

2011 LUNT LS80T/Ha with DSII Module REVIEW

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The first 12 pages are duplicates of the previous review of the LS80 single etalon scope.
Skip right to page 13 for the 80mm DSII module review

MANUFACTURERS INFORMATION

Specifications for 80mm H-Alpha Pressure Tuned Telescope - B1200 - Crayford

Aperture	80mm (Unobstructed)
Focal Length	560mm
Focal Ratio	F Ratio: 7
Bandwidth	<0.7 Angstrom
Blocking	B1800
Filter Type	H-alpha
Weight	14 lbs

Single Etalon scope Price as of this review: \$2995-\$3800

Price as reviewed with Feather Touch and B1800 \$3760.00

Double Stack Module (LS80DSII) additional \$1495



REVIEW:



The LUNT LS80THa dedicated solar telescope was double boxed in white/brown cardboard boxes with the standard LUNT shipping tape. The internal hard shell case was surrounded by shipping peanuts and was lined with firm foam padding cut to fit the scope. Three layers of cushioned protection kept the scope in flawless condition through the

rigors of shipping. I took delivery of this scope at NEAF and carried it home to Atlanta in the Nerdmobile. That's another story in itself but suffice it to say that this case survived a monster truck ride through 7 states and 2 days of bumps on low profile tires. (see www.neafsolar.com/sunspot.html)

The first thing I noticed when I opened the box at NEAF were all the included accessories. Great work Lunt by including everything needed to put the scope directly on a mount and use it right out of the box, even the necessary allen wrenches!

The box contained:

LS80THa telescope

B1800 Halpha Blocking Filter

2 inch dovetail plate

Televue Sol Searcher

Lunt Zoom eyepiece

LUNT LS80THa Users Manual

LUNT 5 year warranty card



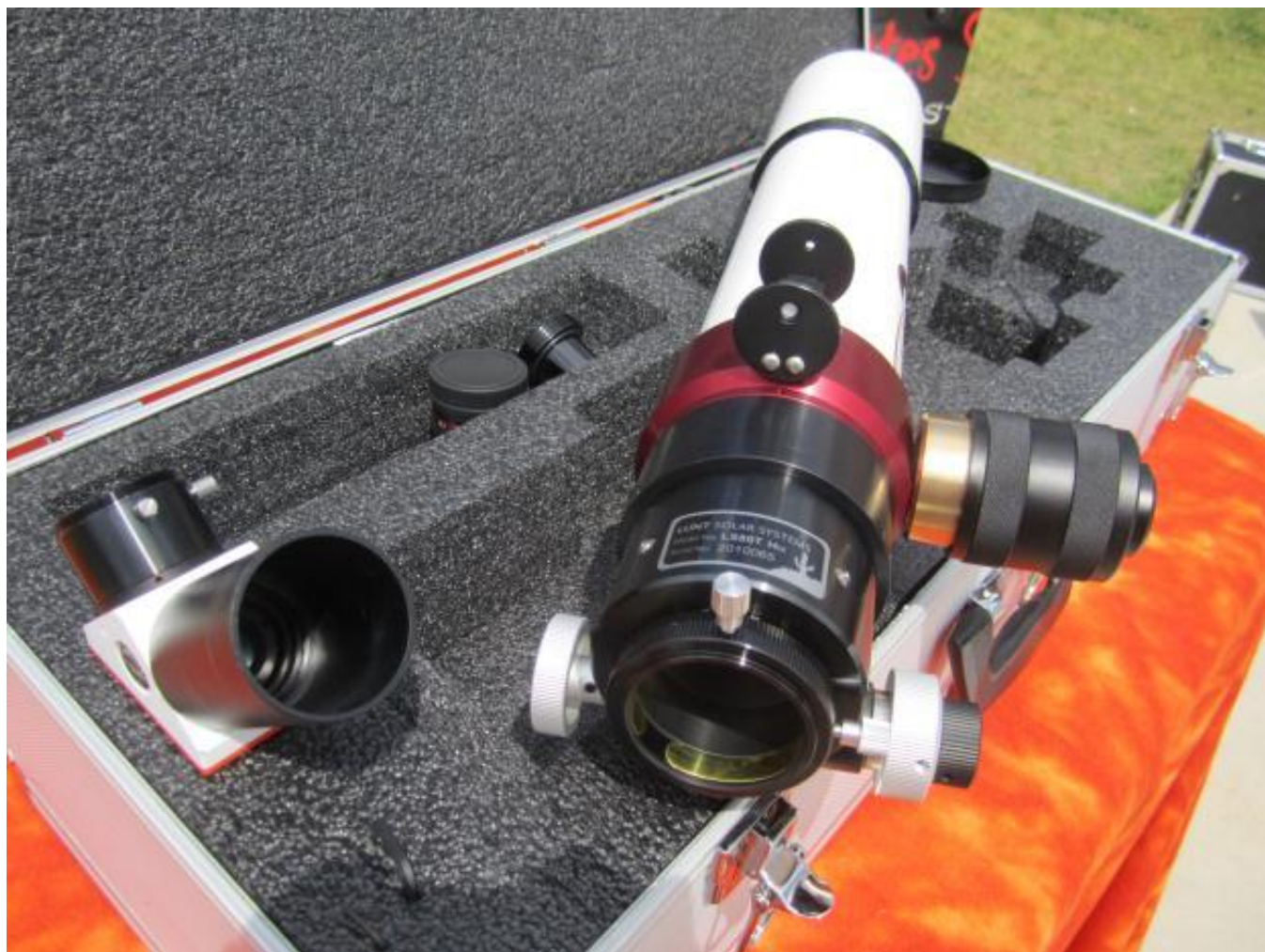
The case was precut to add the external etalon if desired and also had enough room to add the internal DSII module later if purchased. This layout was well thought out with plenty of room to spare.



