



Beyond drone camera specs: Looking past the gimbal and the quality factors to look for



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Use Cases



Typical Scenarios



Inspections



Situational
awareness



Beyond drone camera specs

Inspections

- _ Bridge Inspections
- _ Thermal Inspections
- _ Distribution Network Inspections





Situational Awareness

- _ Pursuits of subjects, day and night
- _ Search and rescue
- _ Day & night surveillance



X10 Sensor Packages





X10 Sensor Packages



NARROW
THERMAL
TELEPHOTO

VT300-Z

MODULE	RESOLUTION	FIELD OF VIEW
Narrow	64 MP	50°
Telephoto	48 MP	13°
Thermal	640x512	40°



1" WIDE
THERMAL
FLASHLIGHT
NARROW

VT300-L

MODULE	RESOLUTION	FIELD OF VIEW
1" Wide	50 MP	93°
Narrow	64 MP	50°
Thermal	640x512	40°
Light	Effective illumination up to 3m	



Best in Class Thermal Sensitivity

2x

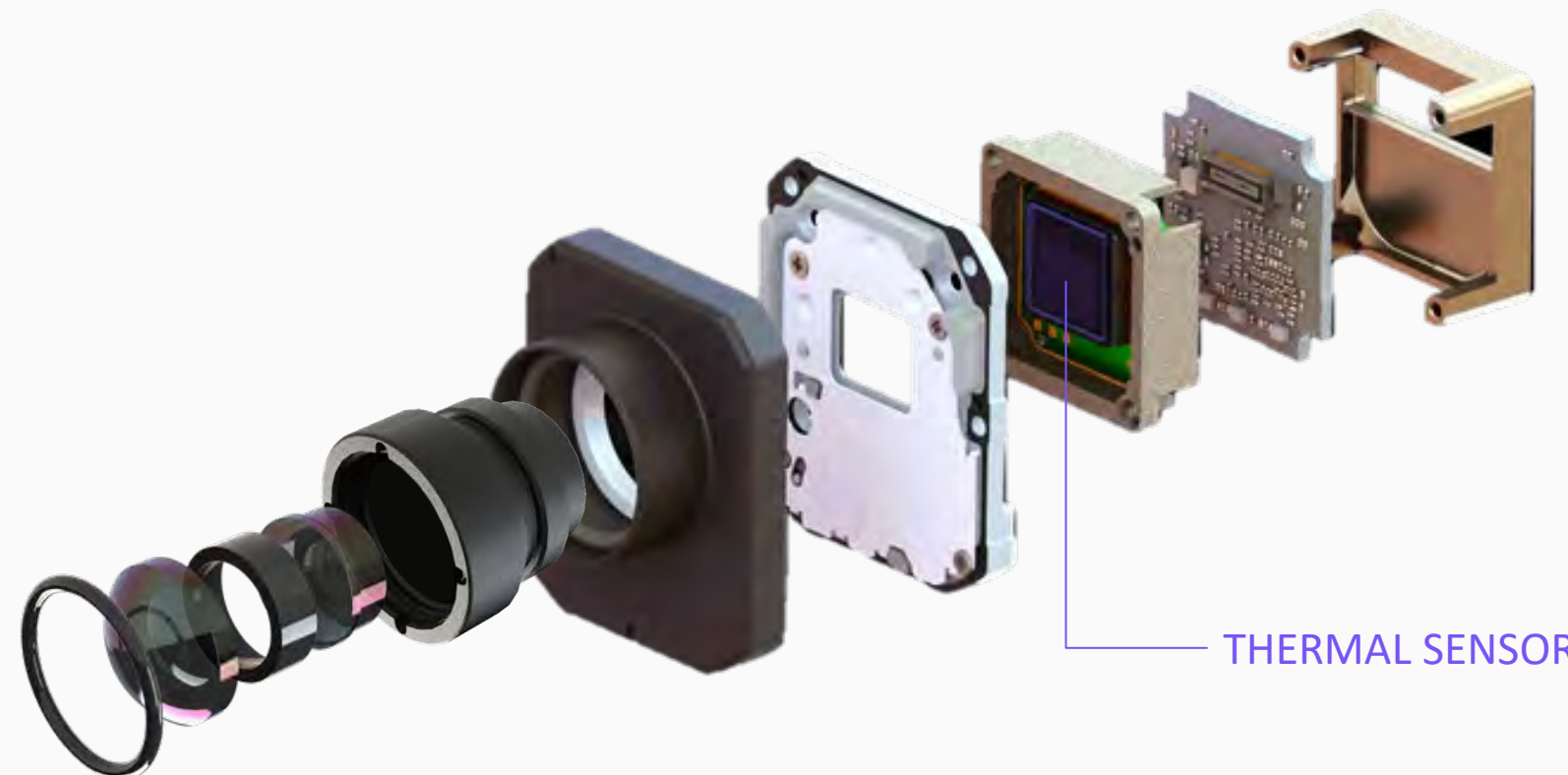
Thermal sensitivity

4x

Resolution

5°C

Radiometric accuracy (\pm)





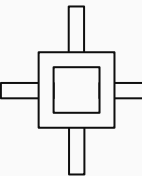
THERMAL SENSOR



Radiometry



Temperature Icons

-  Scene lowest **L: 31.4°C**
-  Scene highest **H: 68.0°C**
-  Local spot **47.1°C**



Combined EO Performance

— Cameras and capabilities designed to
seamlessly work together



X10 Narrow

- Sony 1/1.7" 64MP Sony sensor
- Custom rectilinear lens
- hybrid PDAF, 1m to ∞
- 10 mm (46mm equivalent), f/1.8



X10 Telephoto

- _ Sony 1/2" 48MP Sony sensor
- _ Custom compact rectilinear lens
- _ hybrid PDAF, 5m to ∞
- _ 35 mm (190mm equivalent), f/2.2

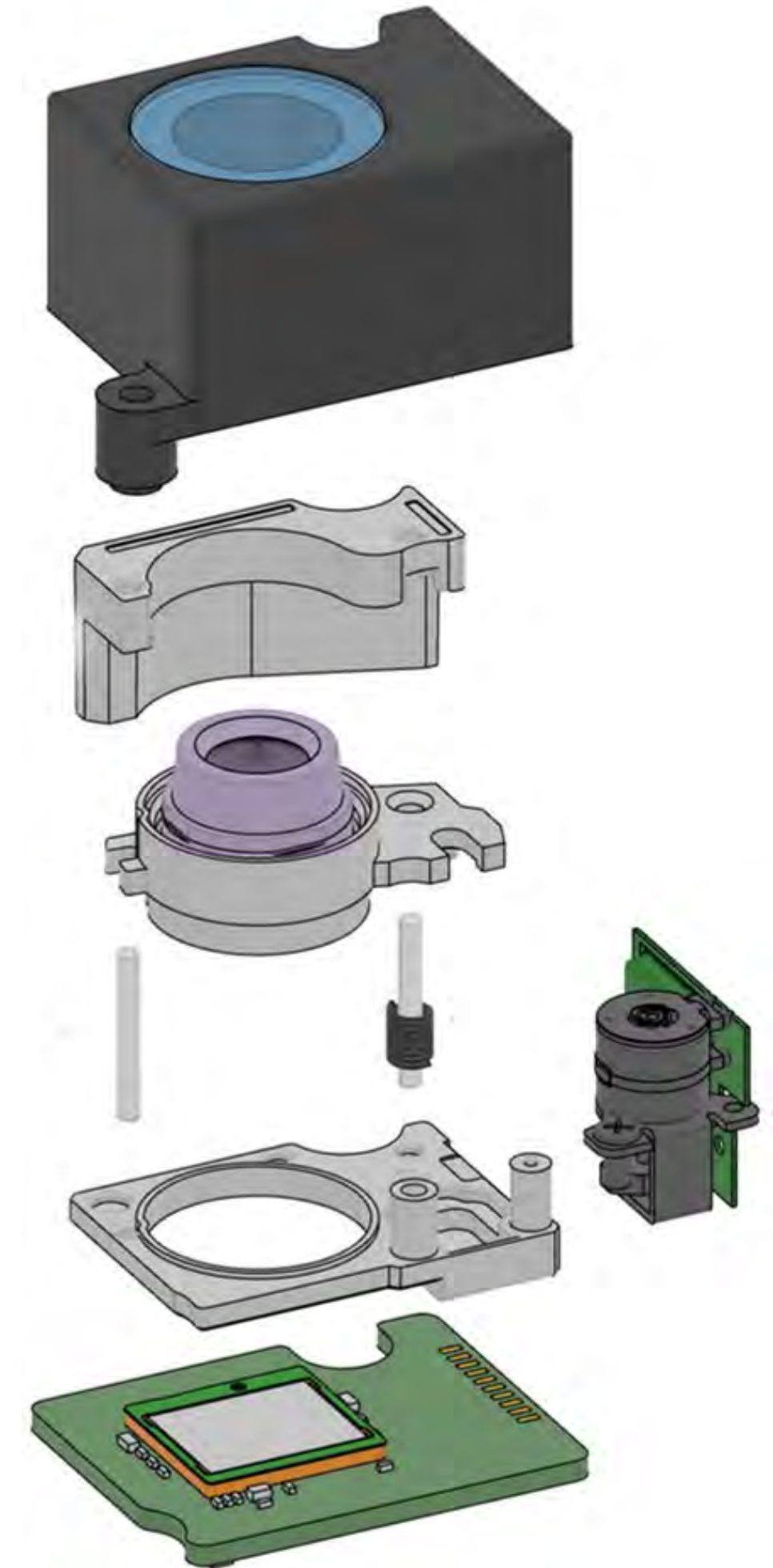


TELEPHOTO

VT300-Z

X10 1" Wide

- _ 4x larger 50.3MP Sony sensor
- _ 3.2um quad pixel, 1.6um full res
- _ 100% focus pixel, 1m to ∞
- _ 8 mm (20mm equivalent), f/1.95

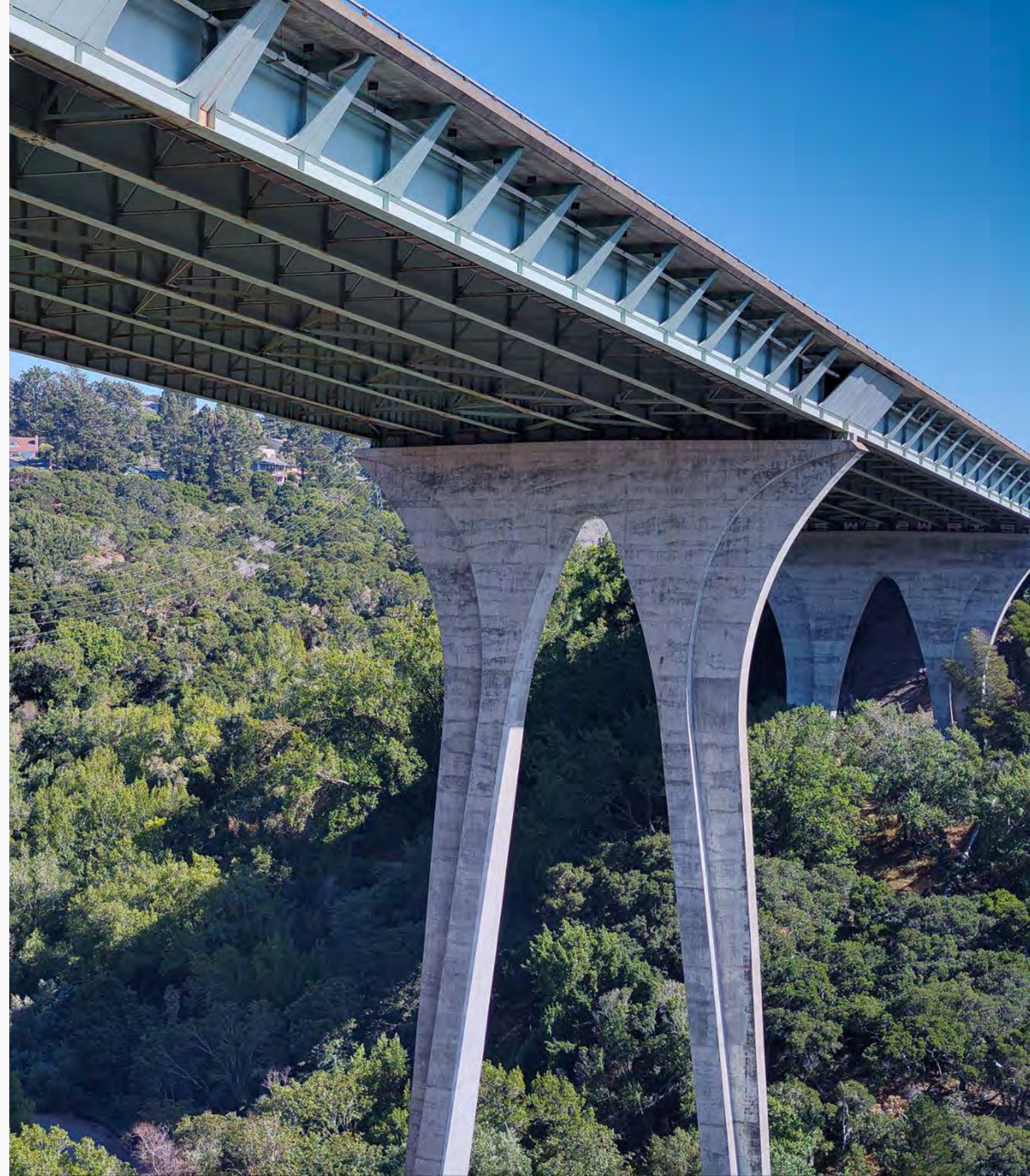




Beyond drone camera specs

ISP & IQ Tuning

- _ Color, sharpness, denoise
- _ Photo & video processing
- _ Media encoding





Beyond Cameras and Sensors



Lighting



Proximity



Autonomy



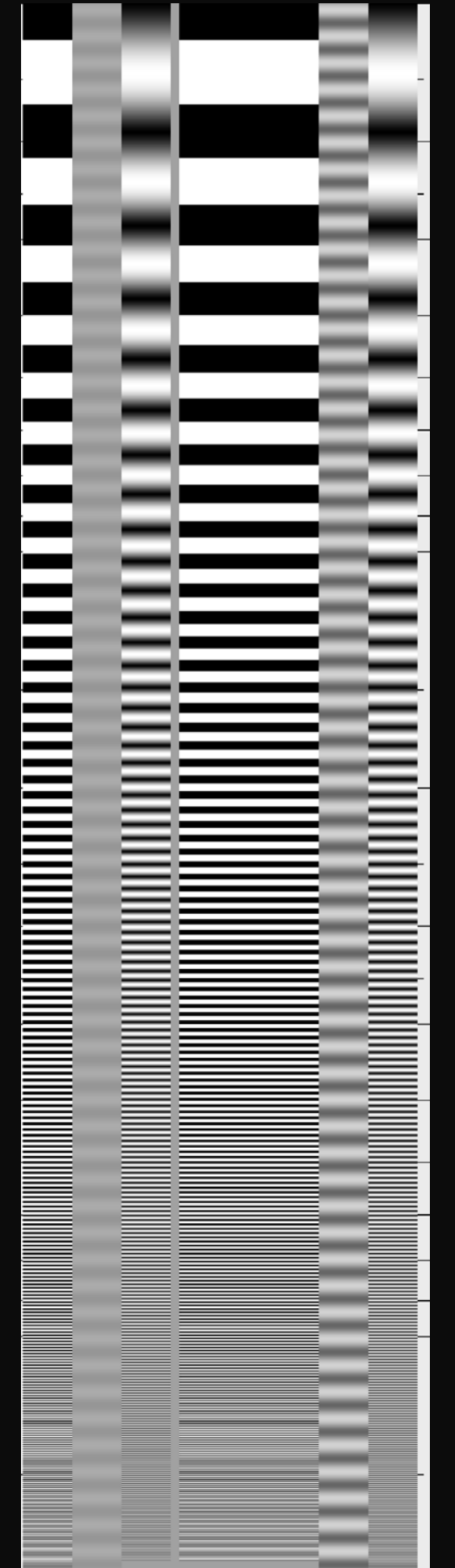
Connectivity

Camera Specifications

	Skydio X10 Narrow Full Res	Skydio X10 Narrow Binned/HDR	Skydio X10 Telephoto Full Res	Skydio X10 Telephoto Binned/HDR	DJI Mavic M3E Wide	DJI Matrice 30 Zoom	Autel 4T Zoom
Resolution	64MP	16MP	48MP	12MP	20MP	48MP	48MP
DFOV	50° 46mm equiv	50° 46mm equiv	13° 190mm equiv	13° 190mm equiv	84° 24mm equiv	22 to 6° 113 to 405mm equiv	38 to 11° 64 to 234mm equiv
Aperture	f/1.8	f/1.8	f/2.2	f/2.2	f/2.8-f/11	f/2.8-f/4.2	f/1.9
Focus	Hybrid PDAF 1m to ∞	Hybrid PDAF 1m to ∞	Hybrid PDAF 5m to ∞	Hybrid PDAF 5m to ∞	1m to ∞	5m to ∞	PDAF

PDAF - Phase Detection Autofocus

Sharpness [MTF]

