SQM lens comparisons

Half-ball vs cone, IR filters, lens holders

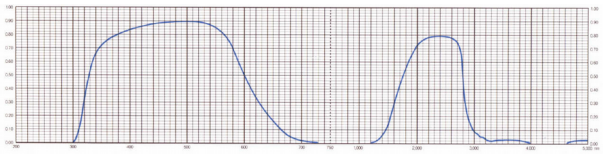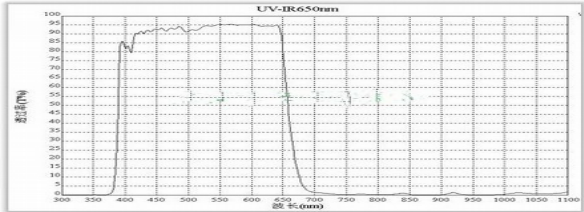Due to light leakages in the original Golden Dragon (GD) lens and holder, a new (BK7 half ball) lens and (UVIR650) IRfilter design was made in 2013 and introduced in the SQM-LU-DL-V model in 2015. This design is intended to maintain a similar field of view and spectral response with the added benefit of reducing IR leakage around the lens and into the sensor.

The table below shows the mechanical parts and filter properties discussed here:

	Lens	Holder	Filter
Original			
New			

Angular response

Tests with various lens configurations are shown below.

SQM-LU with no lens or lensplate or filter

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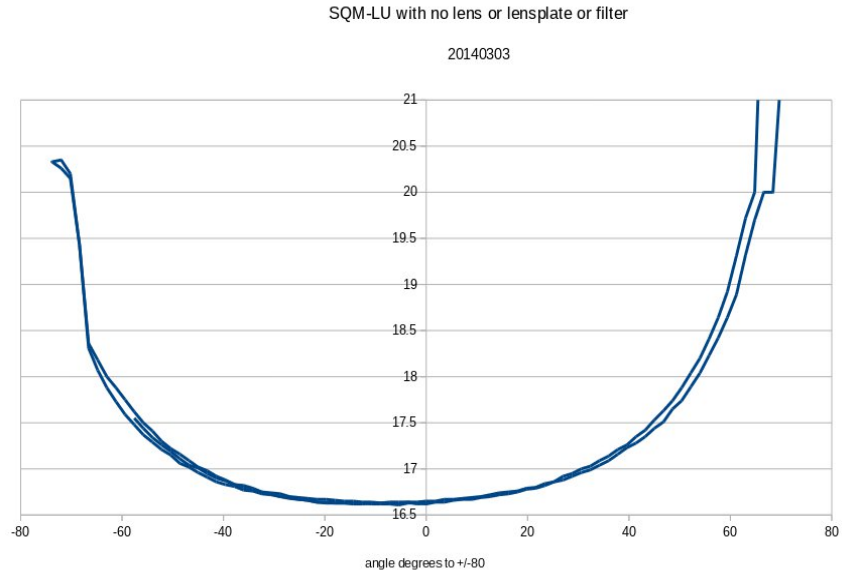*Illustration 1*
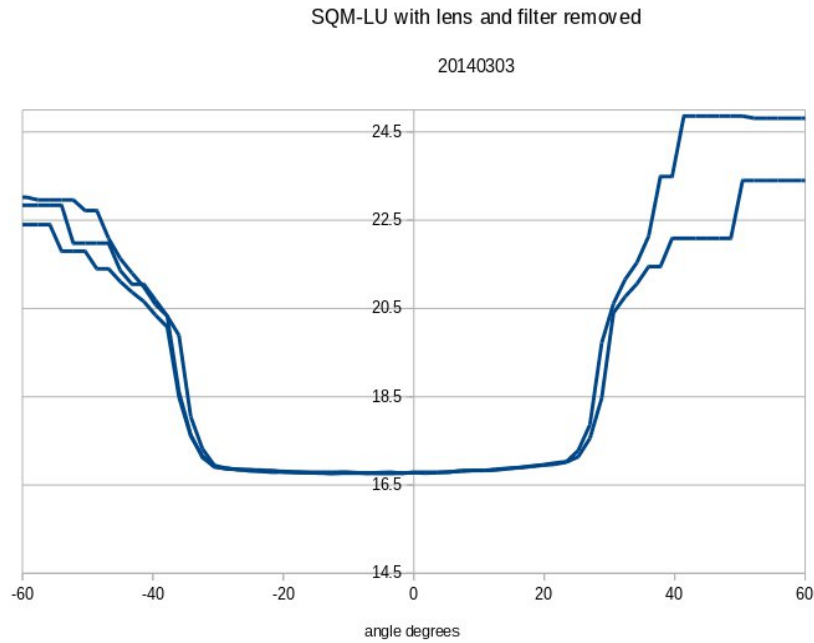
SQM-LU with lens and filter removed