The scope was beautiful to look at and well balanced. This particular scope was equipped with the B1800 blocking filter and the standard focuser. The F7 scope was plenty long and when the dew shield is extended it is about the same length and overall size as the Coronado 90mm scope at about half the weight.

From the objective down was a plastic objective cap, a retractable dew shield, a doublet 80mm objective, a very attractive pearly white anodized tube with Lunt sticker (great touch) a red barometric etalon chamber, a pressure tuner, a removable extension ring designed to increase the in focus for binoviewing, a Lunt Crayford 10:1 focuser with brass compression rings, a B1800 blocking filter with 2 inch extension tube for a ton of back focus if needed and a Lunt Zoom eyepiece. The included 2 inch dovetail was quickly attached along with the Televue Sol Searcher and the whole assembled scope fit easily into the large sturdy case. Outstanding presentation of a stylish scope with all the details covered.

The scope did not feel like it weighed 14 lbs as stated on several web sites. It felt more like about 7 pounds. The balance was just right at the etalon chamber and it was up and ready to setup within about 10 minutes using the supplied tools and hardware.





I should say here that the scope came with a B1800 blocking filter but the B1200 that I own from a previous scope did just fine in all the tests. I do not own or use binoviewers but I could see where the B1800 would be preferable with those. There were three $\frac{1}{4}$ -20 holes on the clamshell for mounting the dovetail in any position you like.



I setup the 80mm on the field at NEAF on Sunday as its first test. It was there with the finest dedicated solar scopes on the market and would have to really shine to stand out. Pictured here are Brian Stephens and I posing for the cameras in the "solar forest". I've never been accused of shyness...☺



Here is the LS80THa with dew shield collapsed (on far right) next to the Explore Scientific 127mm APO on an ADM adjustable dual mount plate sitting on a CGEM. It was dwarfed by all the other big guns but it certainly held its own. I find it amusing that the Coronado 90DS and the little Lunt LS80 look like toys next to the other scopes.

The Sun crackled with several active regions, a large flaring crevice and a really nice detached A-shaped prominence upon first viewing. The 80mm showed the faintest of prominences and significant spicules as well as a fair amount of surface detail. I would rate its performance in the .6-.65A range of resolution. It showed more surface detail than the 60mm single and less than the double 60. Of course the image was significantly brighter than the 60mm Lunt and a little brighter than the double stacked 100mm Lunt. It was a pleasure to look through and did not disappoint.

The scope easily focused using the standard Lunt Crayford. After a little adjustment of the tensioner it held nicely.

Several dozen people of all ages came through the display and I heard many comments on the LS80THa, probably because it was one of the relatively cheaper models that the average astronomer could afford. I had every Lunt scope

they made set up in a big row. I also had a couple other manufacturers' products in the "solar forest" to look through. I heard only positive comments about the LS80 and there were a lot of wows and smiles to go around.