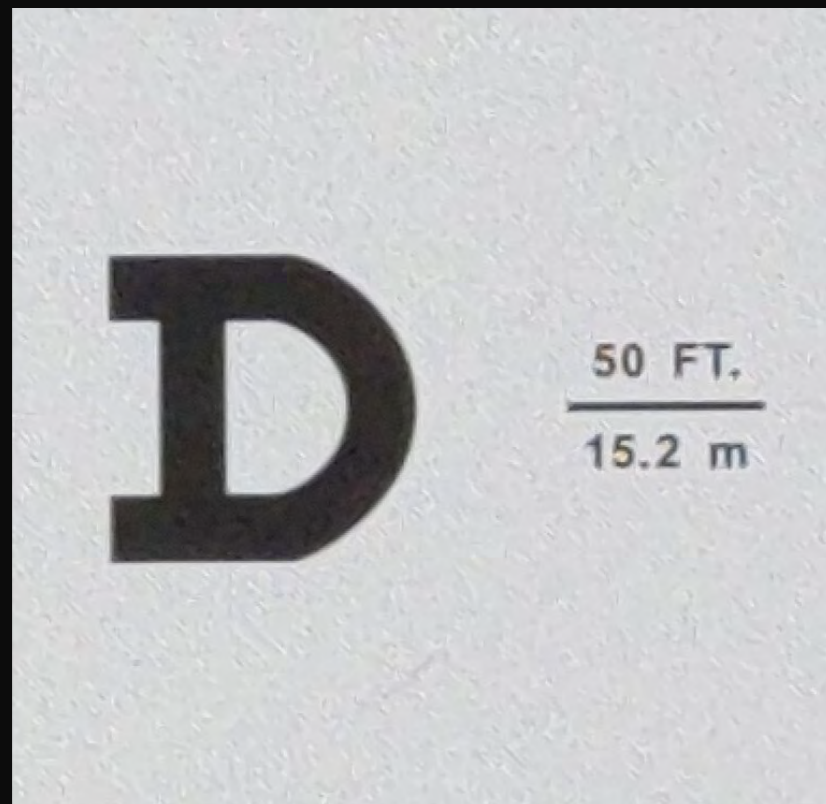


Sharpness [MTF]

Daylight condition [6500K, 1,000 lux], narrow systems



Skydio X10 Full Res - Standard



5330 lwph

Skydio X10 1/4 Res - Standard



3221 lwph

Skydio X10 1/4 Res - HDR



2514 lwph

DJI M3E

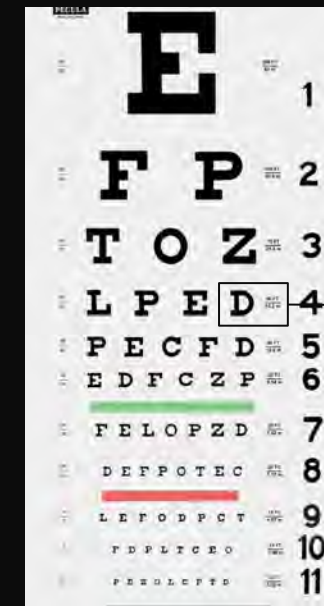


3632 lwph

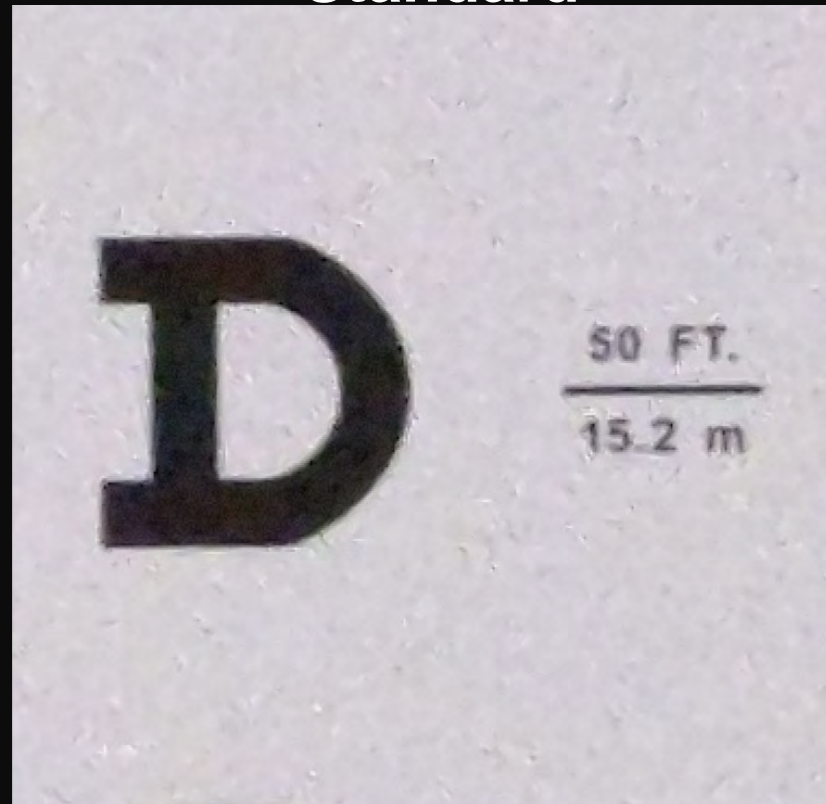
X10 captured at 2 meters, DJI captured at 1 meter

Sharpness [MTF]

Low light condition [3000K, 25 lux], narrow systems



Skydio X10 Full Res - Standard



2007 lwph

Skydio X10 1/4 Res - Standard



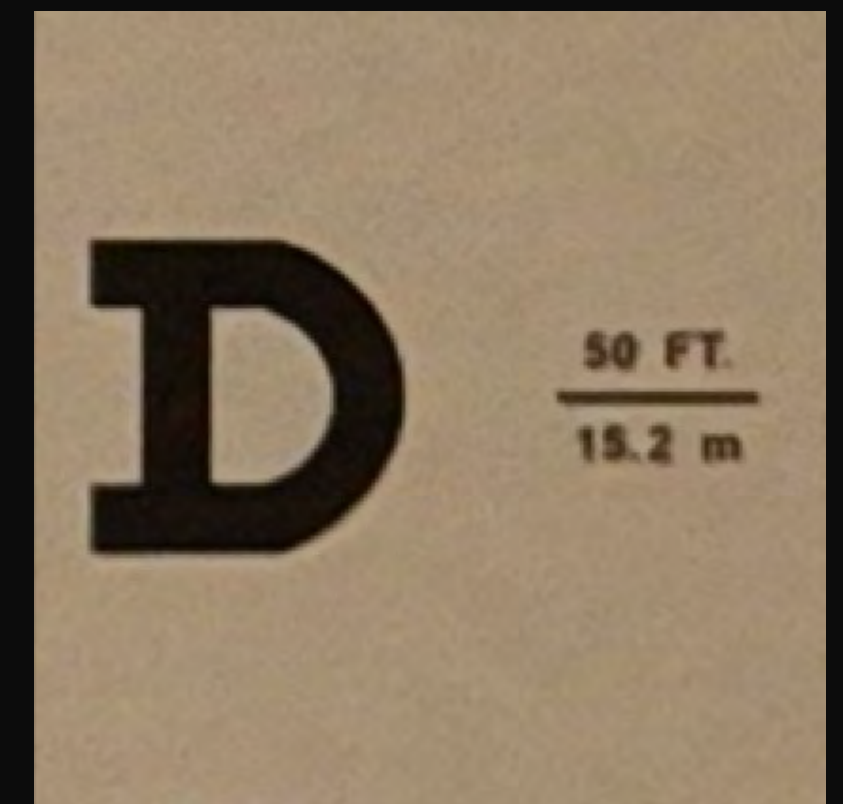
2929 lwph

Skydio X10 1/4 Res - HDR



2060 lwph

M3E

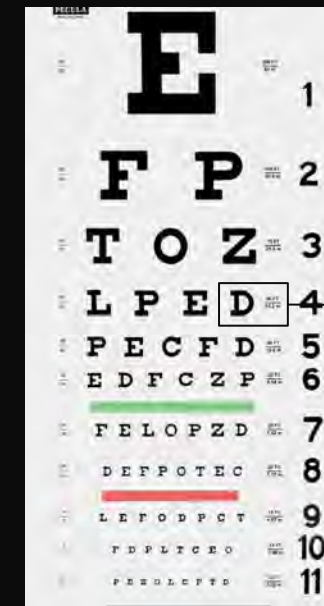


2198 lwph

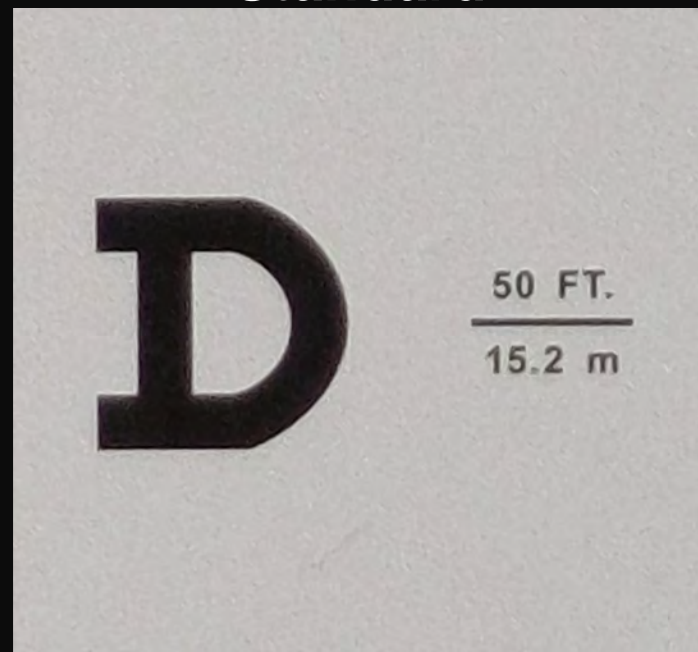
X10 captured at 2 meters, DJI captured at 1 meter

Sharpness [MTF]

Daylight condition [6500K, 1,000 lux], telephoto systems

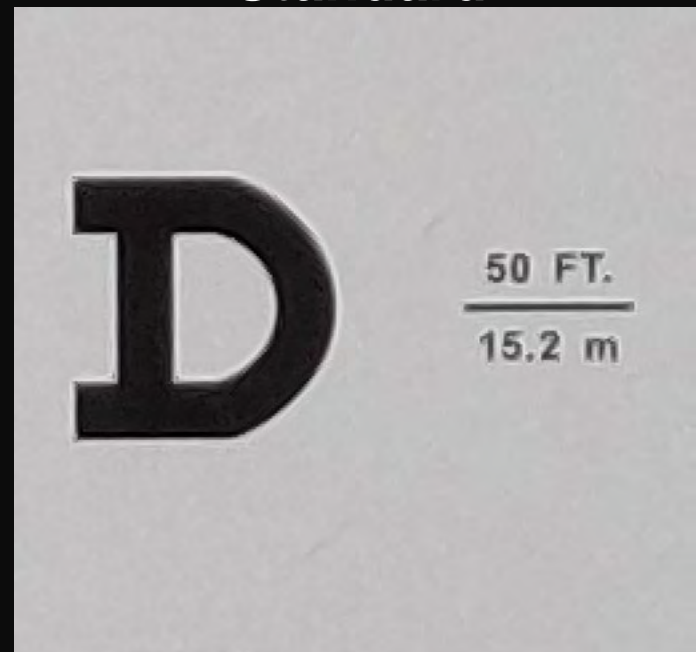


Skydio X10 Full-Res Standard



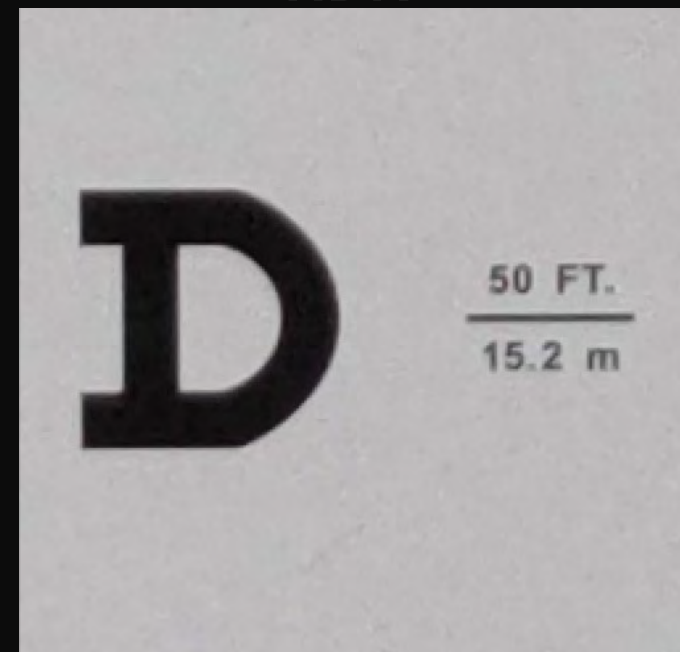
3491 lwph

Skydio X10 1/4 Res - Standard



2945 lwph

Skydio X10 1/4 Res - HDR



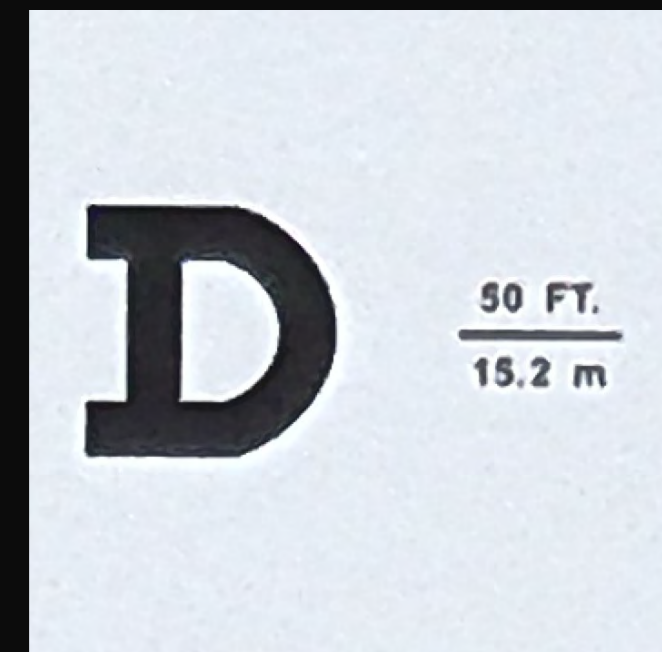
1814 lwph

Autel 4T



1824 lwph

DJI M30 Full Res



2977 lwph

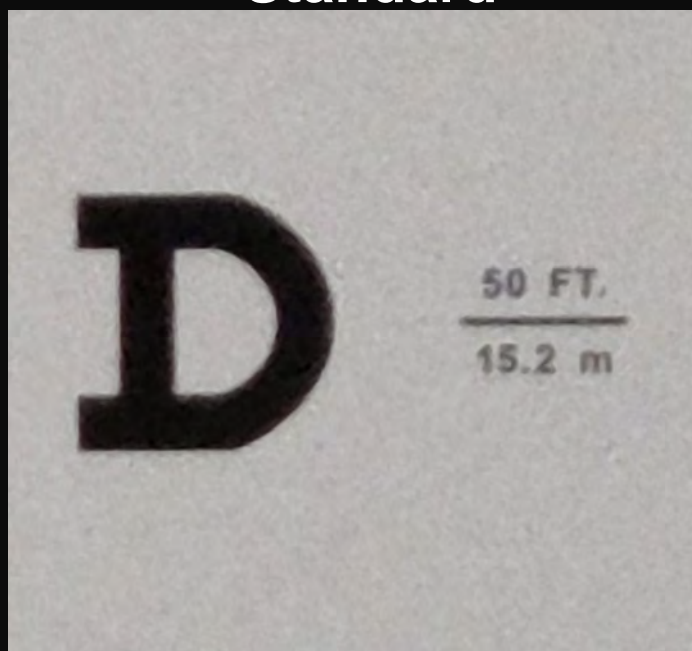
All captured at 5 meters

Sharpness [MTF]