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Illustration 2

SQM-LU with original golden-dragon lens and Newport IR filter
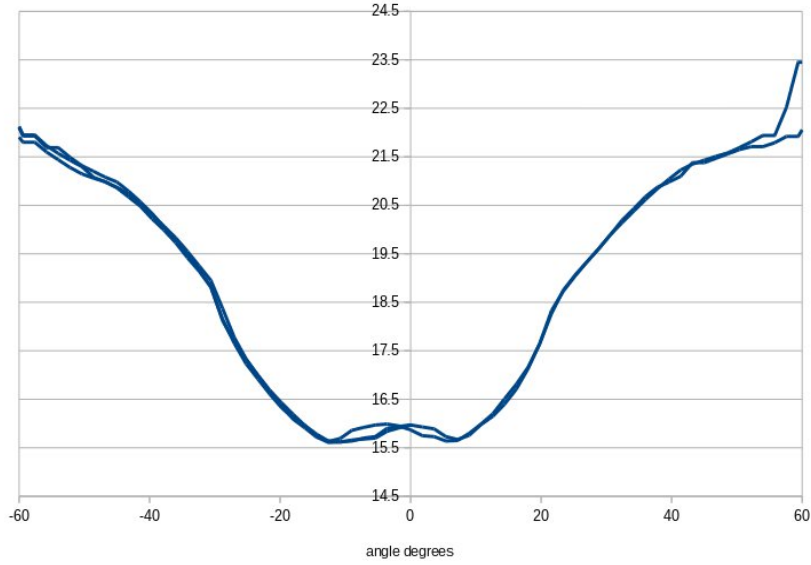
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Illustration 3