The second try was the next week at 3 different solar outreach events scheduled in the Atlanta metro area. These photos show the LS80 with dew shield extended next to a Meade 80mm APO with Lunt B1200 CaK diagonal and DMK41.



Peeples Elementary School



FAA Southern Region Office

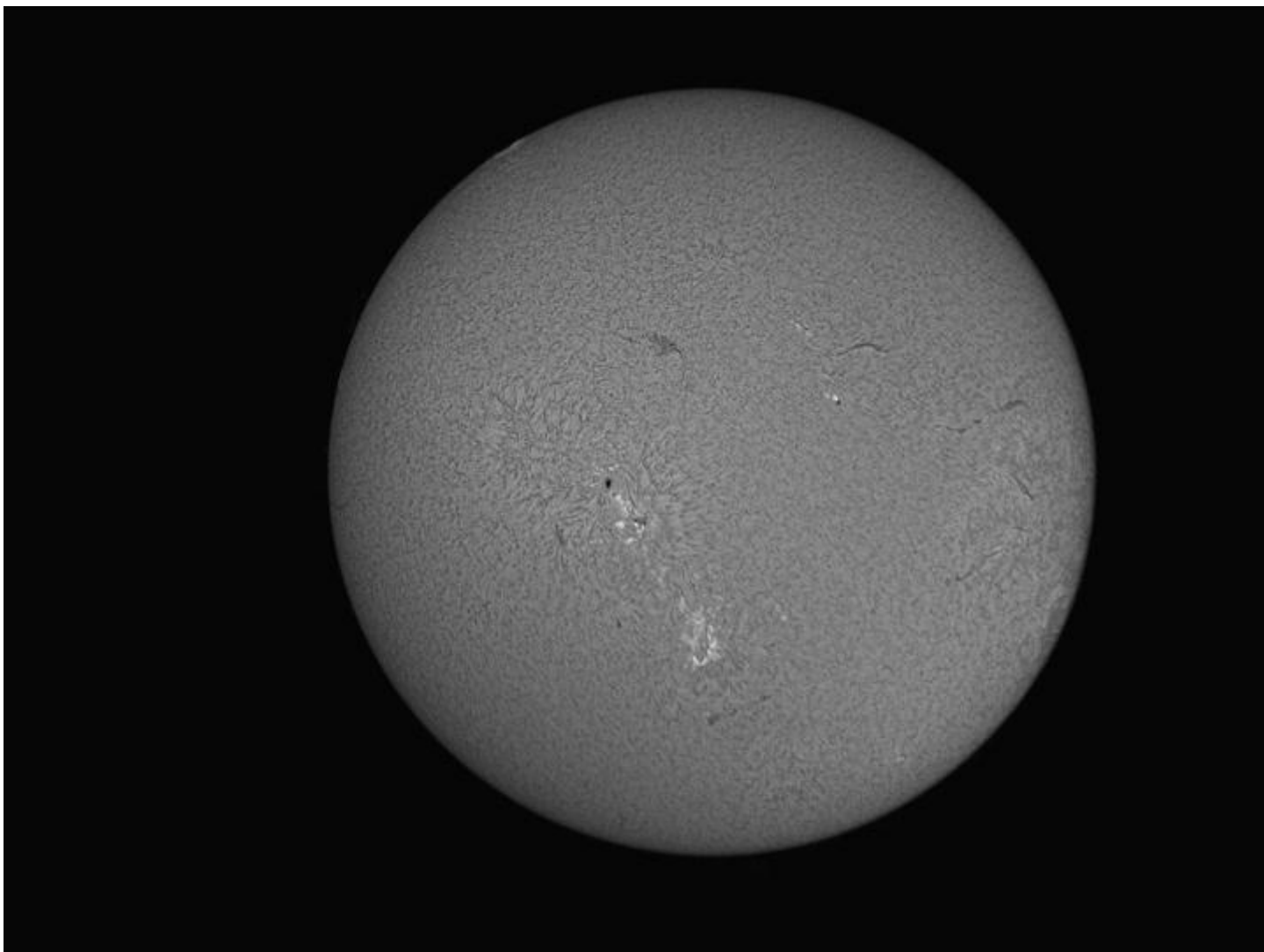


Race for Riley Palmetto, GA

At this last event I had the 80mm setup next to the Lunt LS100 in DS and SS mode. The Lunt performed pretty closely to the LS100 in single mode except it just didn't get the detailed spicule resolution that the 100mm and above scopes are known for.