Low light condition [3000K, 25 lux], telephoto systems

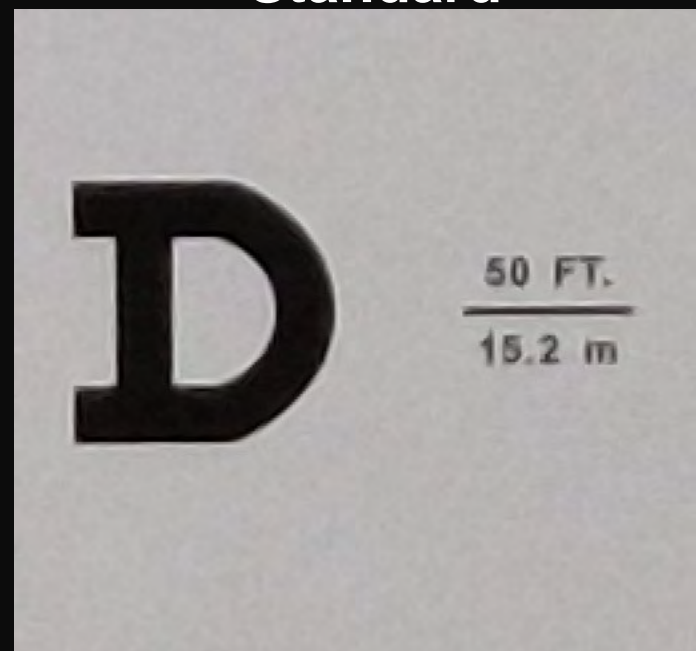


Skydio X10 Full-Res
Standard



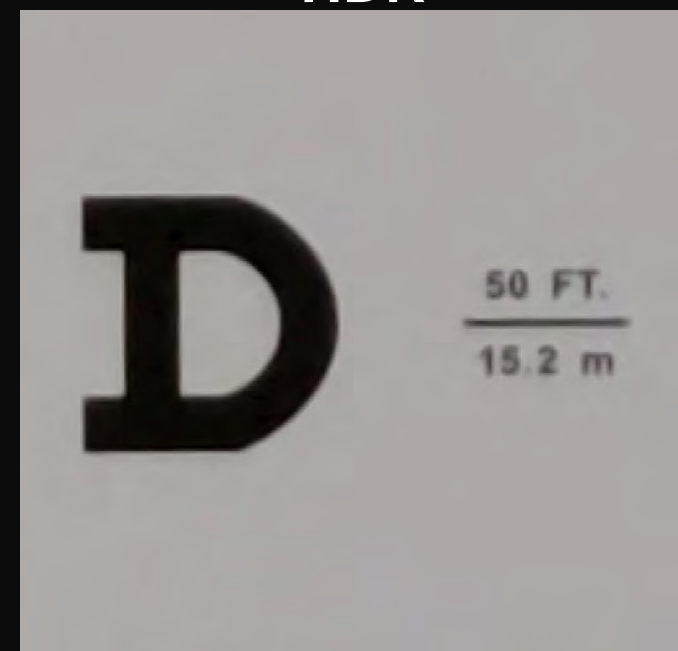
1268 lwph

Skydio X10 ¼ Res -
Standard



2147 lwph

Skydio X10 ¼ Res -
HDR



1269 lwph

Autel 4T



1770 lwph

DJI M30 Full Res

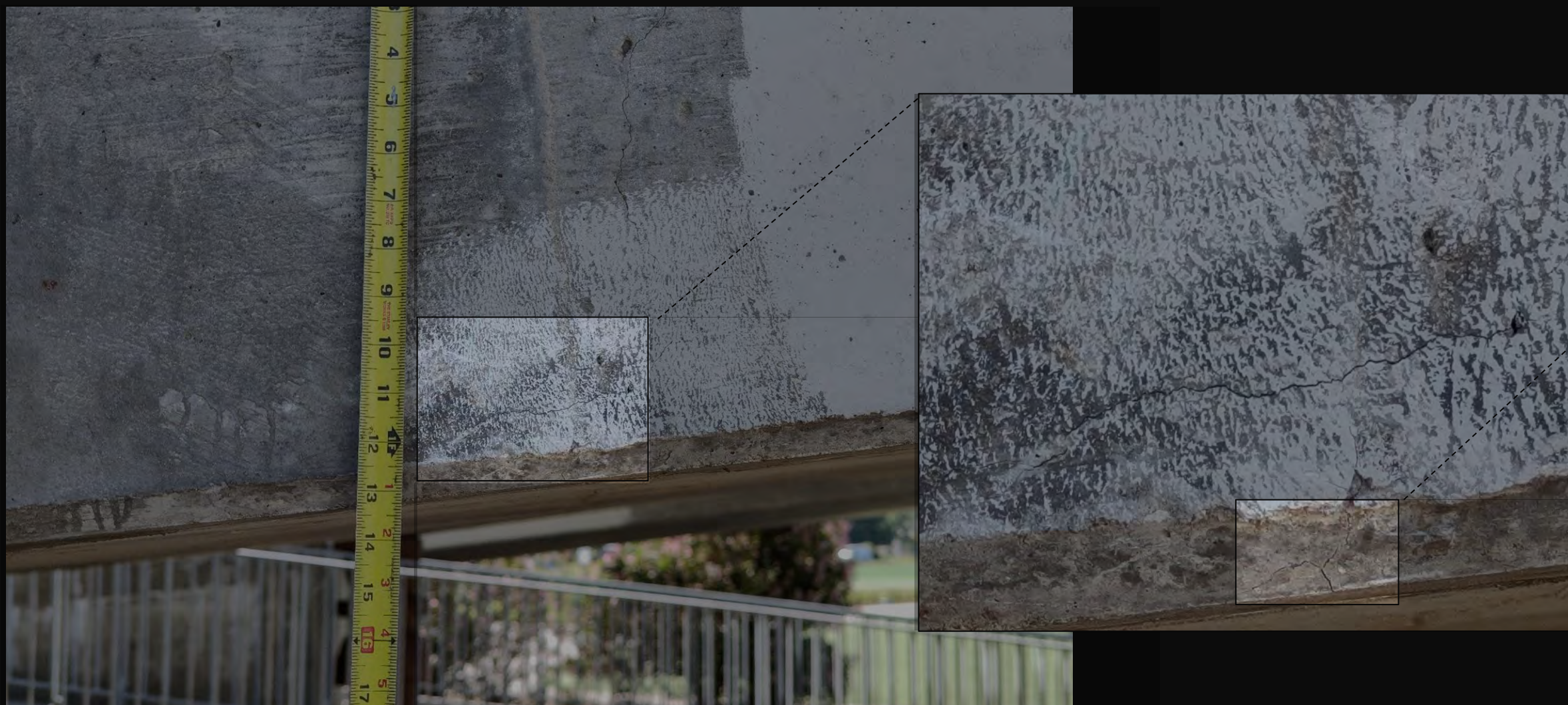


1413 lwph

All captured at 5 meters

Sharpness

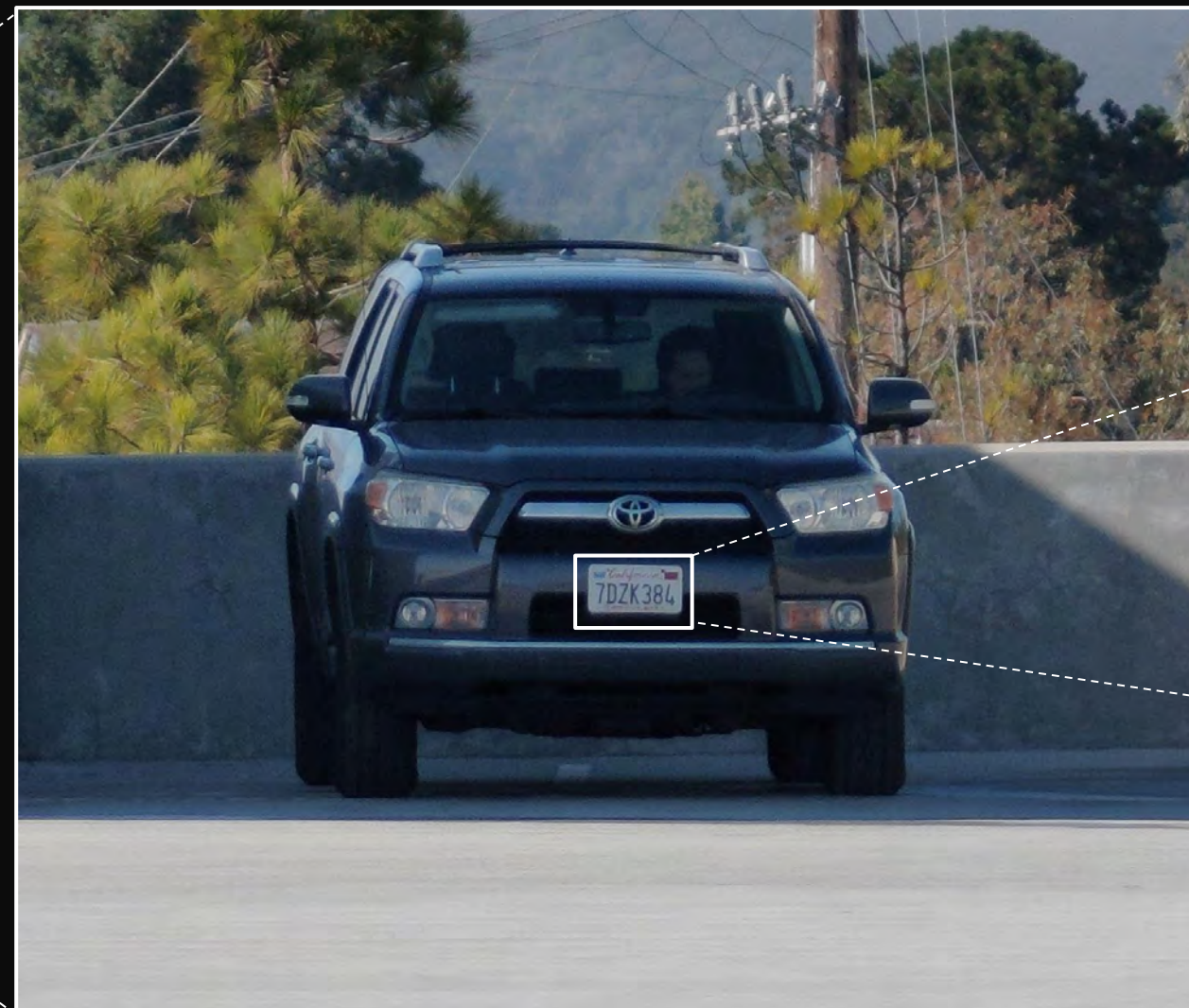
Narrow Camera



See a 0.1mm crack

Sharpness

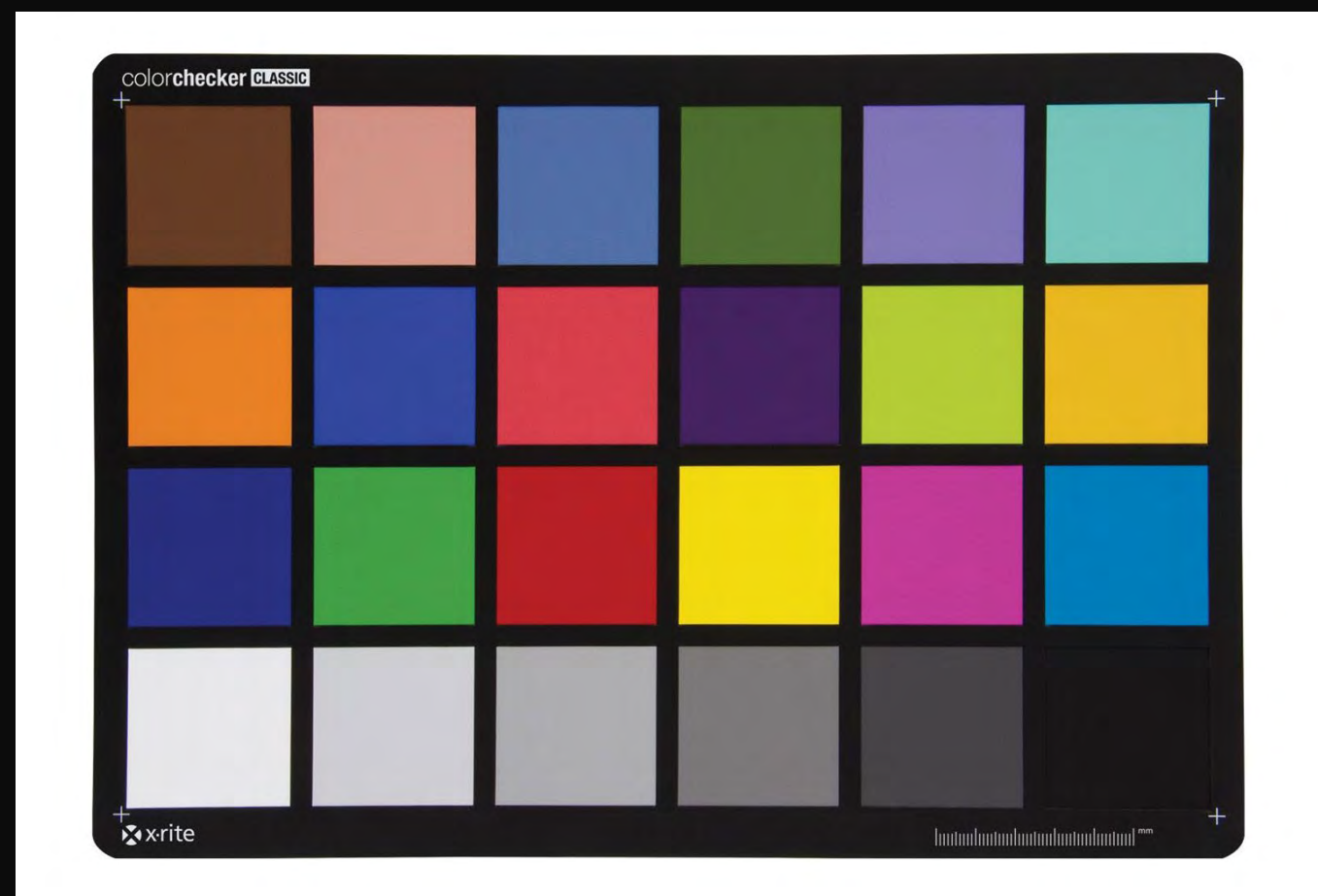
Telephoto Camera



See more, from farther away, in any condition.
(350 feet)

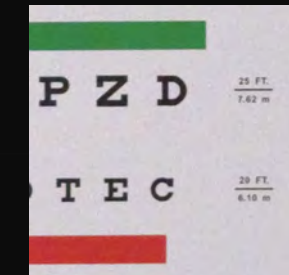
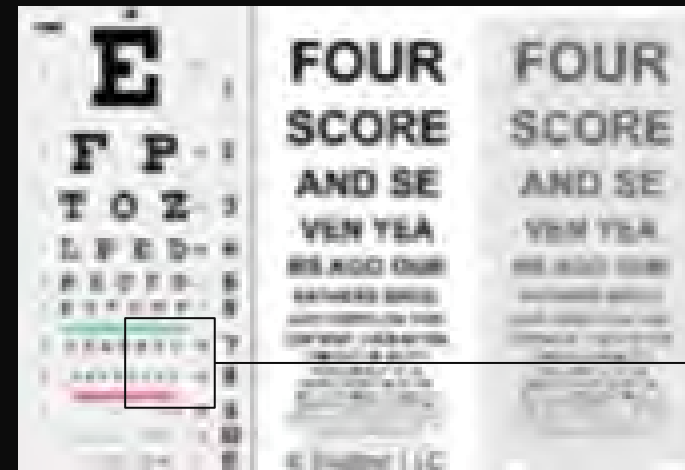


