This datasheet describes the specification according to the standard 1288 for Characterization and Presentation of Specification Data for Image Sensors and Cameras of the European Machine Vision Association (EMVA) (see www.standard1288.org). The measurements were performed with an AEON ACC3 RGB Release 3, 20.01.2104, SN 0005(). The performance parameters and estimated accuracy of the measurements are described in the technical report for the instrument, its calibration in the corresponding calibration report.

Vendor: MATRIX VISION
Model: mvBlueCOUGAR-X104fc
Serial number: GX008709
Sensor diagonal: 13.39 mm
Lens category: C-Mount
Resolution: 1936 × 1214, 12 bit
Pixel size: 5.86 μm × 5.86 μm
Sensor type: CMOS
Shutter type: Global
Overlap capabilities: Overlapping
Maximum frame rate: 25.3 Hz
Interface type: GigE Vision

Type of data presented: Single

**Operation point 1, (page 5)**
- Wavelength centroid: 467.3 nm
- Wavelength FWHM: 20.5 nm
- Gain, offset: Gain = 0dB, Offset = 0.06

**Operation point 2, (page 17)**
- Wavelength centroid: 534.2 nm
- Wavelength FWHM: 30.9 nm
- Gain, offset: Gain = 0dB, Offset = 0.06

**Operation point 3, (page 29)**
- Wavelength centroid: 629.5 nm
- Wavelength FWHM: 13.1 nm
- Gain, offset: Gain = 0dB, Offset = 0.06

Optional data measured: None
EMVA 1288 Summary Sheet for Operating Point 1

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Single</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure time</td>
<td>1.0 ms</td>
</tr>
<tr>
<td>Frame rate</td>
<td>0.0 Hz</td>
</tr>
<tr>
<td>Data transfer mode</td>
<td>BayerRG12</td>
</tr>
</tbody>
</table>

Gain, offset
- Gain = 0 dB, Offset = 0.06

Environmental temperature
- 27.1°C

Camera temperature
- 40.2°C

Wavelength, centr., FWHM
- 467 nm, 20.5 nm

Quantum efficiency
\( \eta = 0.528 \)

Gain
- \( K \) (DN/e) = 0.125
- \( 1/K \) (e/DN) = 8.027

Dark noise & DSNU
- \( \sigma_d \) (DN) = 0.85
- \( \sigma_0 \) (e) = 6.4
- DSNU_{1288} (DN) = 0.64
- DSNU_{1288} (e) = 5.10

Signal-to-noise ratio & PRNU
- SNR_{max} = 181
- SNR_{max} (dB) = 45.2
- SNR_{max} (bits) = 7.5
- \( 1/SNR_{max} \) (%) = 0.55
- PRNU_{1288} (%) = 0.371

Nonlinearity
- LE (%) = 0.39

Sensitivity & saturation
- \( \mu_{p,\text{min}} \) (p) = 13.9
- \( \mu_{e,\text{min}} \) (e) = 7.3
- \( \mu_{p,\text{sat}} \) (p) = 62058
- \( \mu_{e,\text{sat}} \) (e) = 32786

Dynamic range
- DR = 4473
- DR (dB) = 73.0
- DR (bit) = 12.1

Dark current
- \( \mu_{c,\text{mean}} \) (DN/s) = 3.44
- \( \mu_{c,\text{mean}} \) (e/s) = 27.64
- \( \mu_{c,\text{var}} \) (e/s) = 52.51
EMVA 1288 Summary Sheet for Operating Point 2

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Single</th>
<th>Gain, offset</th>
<th>Gain = 0dB, Offset = 0.06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure time</td>
<td>1.0 ms</td>
<td>Environmental temperature</td>
<td>27.1°C</td>
</tr>
<tr>
<td>Frame rate</td>
<td>0.0 Hz</td>
<td>Camera temperature</td>
<td>40.2°C</td>
</tr>
<tr>
<td>Data transfer mode</td>
<td>BayerRG12</td>
<td>Wavelength, cent., FWHM</td>
<td>534 nm, 30.9 nm</td>
</tr>
</tbody>
</table>