I took several pictures through the scope during all three events. Basically when I do an event I setup a couple of computers and cameras and attach them to whatever scope I feel like using that day to allow the people at the events to come up and find their own features to take pictures of. I rarely get the opportunity to take my own solar images anymore and I find great satisfaction in sending these people their processed images later so that they can see how easy it is to get a picture of solar features.

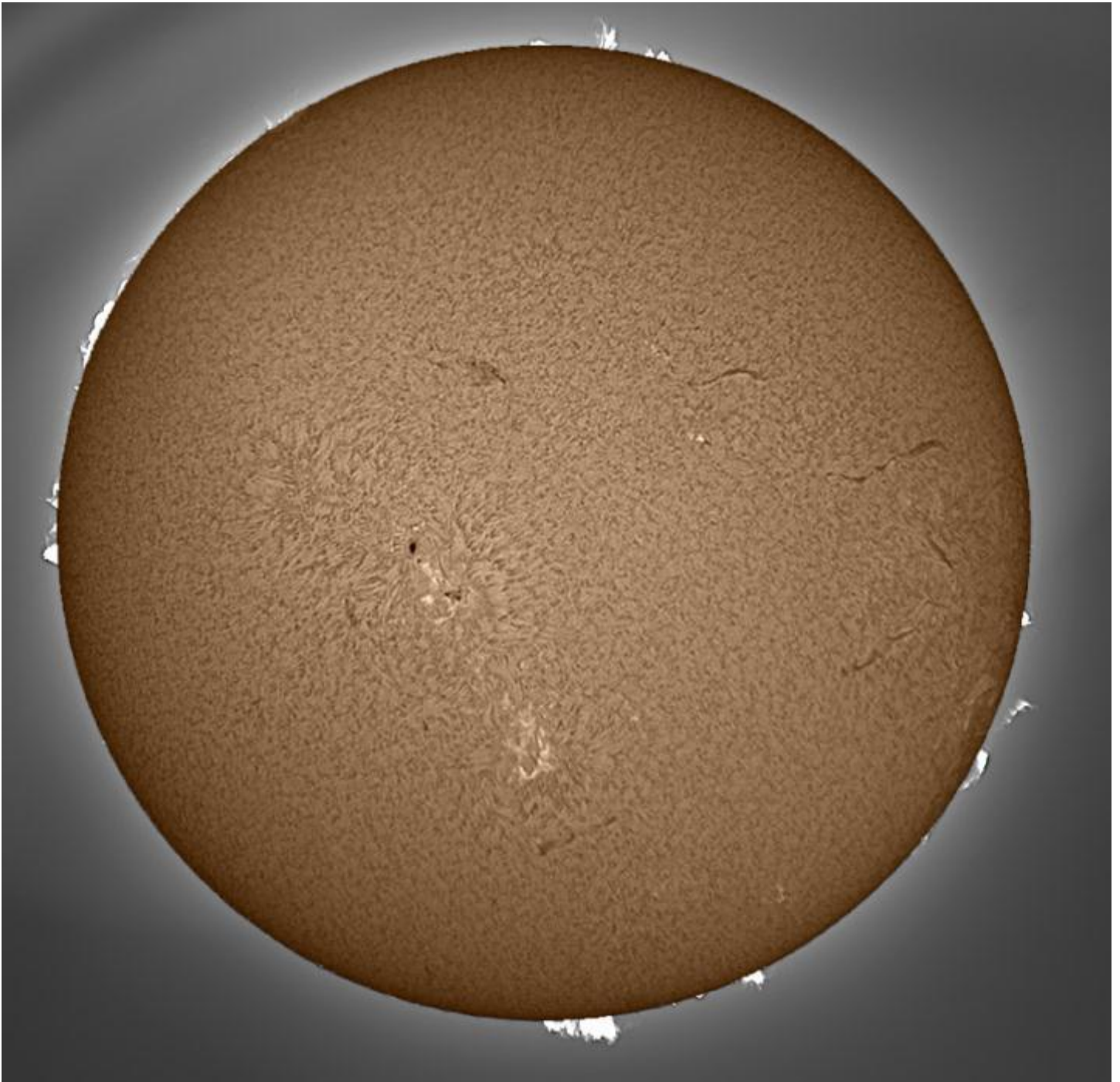
The below images were taken with the LS80 and the DMK41 camera. I hope this gives you some sort of an idea how good the scope does and how easy it really is, with the right equipment, to get pretty good images.