Color Accuracy

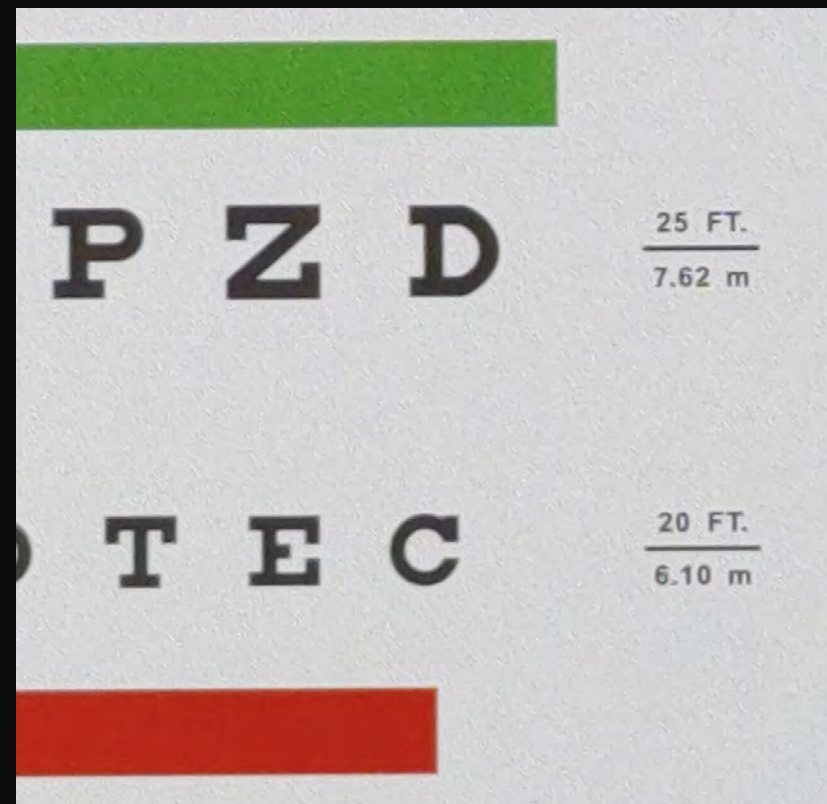


Color Accuracy

Daylight condition [6500K, 1,000 lux], narrow systems

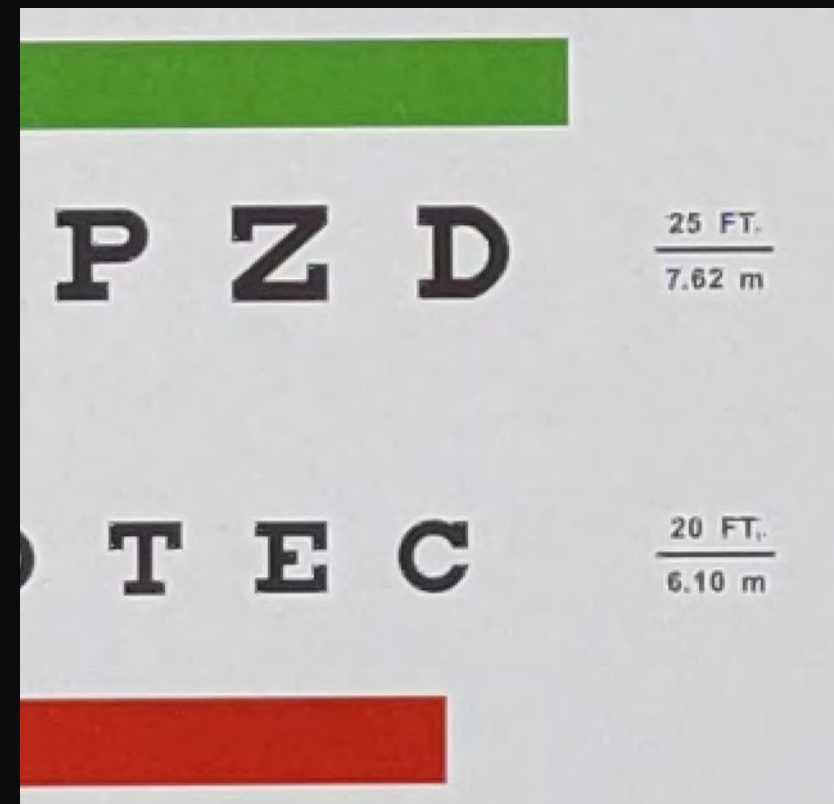


Skydio X10 Full Res - Standard



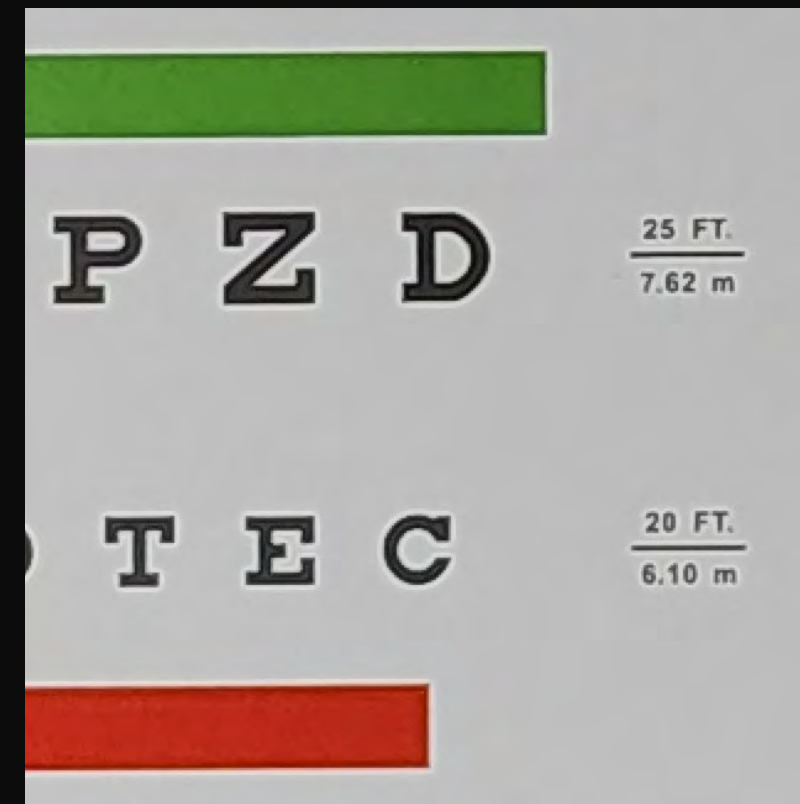
$\Delta E = 6.16$

Skydio X10 1/4 Res - Standard



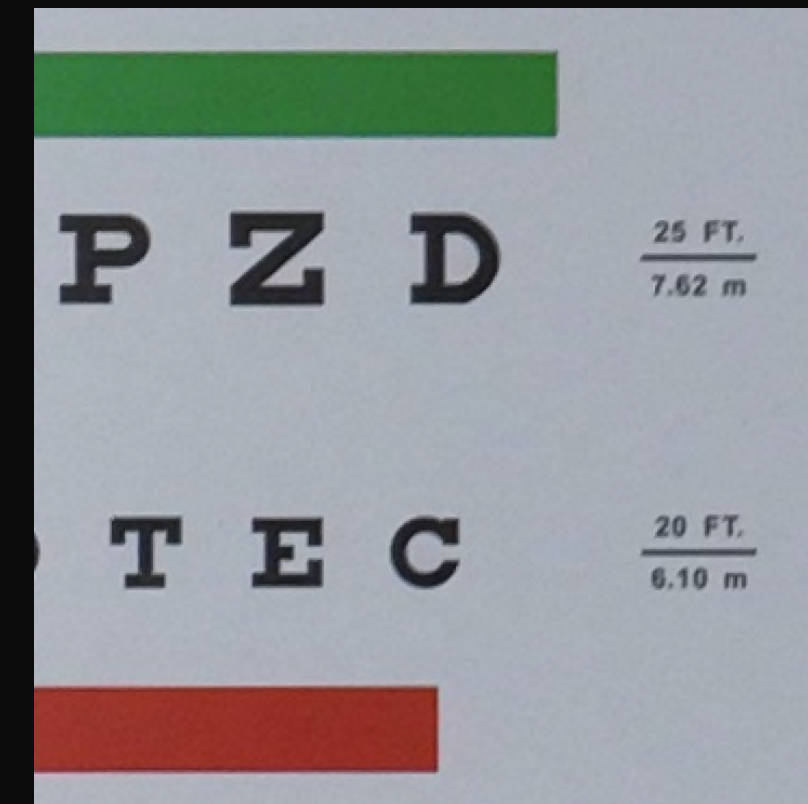
$\Delta E = 6.2$

Skydio X10 1/4 Res - HDR



$\Delta E = 6.72$

M3E

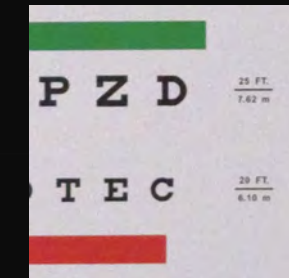
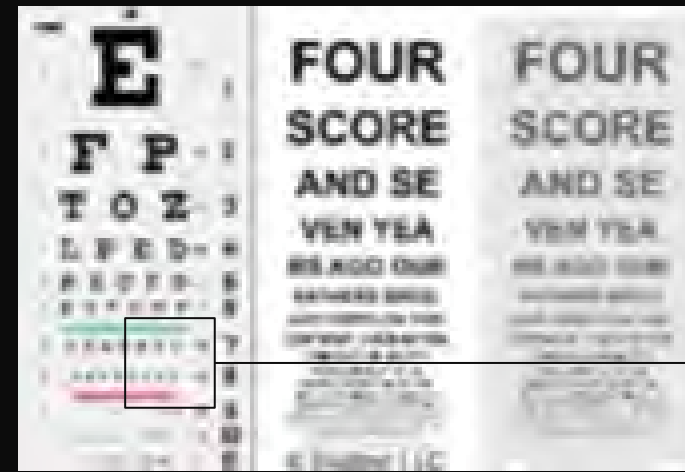


$\Delta E = 6.48$

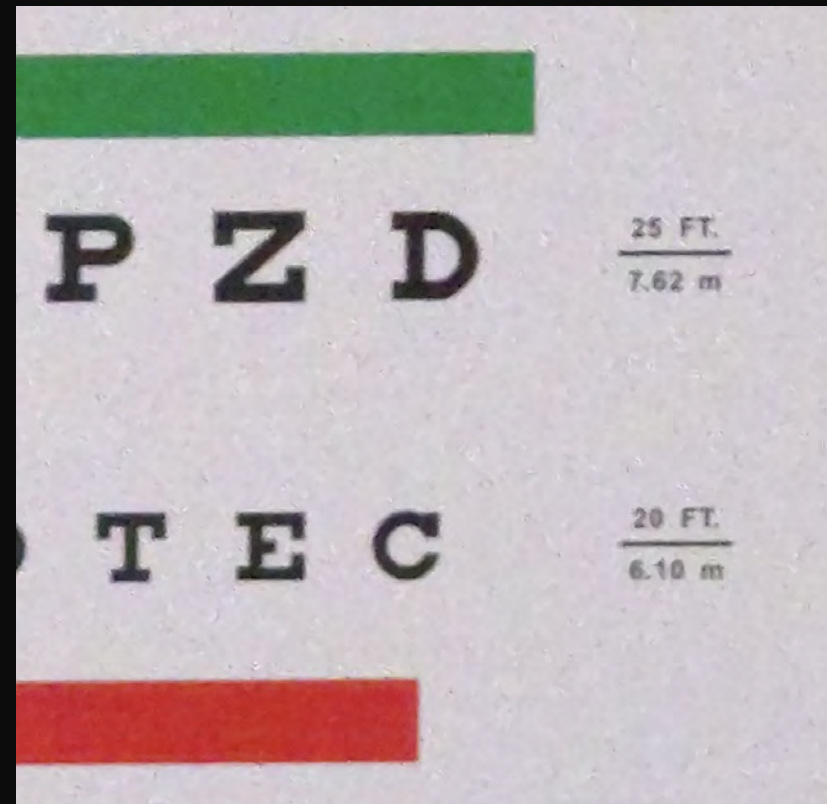
X10 captured at 2 meters, DJI captured at 1 meter

Color Accuracy

Low light condition [3000K, 25 lux], narrow systems

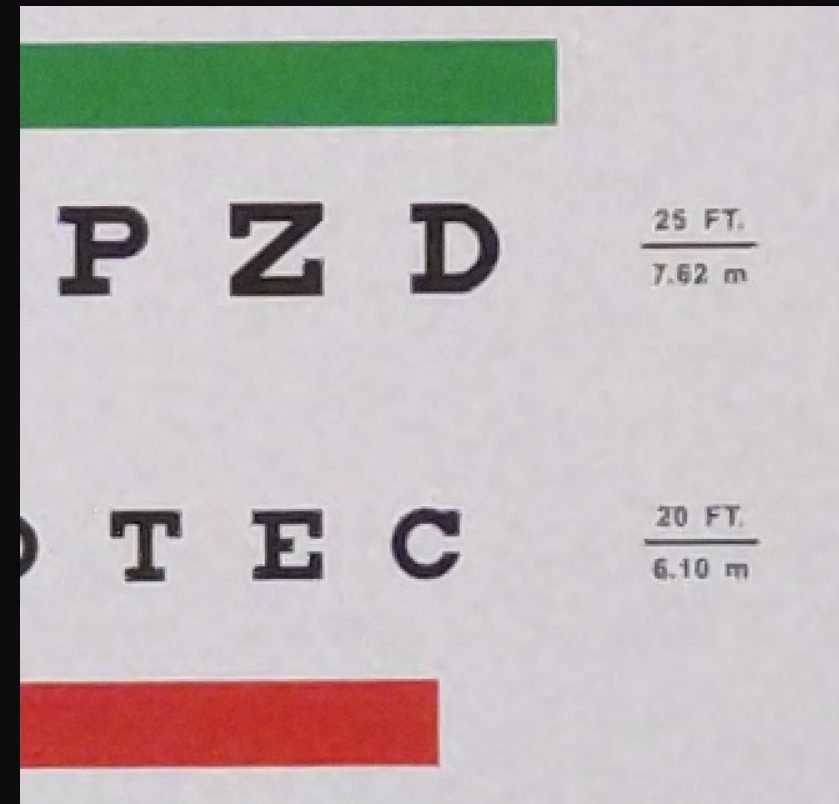


Skydio X10 Full Res - Standard



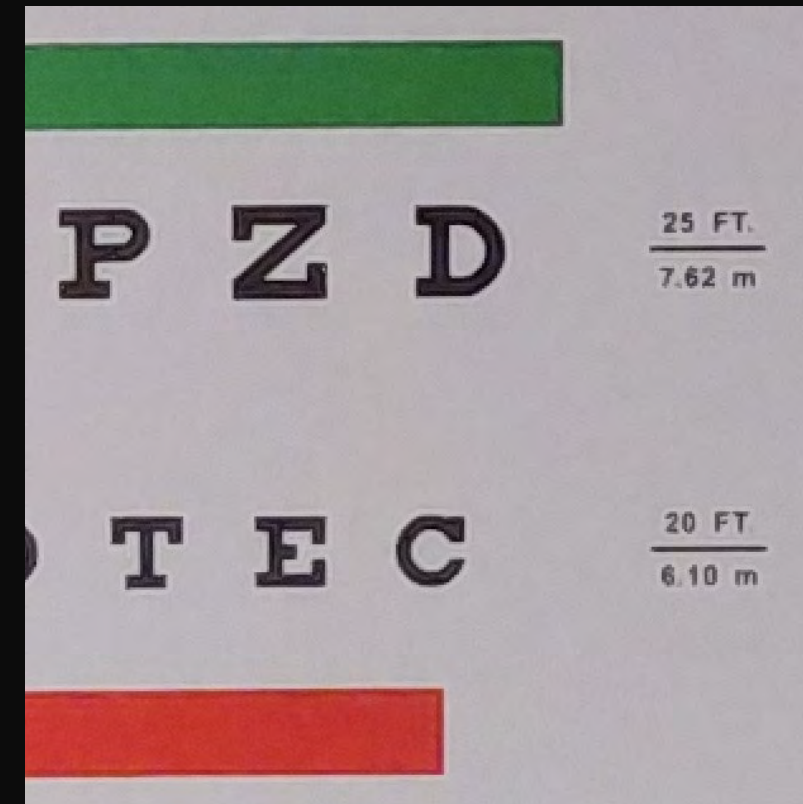
$\Delta E = 8.46$

Skydio X10 1/4 Res - Standard



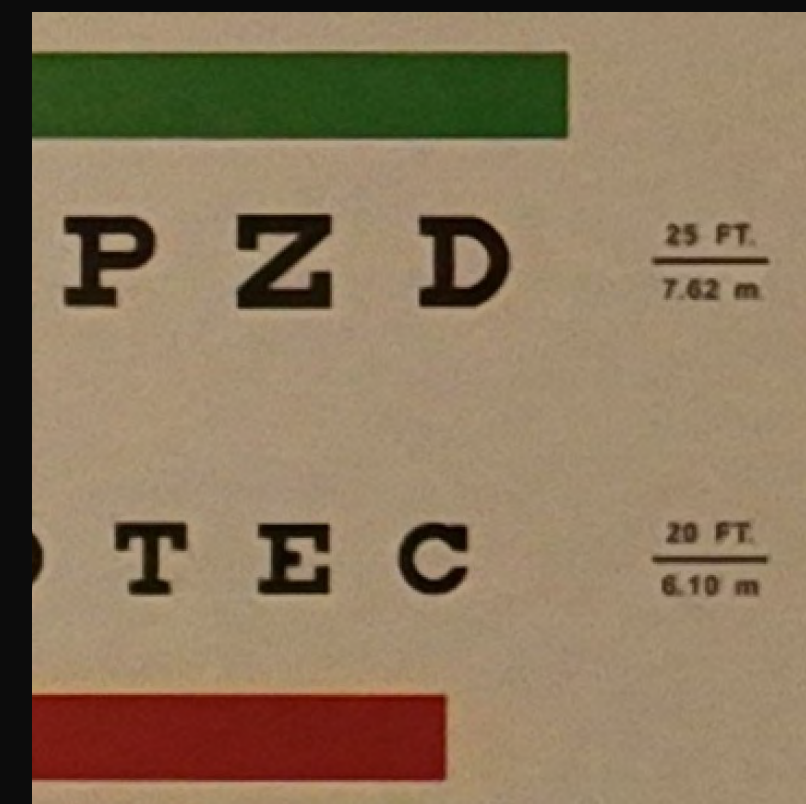
$\Delta E = 8.3$

Skydio X10 1/4 Res - HDR



$\Delta E = 4.12$

M3E

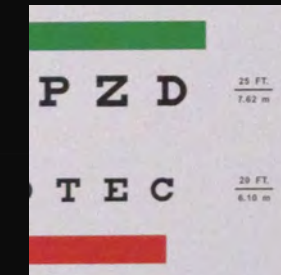
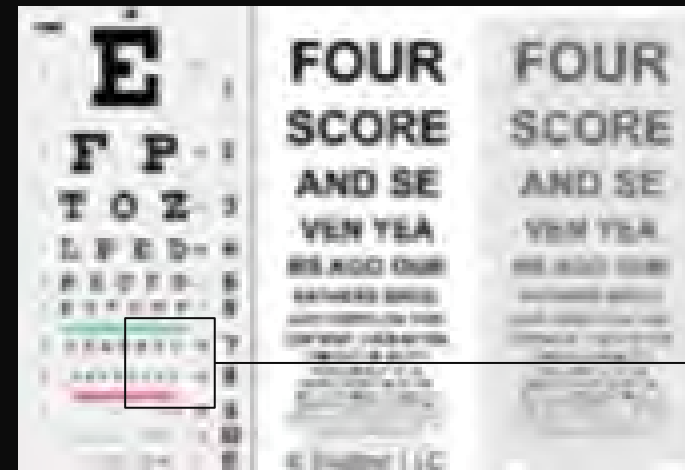


$\Delta E = 17.15$

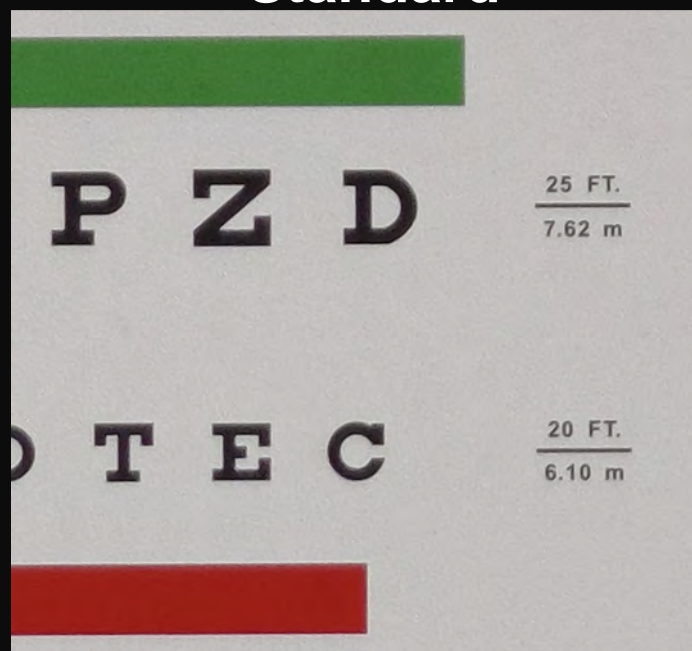
X10 captured at 2 meters, DJI captured at 1 meter