![Photon transfer graph](image)

<table>
<thead>
<tr>
<th>Quantum efficiency</th>
<th>η</th>
<th>0.587</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain</td>
<td>K (DN/e)</td>
<td>0.124</td>
</tr>
<tr>
<td></td>
<td>1/K (e/DN)</td>
<td>8.041</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dark noise &amp; DSNU</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>σ_d (DN)</td>
<td>0.85</td>
<td></td>
</tr>
<tr>
<td>σ_0 (e)</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>DSNU_{1288} (DN)</td>
<td>0.62</td>
<td></td>
</tr>
<tr>
<td>DSNU_{1288} (e)</td>
<td>4.99</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signal-to-noise ratio &amp; PRNU</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SNR_{max}</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>SNR_{max} (dB)</td>
<td>45.1</td>
<td></td>
</tr>
<tr>
<td>SNR_{max} (bits)</td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>1/SNR_{max} (%)</td>
<td>0.56</td>
<td></td>
</tr>
<tr>
<td>PRNU_{1288} (%)</td>
<td>0.476</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nonlinearity</th>
<th>LE (%)</th>
<th>0.33</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Sensitivity &amp; saturation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>μ_{p, min}</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>μ_{e, min}</td>
<td>7.4</td>
<td></td>
</tr>
<tr>
<td>μ_{p, sat}</td>
<td>55091</td>
<td></td>
</tr>
<tr>
<td>μ_{e, sat}</td>
<td>32319</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynamic range</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DR</td>
<td>4397</td>
<td></td>
</tr>
<tr>
<td>DR (dB)</td>
<td>72.9</td>
<td></td>
</tr>
<tr>
<td>DR (bit)</td>
<td>12.1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dark current</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>μ_c,mean (DN/s)</td>
<td>3.22</td>
<td></td>
</tr>
<tr>
<td>μ_c,mean (e/s)</td>
<td>25.87</td>
<td></td>
</tr>
<tr>
<td>μ_c, var (e/s)</td>
<td>146.57</td>
<td></td>
</tr>
</tbody>
</table>
EMVA 1288 Summary Sheet for Operating Point 3

Type of data: Single
Exposure time: 1.0 ms
Frame rate: 0.0 Hz
Data transfer mode: BayerRG12

Gain, offset:
Gain = 0dB, Offset = 0.06

Environmental temperature:
27.1°C

Camera temperature:
40.2°C

Wavelength, cent., FWHM:
630 nm, 13.1 nm

Quantum efficiency:
\( \eta = 0.438 \)

Gain:
\( K \) (DN/e) = 0.125
\( 1/K \) (e/DN) = 8.032

Dark noise & DSNU:
\( \sigma_d \) (DN) = 0.85
\( \sigma_0 \) (e) = 6.4
DSNU_{1288} (DN) = 0.62
DSNU_{1288} (e) = 4.99

Signal-to-noise ratio & PRNU:
SNR_{max} = 180
SNR_{max} (dB) = 45.1
SNR_{max} (bits) = 7.5
1/SNR_{max} (%) = 0.56
PRNU_{1288} (%) = 0.519

Nonlinearity:
LE (%) = 0.52

Sensitivity & saturation:
\( \mu_{p,\text{min}} \) (p) = 16.8
\( \mu_{e,\text{min}} \) (e) = 7.3
\( \mu_{p,\text{sat}} \) (p) = 74067
\( \mu_{e,\text{sat}} \) (e) = 32415

Dynamic range:
DR = 4414
DR (dB) = 72.9
DR (bit) = 12.1

Dark current:
\( \mu_{c,\text{mean}} \) (DN/s) = 4.07
\( \mu_{c,\text{mean}} \) (e/s) = 32.71
\( \mu_{c,\text{var}} \) (e/s) = 48.79