This is the post wavelet image right out of registax with no photoshopping. It gave a really good and even illumination and extraordinary detail, especially for a SINGLE etalon scope. Remember, this is NOT doublestacked.

Lunt seems to be focusing on manufacturing a much higher resolution single etalon system at around .6-.7 Angstroms. All of my Lunt scopes have really good surface detail in the single etalon mode.

The next page shows the processed image from a DMK41 camera of the prominences behind the surface detail. Not a bad image for a little 50mm etalon.



THE BOTTOM LINE

THIS TELESCOPE ROCKS!!!

I would have to say that this scope feels like the culmination of years of product design at Lunt. The scope is light and compact while delivering a world class H-Alpha image for a reasonable price. I strongly recommend this scope for the novice solar imager or viewer who is looking for a little more than the entry level without breaking the bank.

Pros-

Exceptionally attractive cosmetically

Lightweight

Ease of Use

All necessary accessories included

Excellent case

5 Year warranty

EXCELLENT Customer Service in a market where it is sorely lacking from the “big guys”

Relatively inexpensive

Wide range of infocus and backfocus for all attachments

Great Job LUNT!

Cons-

Not enough of them available for purchase ☺ yet...

LUNT DSII DOUBLE STACKING MODULE

(image shown has it installed incorrectly...read why below)



After several months of waiting the LS80mm DSII module finally shipped in July of this year. I had been anticipating this addition feverishly and could not wait to get my hands on it. The box arrived in typical Lunt fashion tightly packed with foam peanuts in a double boxed configuration completely sealed in Lunt shipping tape. It looked like you could have dropped this box from a jet at altitude and it would have survived.



It was shipped via UPS ground and took approximately 5 days to make the journey from Tucson to Atlanta.

Upon opening the box I found the contents to be:

- 1 DSII module
- 1 Instruction sheet
- 1 5 year Warranty card
- 1 plastic bag with three thumbscrews for quick removal of the module.



The module contained a hyperbolic chamber housing a collimating lens, a 35mm unobstructed etalon and a refocusing lens all packed securely into a masterfully machined anodized black housing. The pressure adjusting portion was again a black rubber gripped metal cover with an airtight piston plunger attached to the inside designed to screw onto a threaded metal chamber. This setup allows the user to slightly vary the internal air pressure inside the etalon chamber thus changing the refractive index of the air and varying the centerline of the passband through the etalon. The pressure chamber was the same sized used on the original internal 50mm unobstructed etalon in the single etalon Lunt LS80Ha scope.

The unobstructed etalon placement along the light cone allowed for all the light gathered from the doublet 80mm objective to be fully filtered, collimated and refocused by the time it reached focus at the eyepiece. The only thing different about this etalon from the internal 50mm unobstructed one (besides the size) was that there was no ERF (energy rejection filter). Of course there is no need to have a second ERF in this configuration. This also means that the module CANNOT be used with any other scope without the addition of a full aperture ERF. There is a warning on the module to this effect.

ASSEMBLY



A special note to readers here from personal experience: READ THE INSTRUCTIONS!!

It was amazing how much time I wasted by just simply slapping this module on the rear of my scope in place of the focuser and wondering why I was getting so many ghost images. After several attempts to get the ghost images tuned out I finally received the information from the friendly Lunt'sters that I should read the instructions. 😊



As pictured above there is a 2 inch collar between the focuser and the red etalon chamber which **MUST BE REMOVED** fully from the scope before the DSII module is added. The finished assembly looked like this:



Notice that the Sol Finder had to be moved up one screw in order to make room for the thumbscrew on the DSII module. Lunt tells me that they are now making the scope in a fashion which will not force this. I found that the movement of the Sol Finder had no effect on its reliability as it fits into a machined groove and retained its alignment even with only one bolt used to attach it.

I upgraded to the Feathertouch focuser after purchase so I still had the Crayford focuser originally purchased with the scope. I simply attached the removed collar from the installation to the extra focuser and that made it about a 20 second operation to swap from single stack to double stack. Otherwise, the collar must be retained in order for the scope to switch modes.



All of these items fit neatly into the large supplied original case for the scope and still leave room for accessories.