Color Accuracy

Daylight condition [6500K, 1,000 lux], telephoto systems

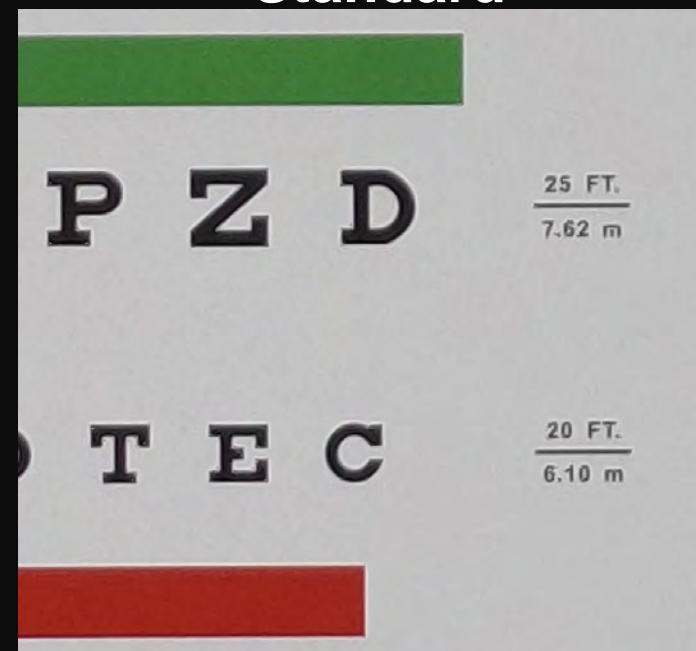


Skydio X10 Full-Res Standard



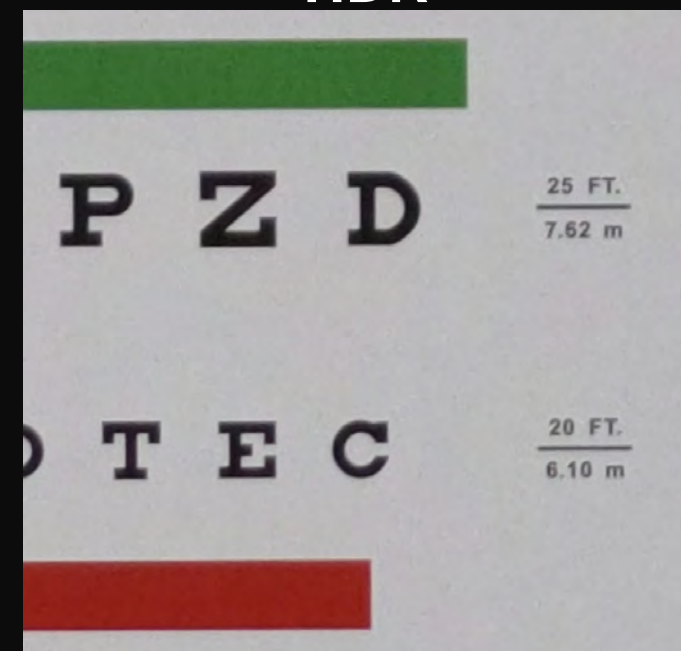
$\Delta E = 6.59$

Skydio X10 ¼ Res - Standard



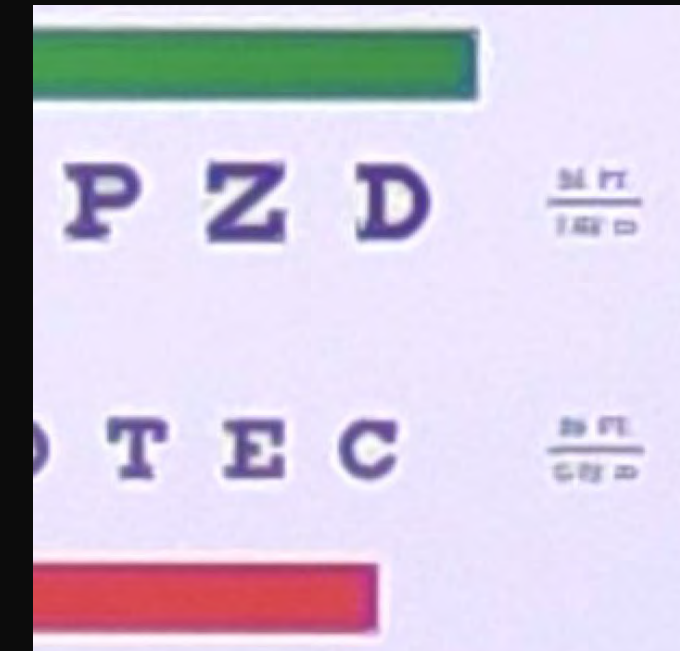
$\Delta E = 5.77$

Skydio X10 ¼ Res - HDR



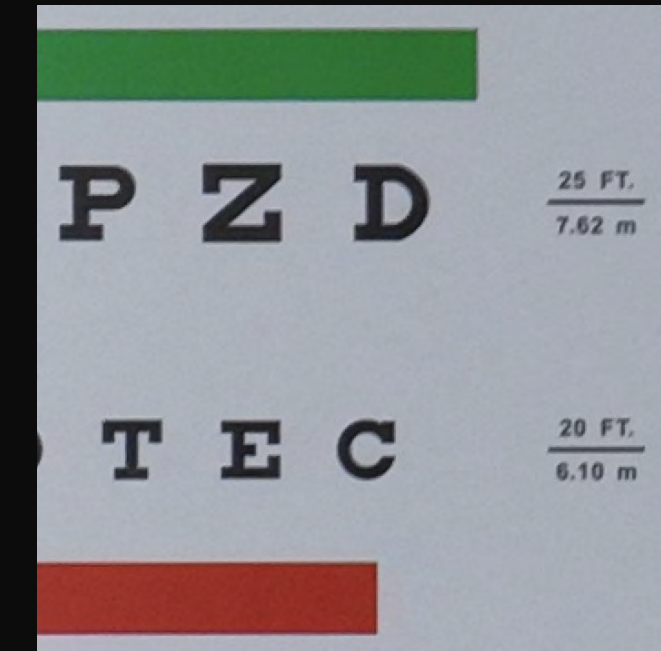
$\Delta E = 7.71$

Autel 4T



$\Delta E = 11.11$

DJI M30 Full Res

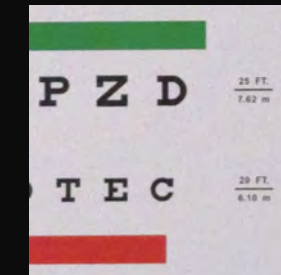
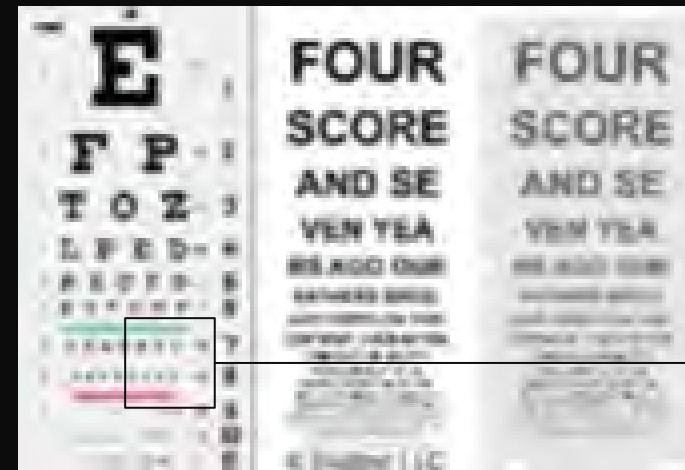


$\Delta E = 4.75$

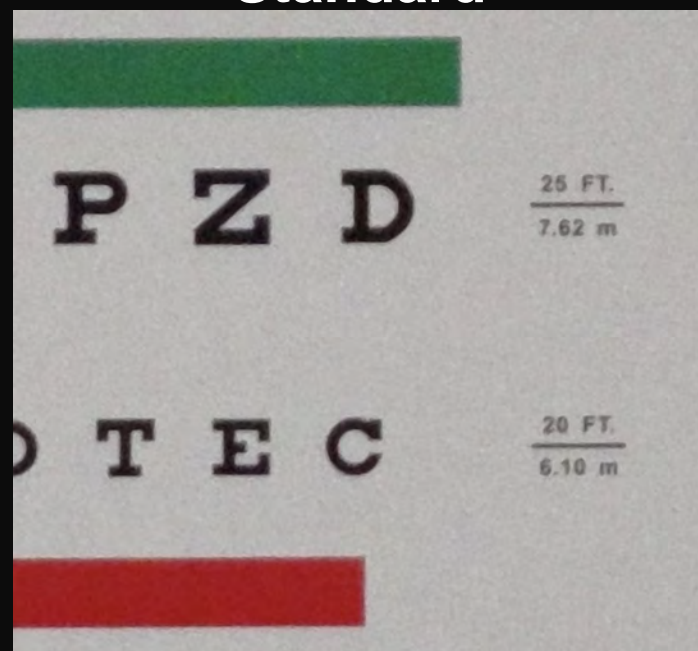
All captured at 5 meters

Color Accuracy

Low light condition [3000K, 25 lux], telephoto systems

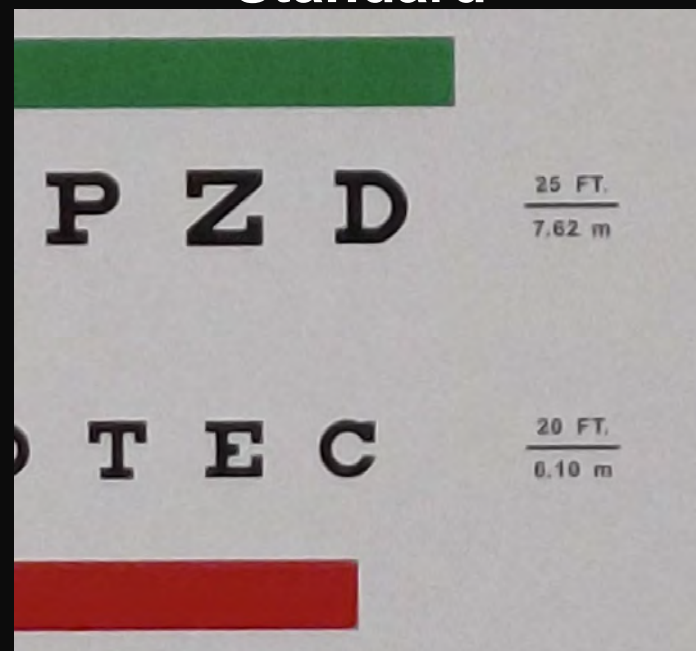


Skydio X10 Full-Res Standard



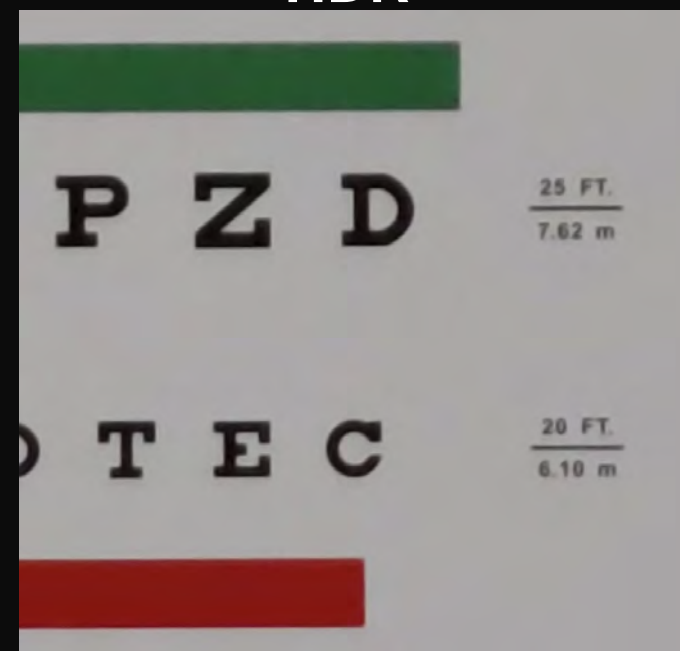
$\Delta E = 9.37$

Skydio X10 ¼ Res - Standard



$\Delta E = 8.87$

Skydio X10 ¼ Res - HDR



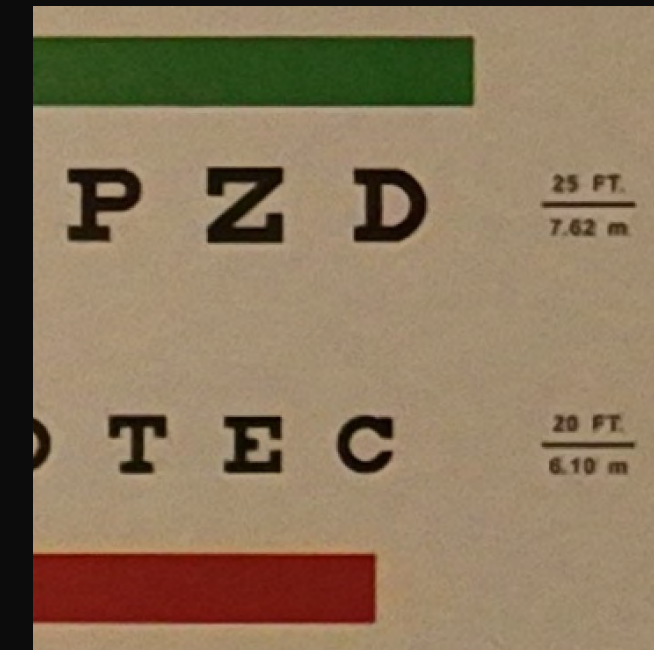
$\Delta E = 12.63$

Autel 4T



$\Delta E = 10.78$

DJI M30 Full Res

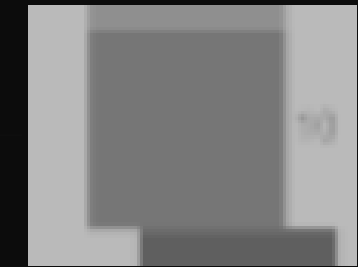
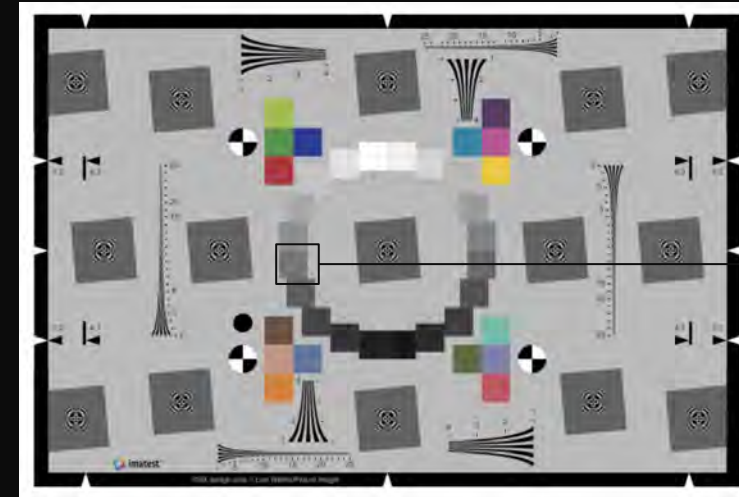