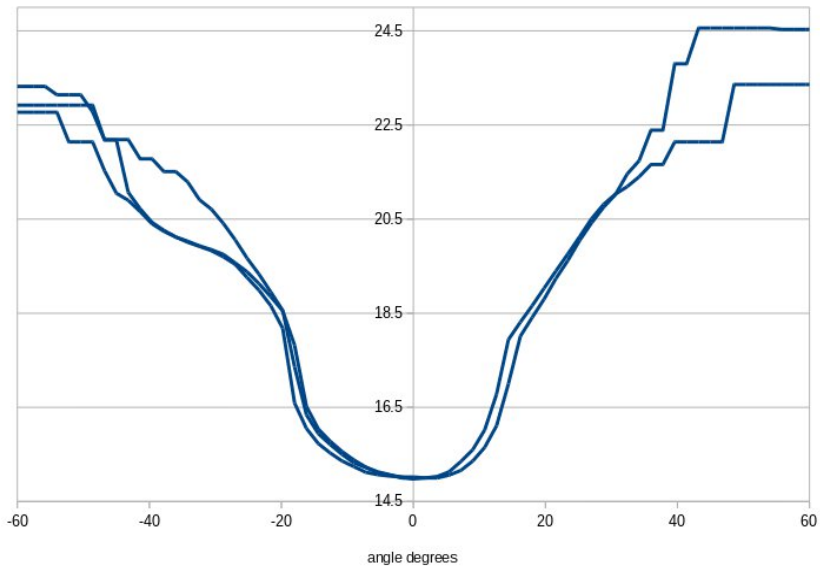SQM-LU with new filter and halfball lens

2014-03-03

Illustration 4

Spectral response

Some preliminary tests performed by Dr. Mauro Pravettoni of SUPSI, Switzerland show the different spectral profile. I suspect that the scaling is due to the test setup since both "old" (HOYA CM500 with GD lens) and "new" (half-ball lens with UVIR650 filter) have been calibrated to the same reading.
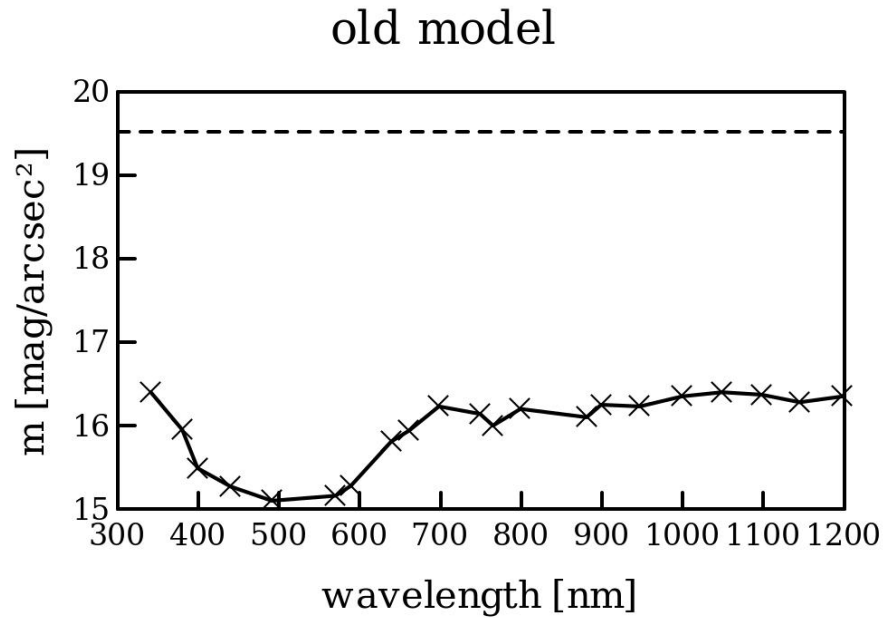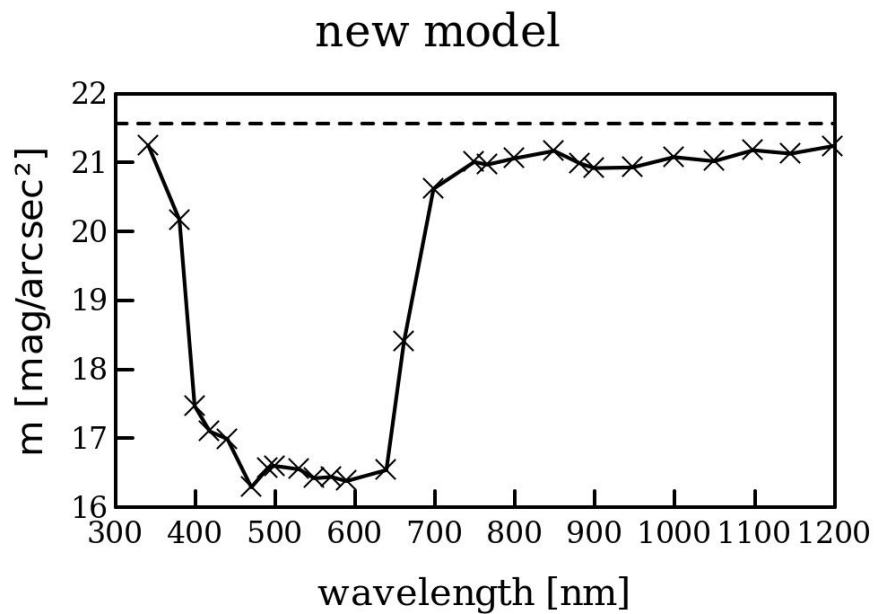

Illustration 5

Illustration 6

Production

All the new meters (i.e. SQM-LE2) will be calibrated with the same calibration setup and reference value as the original lens (i.e. SQM-LE).

There will likely be a difference in the IR detection because the new (...2) model blocks IR leaks better.

The new model will be shipping around 2018-11-06. We will keep some original lenses for special orders.

Conclusions:

The new filter (UVIR650) contains 2-3 micron red leak, but the Si detector has absolutely no sensitivity there.

The main effect of this new IR filter will be increased throughput in the 600-650nm region. The effect of that on readings will depend on the mix of illuminants.