VISUAL OBSERVING



I setup the scope on a Williams Optics dual mount grab and go on a Stellervue tripod. If you've read my above review of this scope from a few months ago you will know that I am ecstatic about the quality of the visual and imaging performance of the LS80 single etalon scope. I own every scope they make and have used them extensively in my Solar Astronomy Outreach Program (www.charliebates.org) which sees over 50,000 students per year. I firmly believe that this scope may be the finest visual scope that Lunt makes. Anyway, I digress.

The visuals through the LS60 single are already so exceptionally good that I did not expect a significant improvement with the double stacking module. Boy was I wrong! The 2nd etalon made several filaments and active regions spring to life in the eyepiece. There was easily 200% more surface detail and a strange sense of proportion and roundness that was not evident in the single etalon configuration. I was using a Lunt Zoom eyepiece and I was easily able to zoom all the way in and all the way out while retaining a crisp focus. The image was as expected with a double stacked system. Significantly more surface detail, slightly less prominence brightness and a 40% reduction in image brightness inherent in the mechanics involved in adding a second etalon. The field was slightly unevenly illuminated as compared to the perfect illumination in the single etalon mode but nothing to complain about. The view was fantastic and it added a new dimension to the scope.

I did notice a slight downside to all of the glass between me and the Sun. There was a glaring affect around the disk with certain eyepieces of varying eye relief. I spoke to Lunt about this and it is more a symptom of the human eye being used

than the optics being used. I tried several times to alleviate this and found that with a little practice and centering of the image that the glare went away. It seemed to be associated with where my eye was placed more than anything in the scope and it was nowhere to be found when imaging. Don't be disheartened with this if you experience it. Just swap out a few eyepieces and keep your eye centered and the image centered.

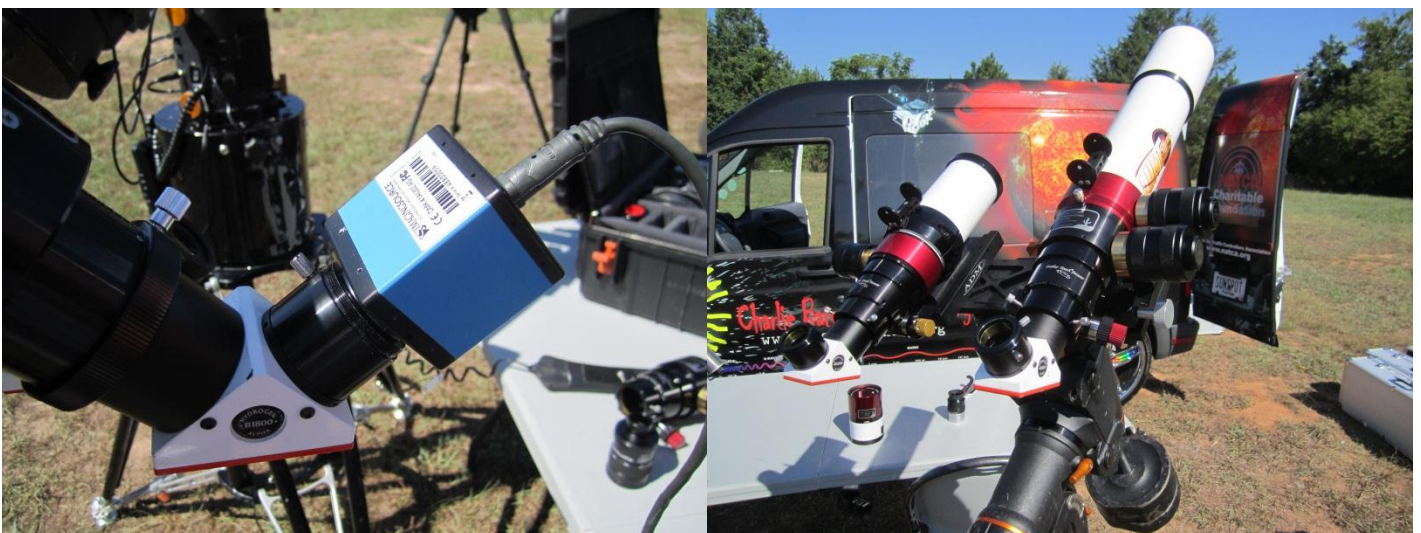
I had a few passersby check it out next to the Lunt 60DS.