$\Delta E = 13.52$

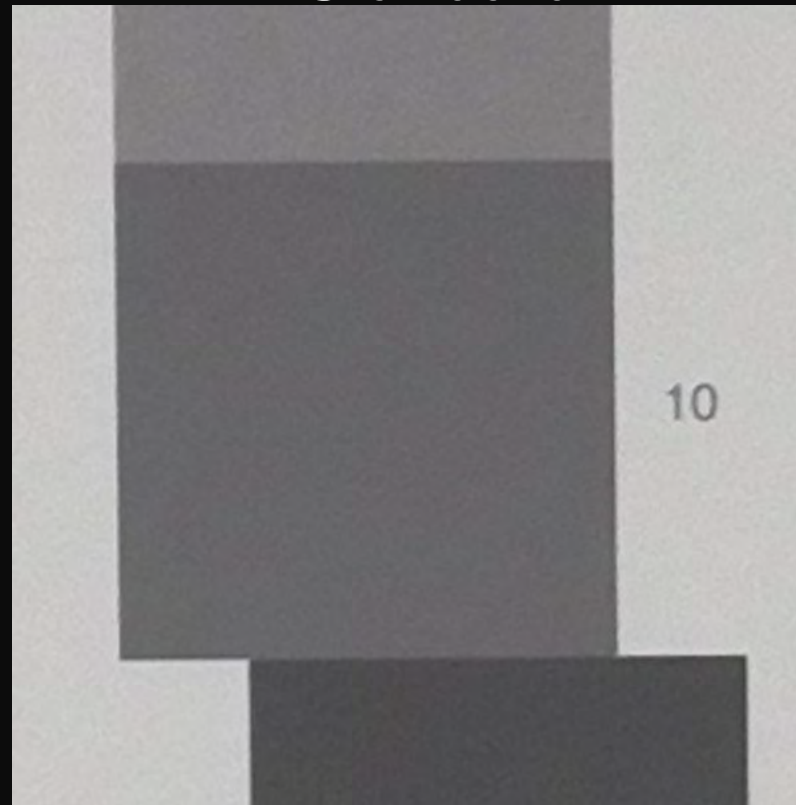
All captured at 5 meters

Signal to Noise

Daylight condition [6500K, 1,000 lux], narrow systems

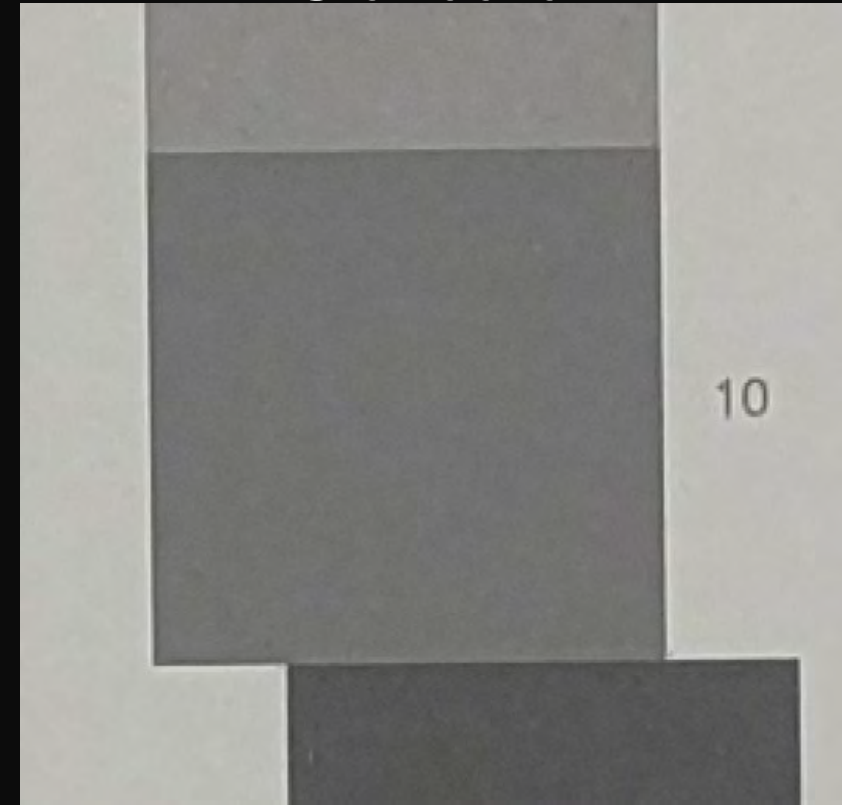


Skydio X10 Full Res - Standard



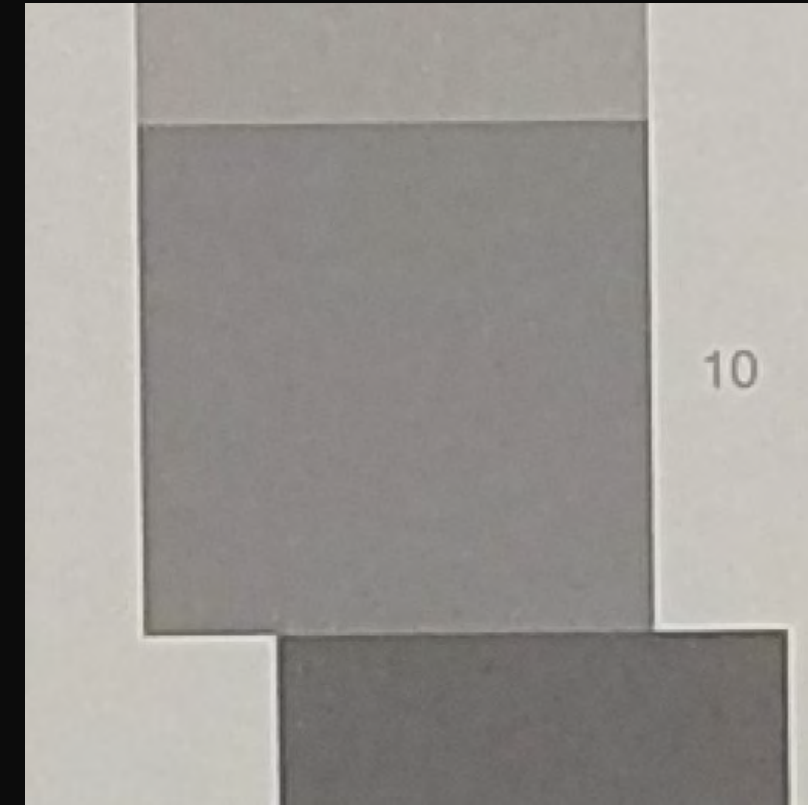
36.9 dB

Skydio X10 ¼ Res - Standard



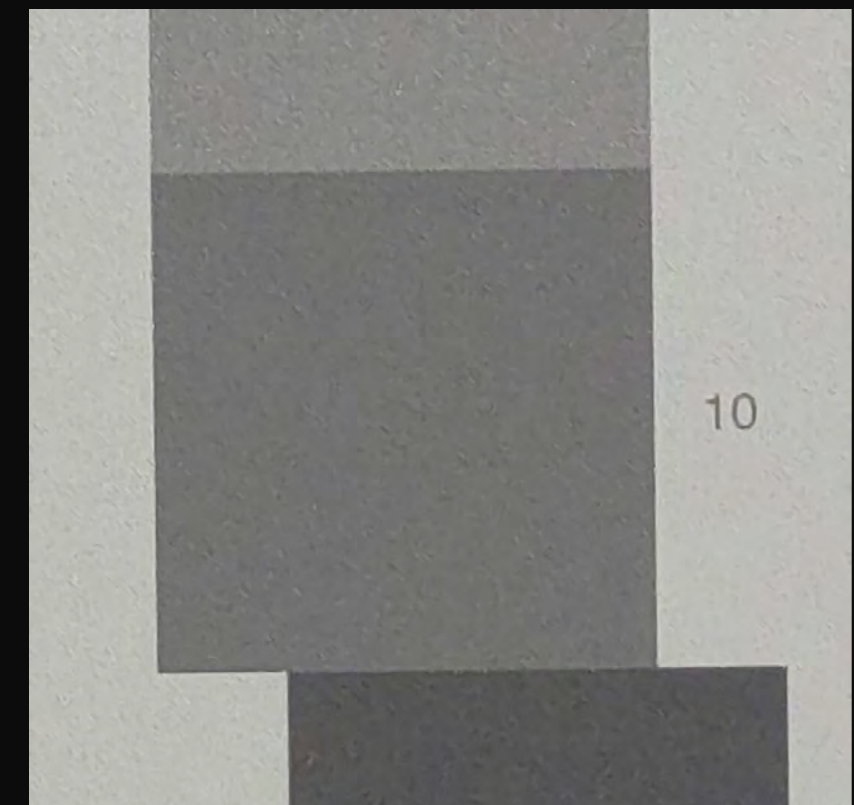
44.3 dB

Skydio X10 ¼ Res - HDR



41.7 dB

M3E

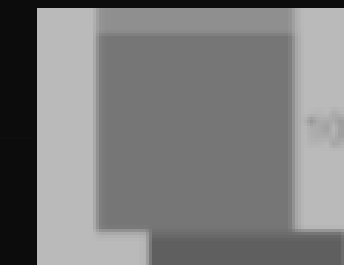
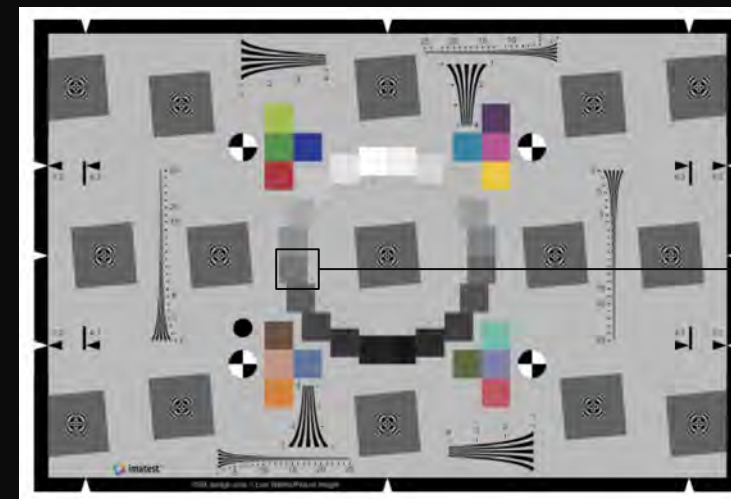


43.4 dB

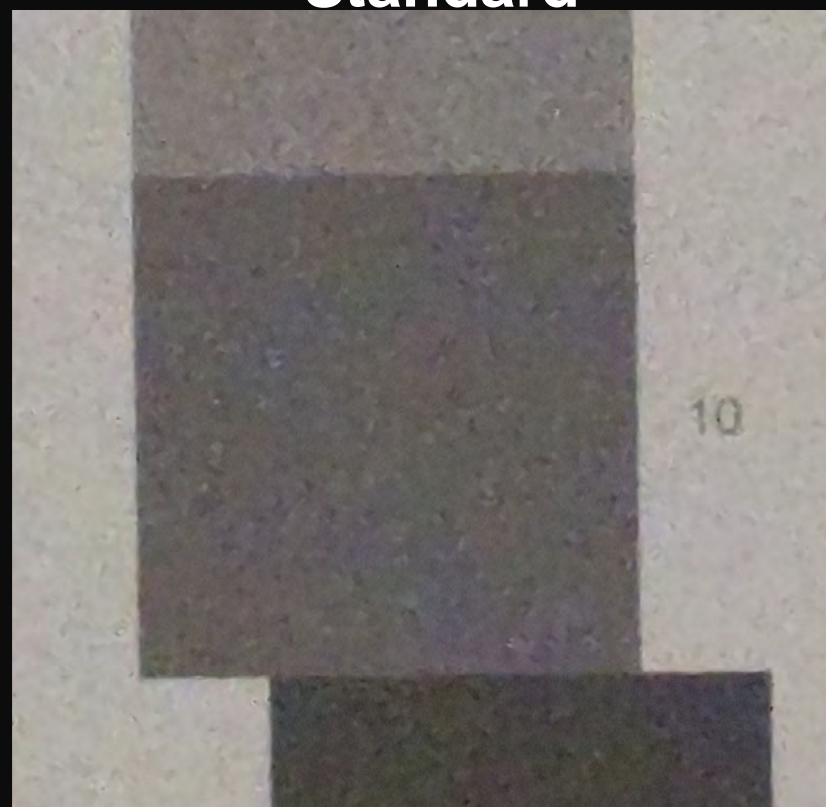
X10 captured at 2 meters, DJI captured at 1 meter

Signal to Noise

Low light condition [3000K, 25 lux], narrow systems

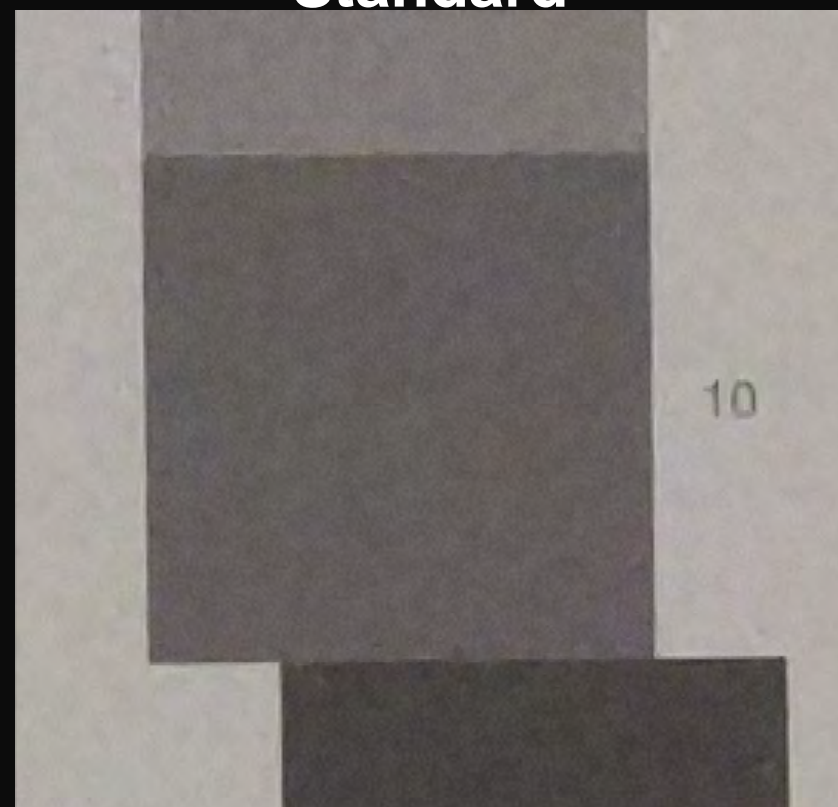


Skydio X10 Full Res - Standard



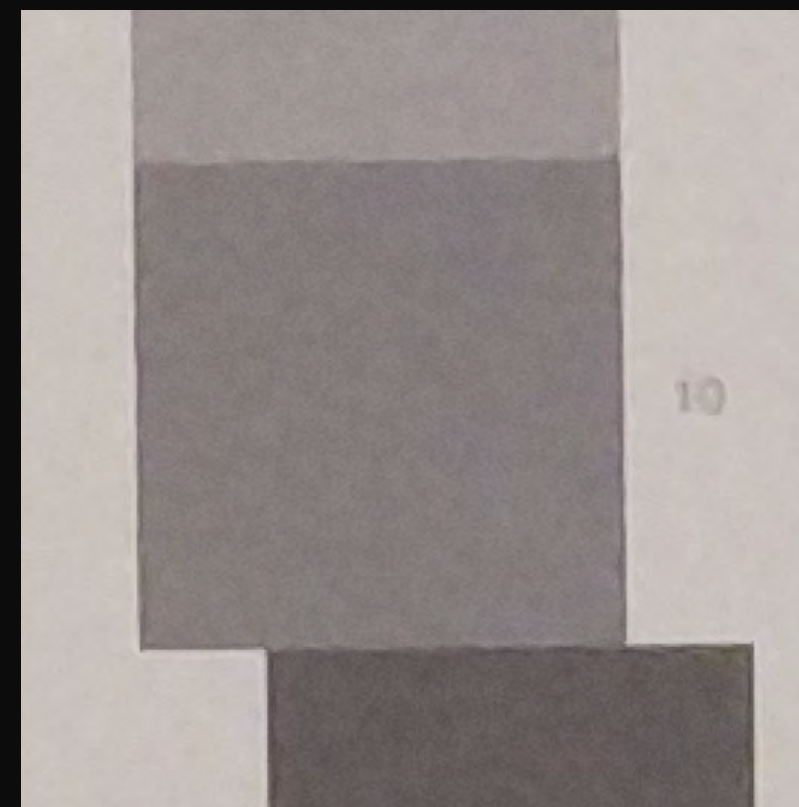
32.5 dB

Skydio X10 1/4 Res - Standard



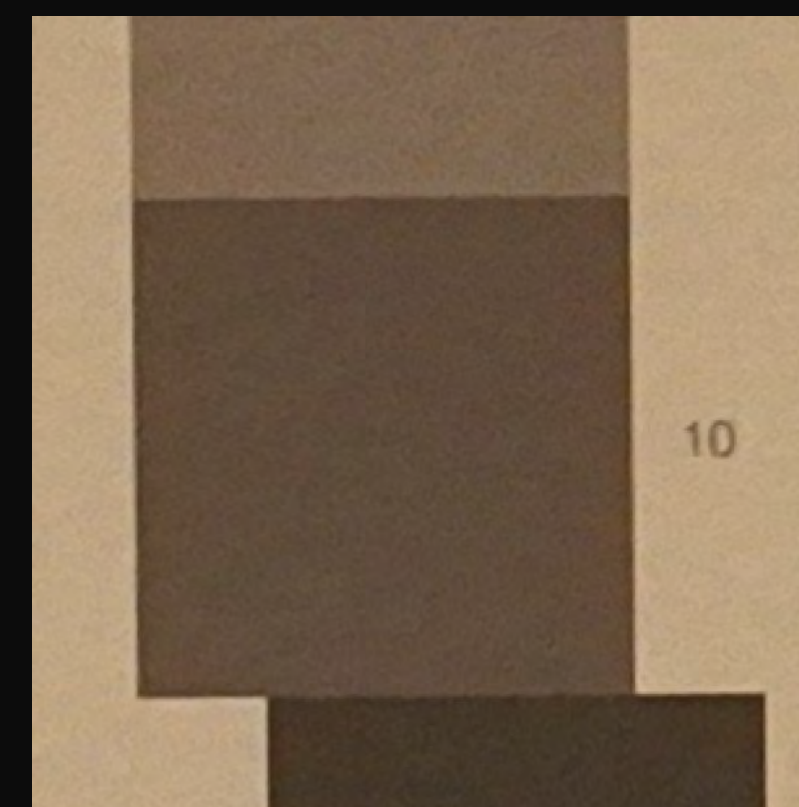
36.0 dB

Skydio X10 1/4 Res - HDR



37.2 dB

M3E

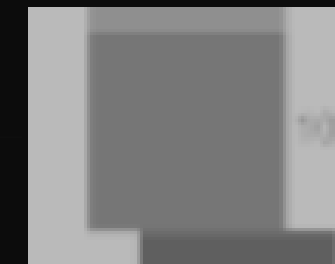
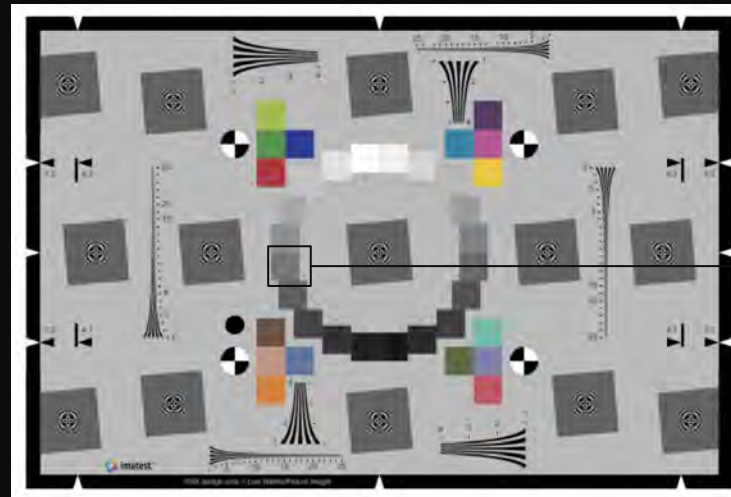


