Research Program

We are looking for minimum 3 volunteers, who help us with:

1. Initial data collecting:

- at least 3 different instruments each
- baselines for at least 3 different targets (substrates)
- each baseline created based on 5-10 scans (averaging)
- data collected during 2-3 months (2-5 times/week).

2. Testing — series parallel measurements repeated by at least two instrument. Goal is to compare harmonised data with measured to confirm that implementation is successful

3. Periodical implementation checks (parallel measurements)