39.2 dB

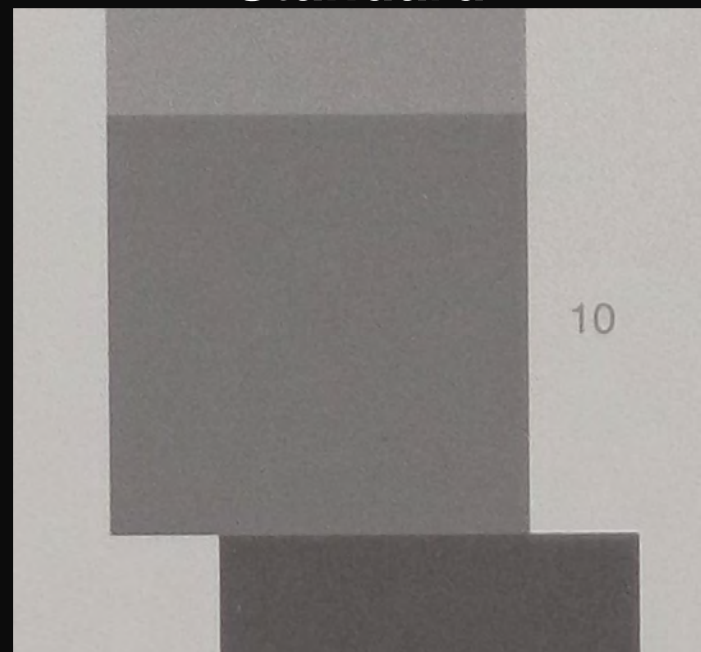
X10 captured at 2 meters, DJI captured at 1 meter

Signal to Noise

Daylight condition [6500K, 1,000 lux], telephoto systems

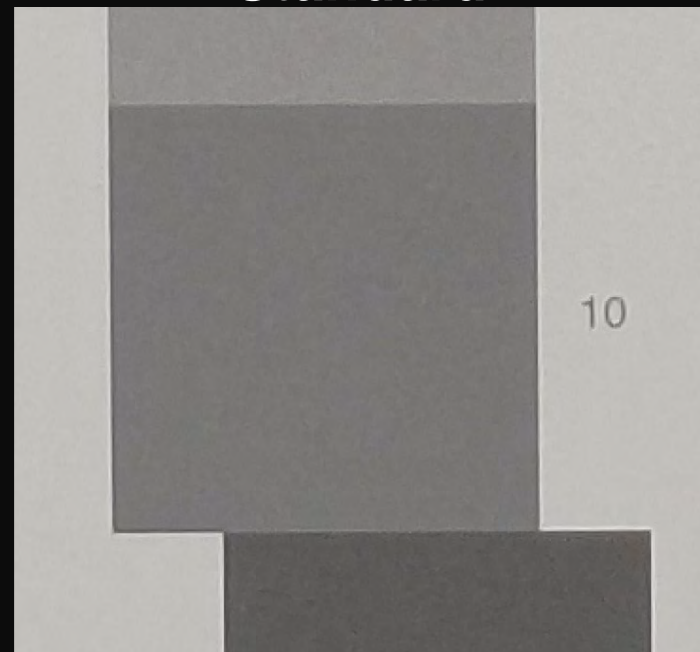


**Skydio X10 Full-Res
Standard**



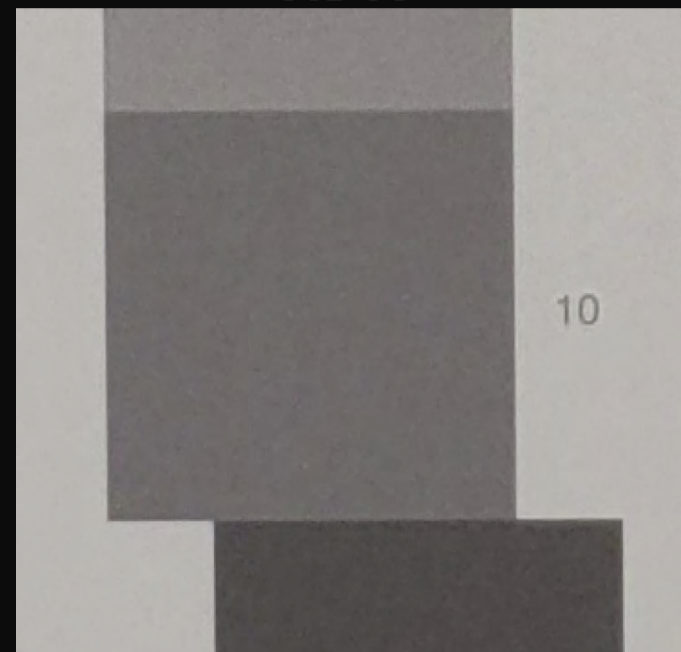
40.0 dB

**Skydio X10 ¼ Res -
Standard**



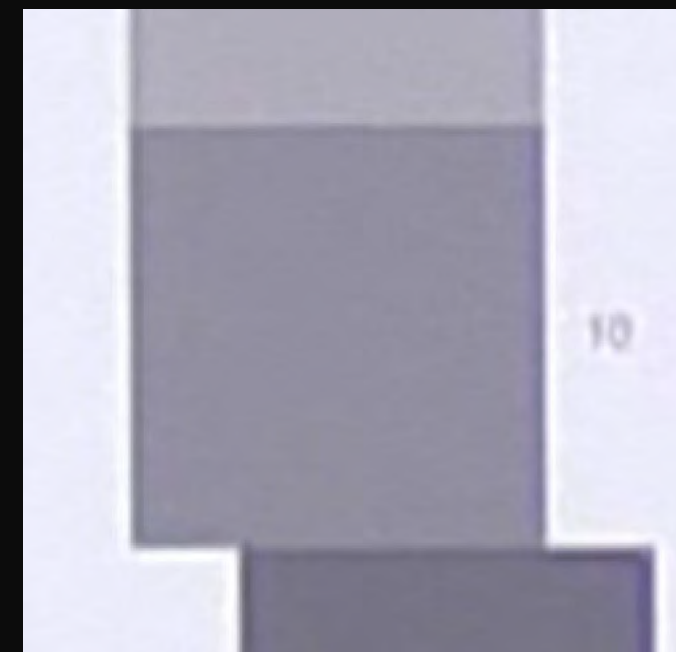
42.9 dB

**Skydio X10 ¼ Res -
HDR**



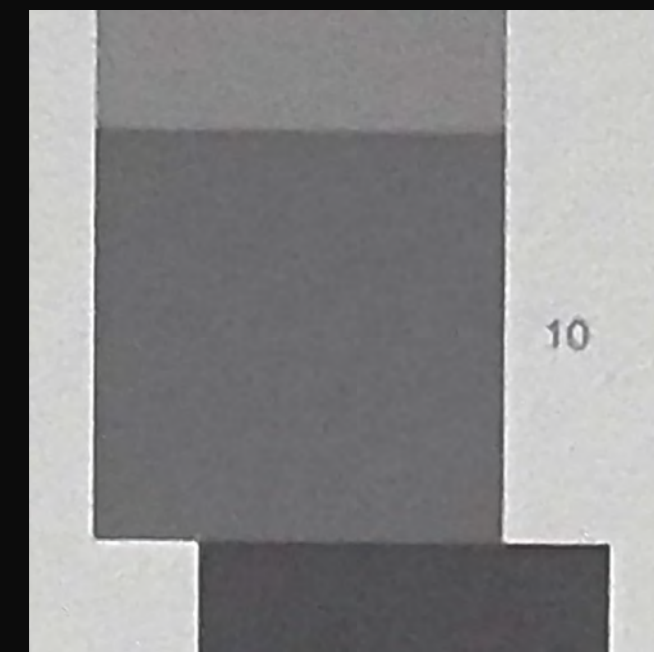
43.4 dB

Autel 4T



51.6 dB*

DJI M30 Full Res



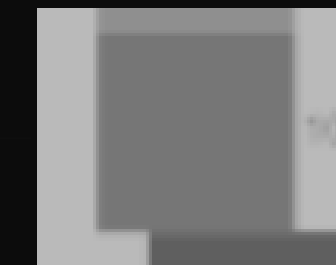
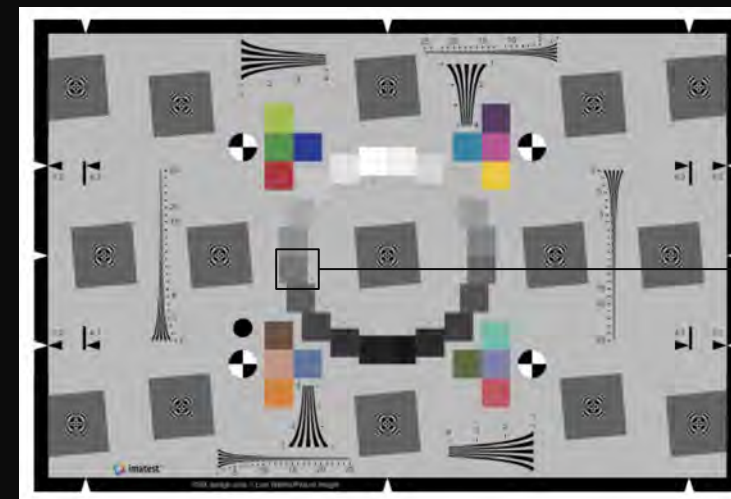
43.2 dB

All captured at 5 meters

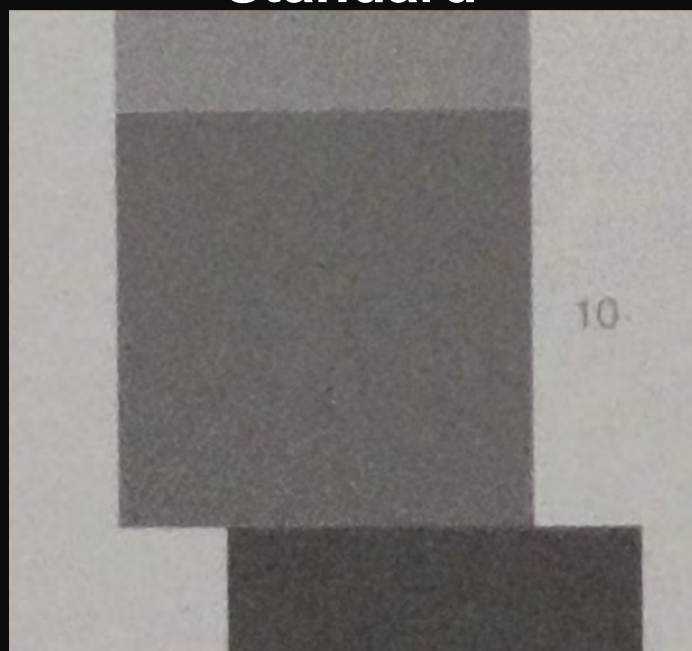
* should be paired with
subjective evaluation

Signal to Noise

Low light condition [3000K, 25 lux], telephoto systems

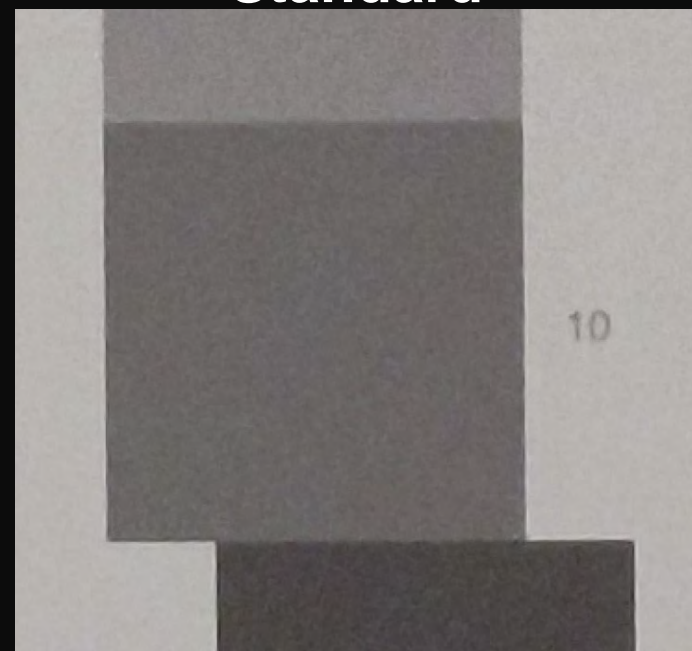


**Skydio X10 Full-Res
Standard**



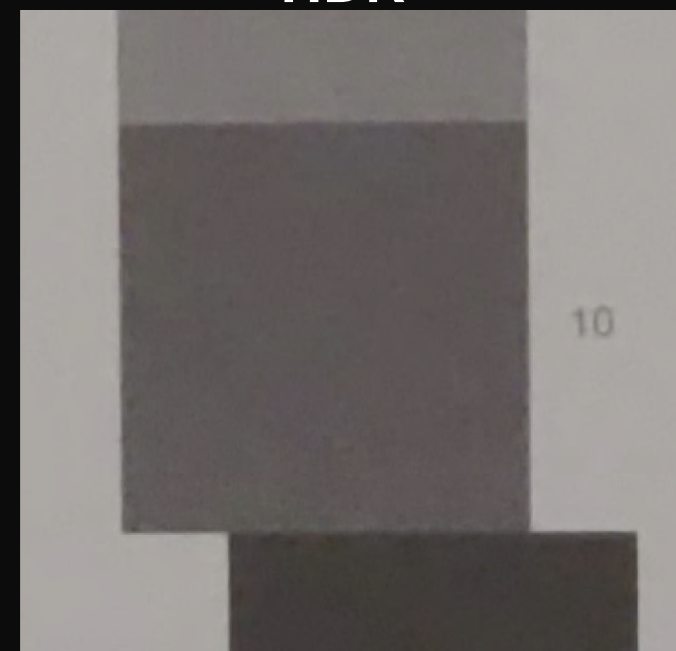
35.1 dB

**Skydio X10 1/4 Res -
Standard**



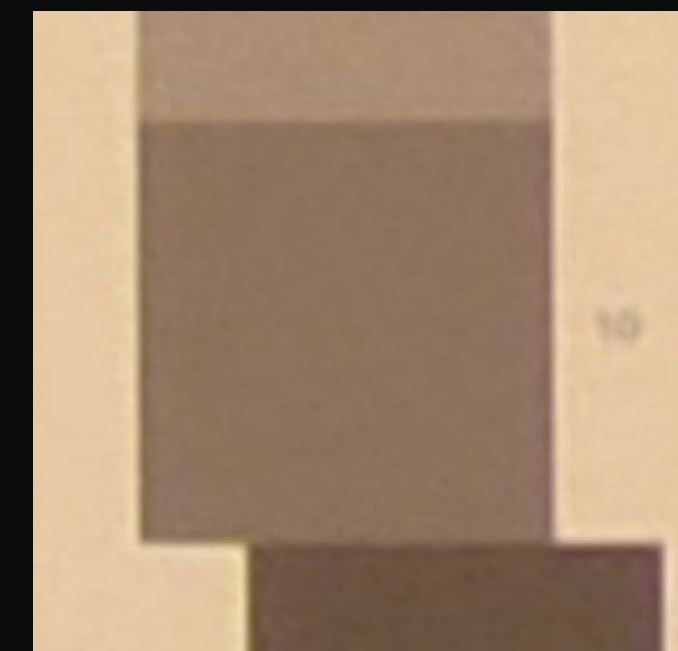
39.1 dB

**Skydio X10 1/4 Res -
HDR**



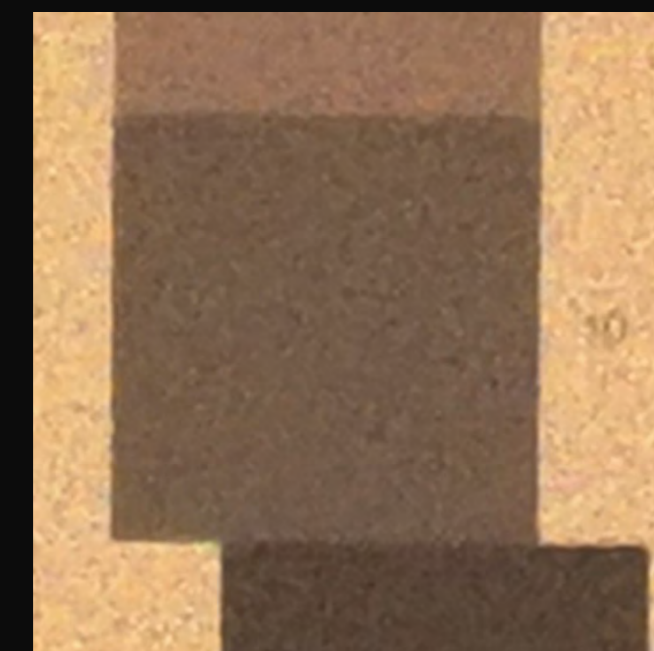
45.3 dB

Autel 4T



50.1 dB*

DJI M30 Full Res



35.9 dB

All captured at 5 meters

* should be paired with
subjective evaluation

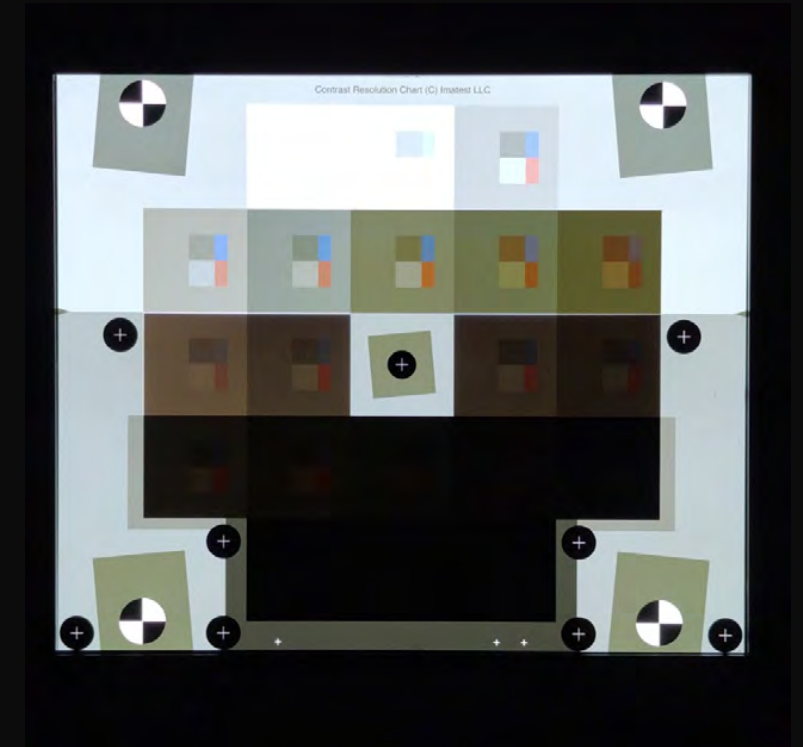
Signal to Noise

HIGH SNR

LOW SNR



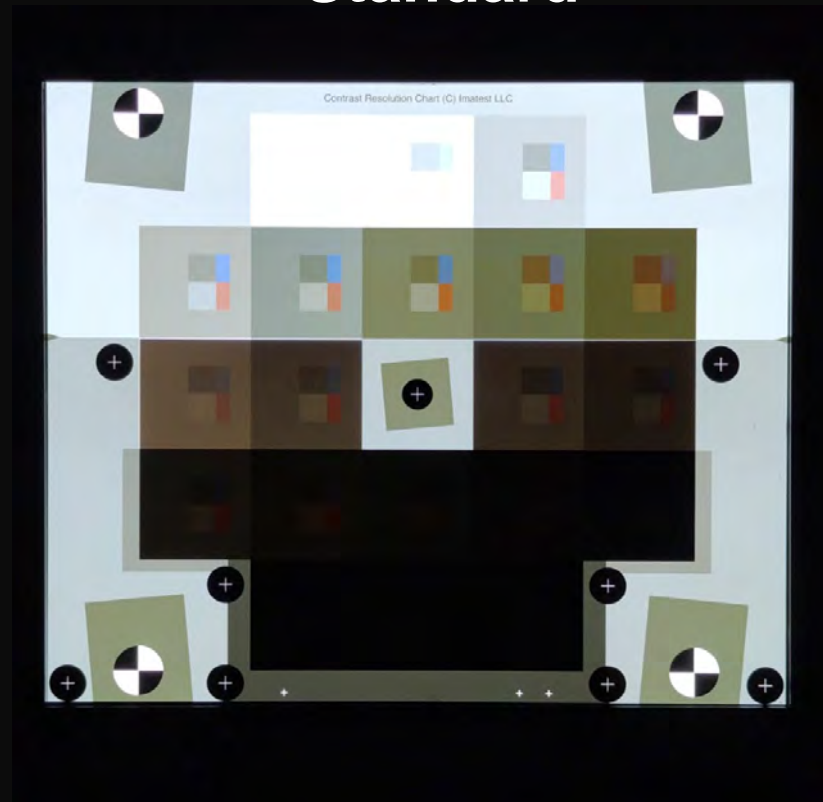
Dynamic Range



Dynamic Range

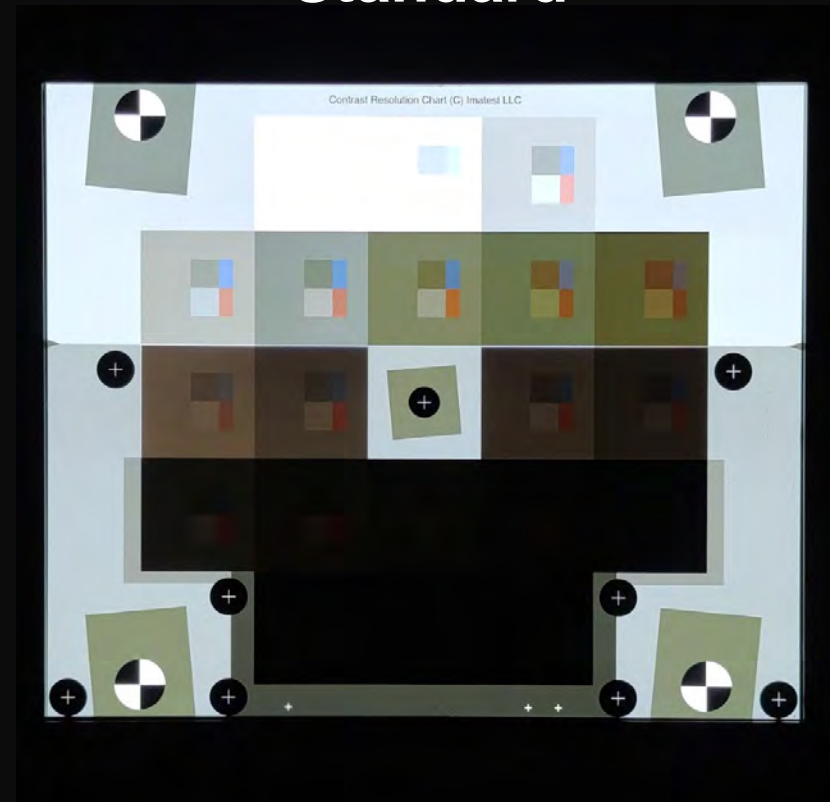
Daylight condition [6500K, 100,000 lux], narrow systems

**Skydio X10 Full Res -
Standard**



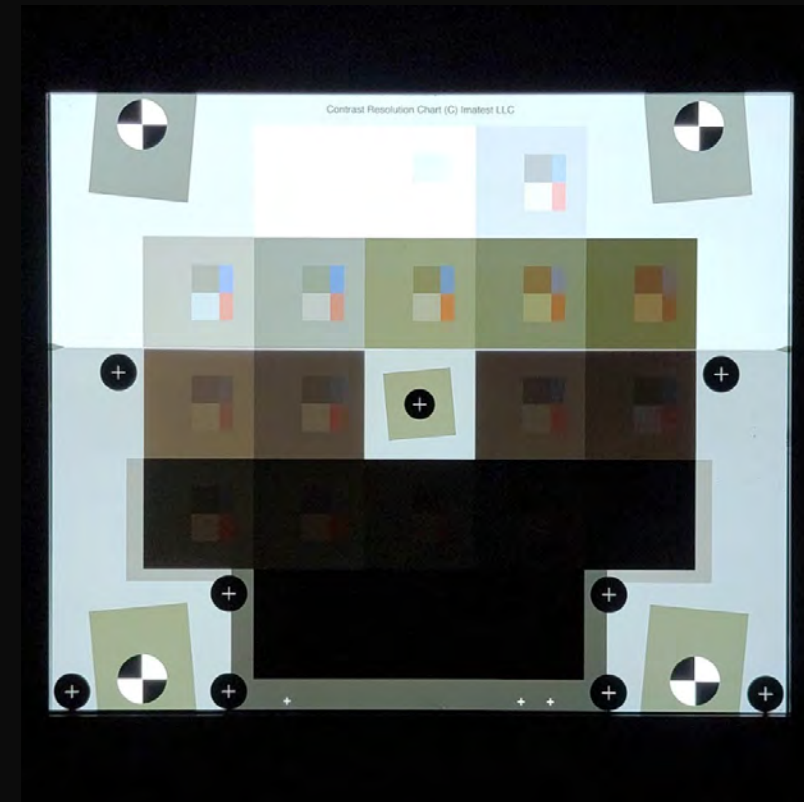
60.7 dB

**Skydio X10 ¼ Res -
Standard**



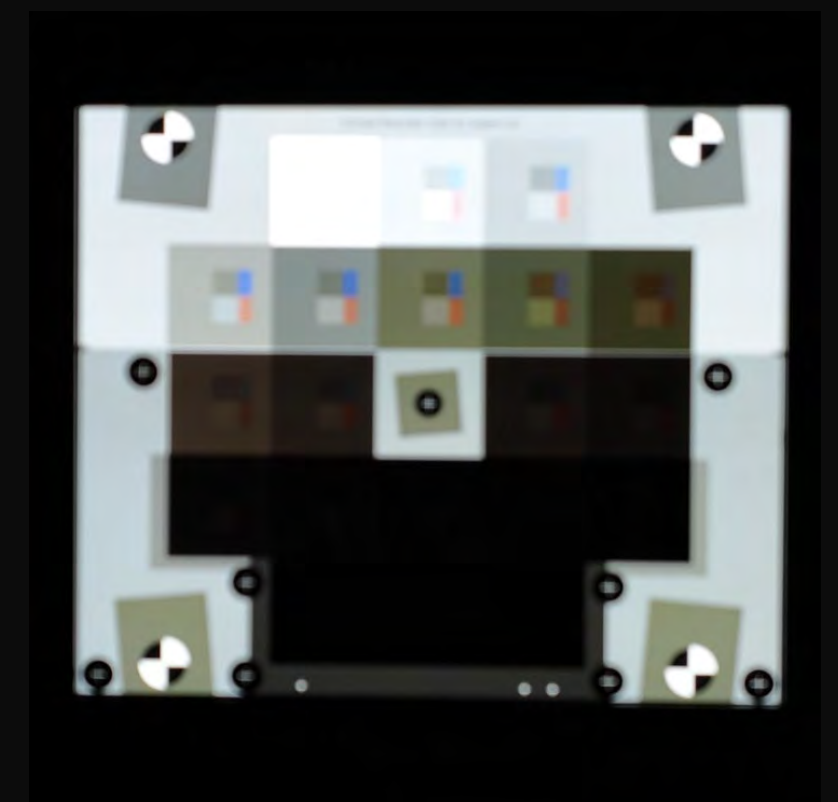
60.9 dB

Skydio X10 ¼ Res - HDR



58.7 dB *

M3E

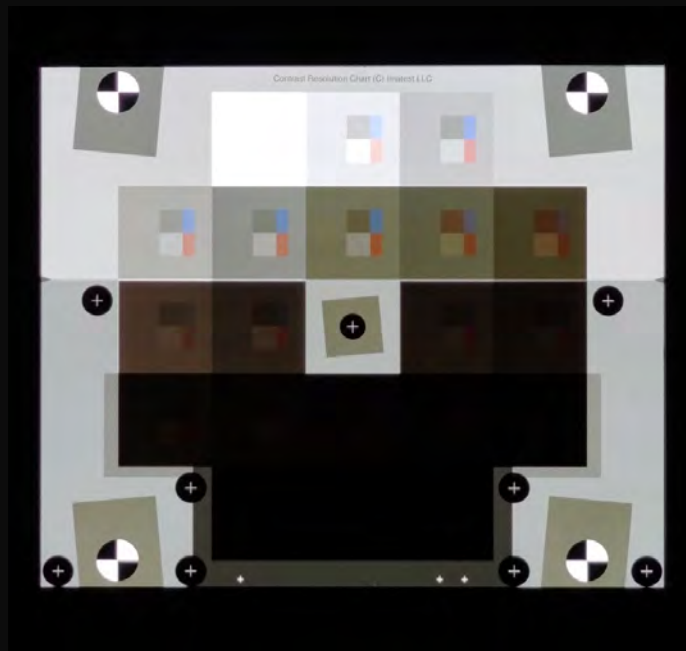


65.3 dB

Dynamic Range

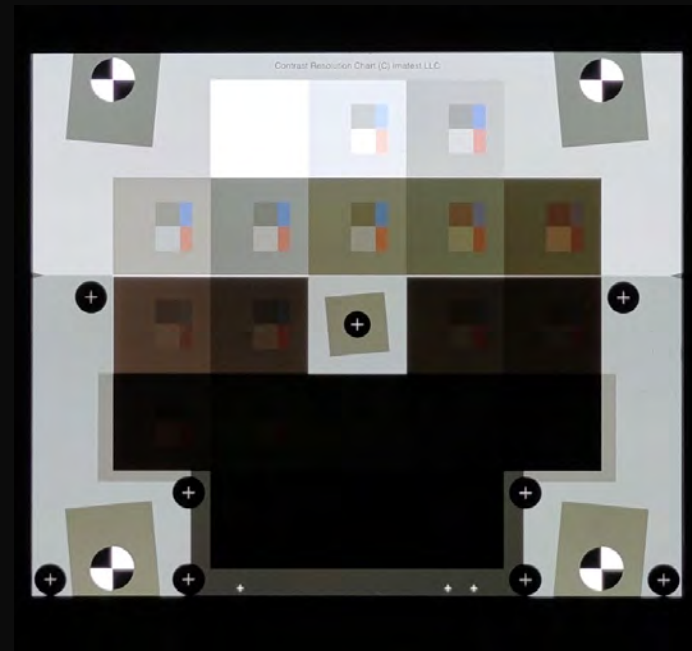
Daylight condition [6500K, 100,000 lux], telephoto systems

**Skydio X10 Full-Res
Standard**



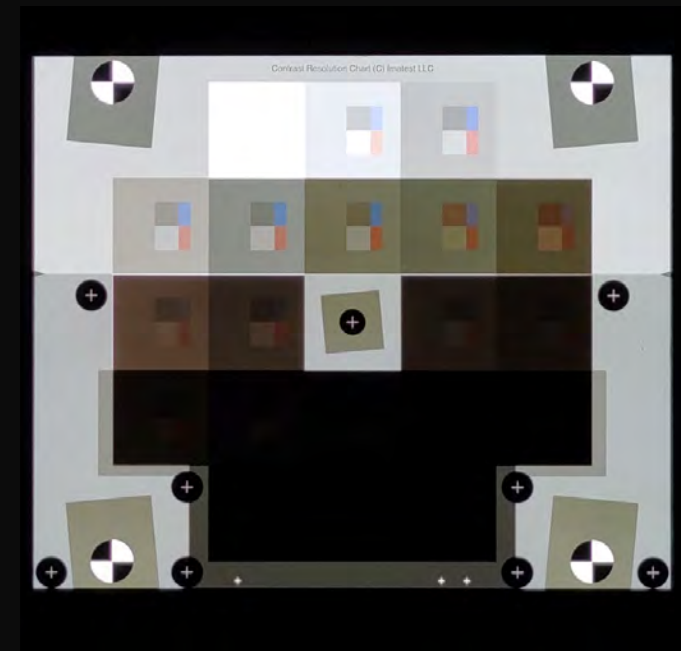
68.2 dB

**Skydio X10 ¼ Res -
Standard**



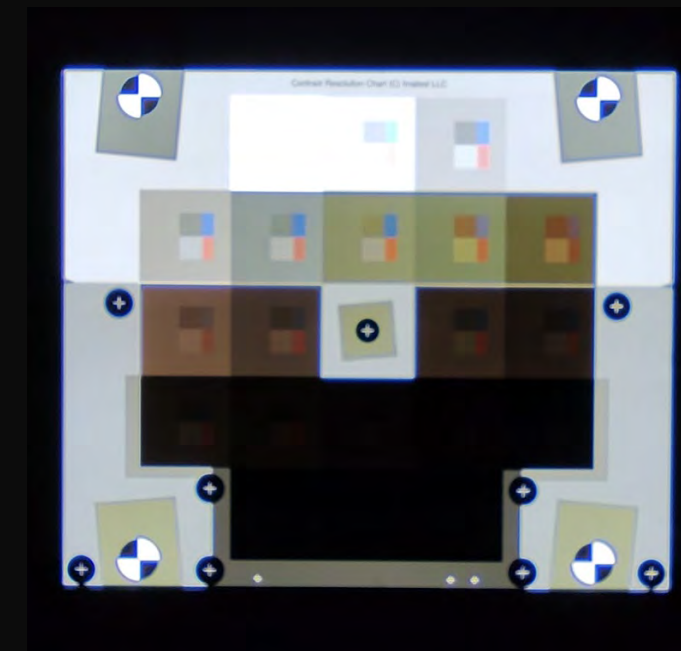
66.0 dB

**Skydio X10 ¼ Res -
HDR**



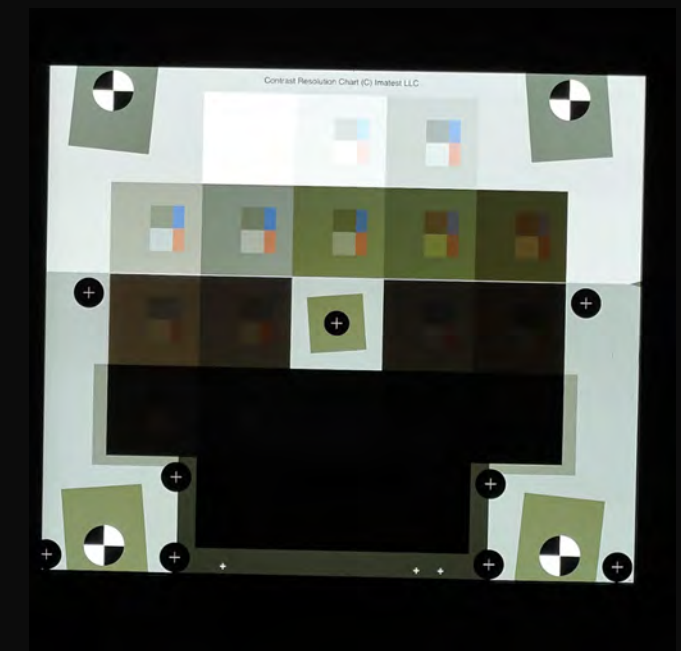
80.2 dB

Autel 4T



67.4 dB

DJI M30 Full Res



66.0 dB

Dynamic Range

Skydio X10 Narrow Full Res - Standard



Skydio X10 Narrow 1/4 Res - HDR





Q&A



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