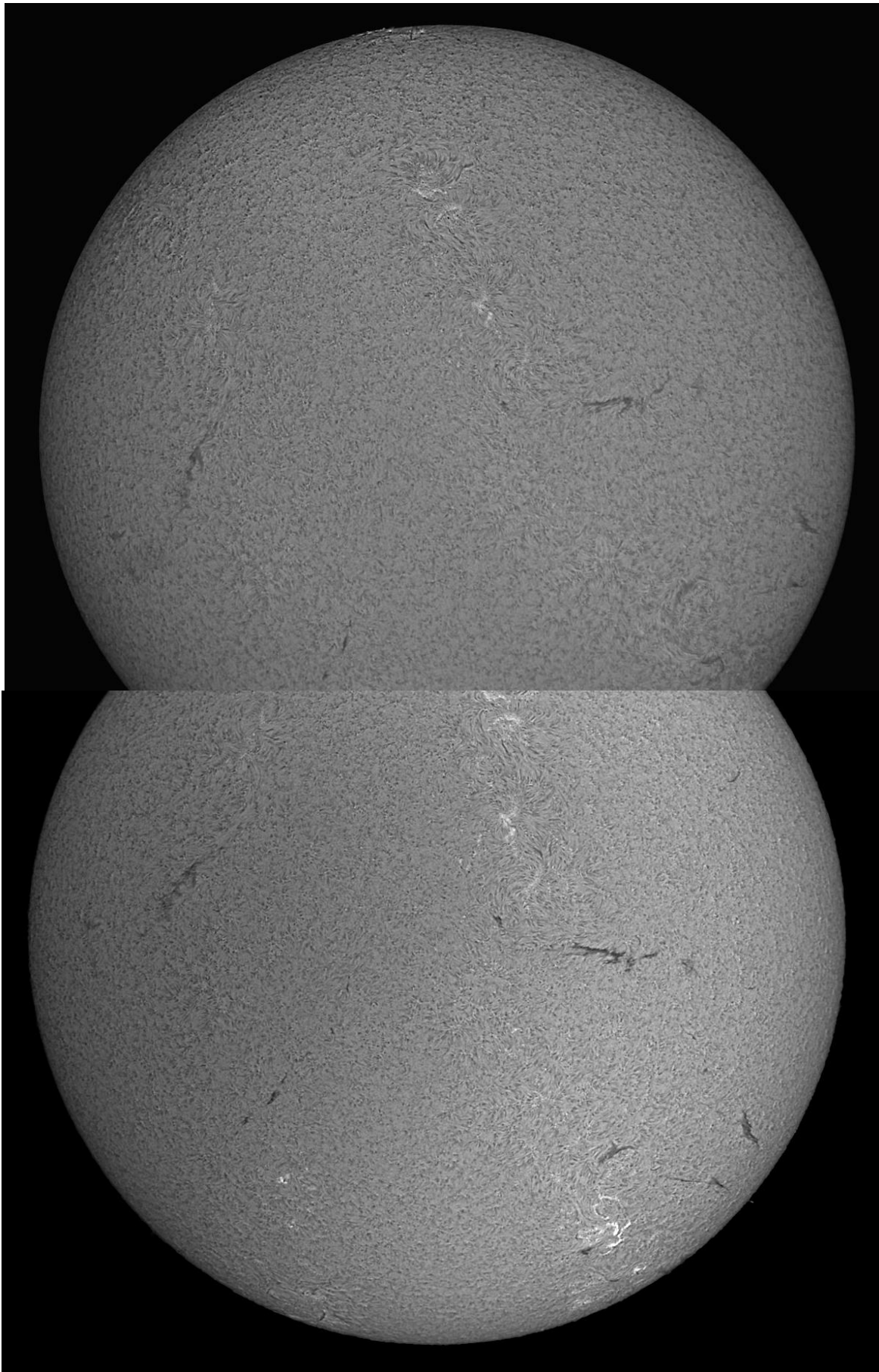
Andrea says, and the general consensus was that they are both just incredible...(the scopes) and that she could see more details in the LS80DS but that the image was a little brighter in the LS60DS. This is exactly in line with the external etalon on the 60 and the 2 internal etalons in the 80. When I looked I could plainly see more details in the 80mm but the difference was not jumping out at you as compared to the 60. It was slightly better, about 20mm aperture better.

IMAGING RESULTS

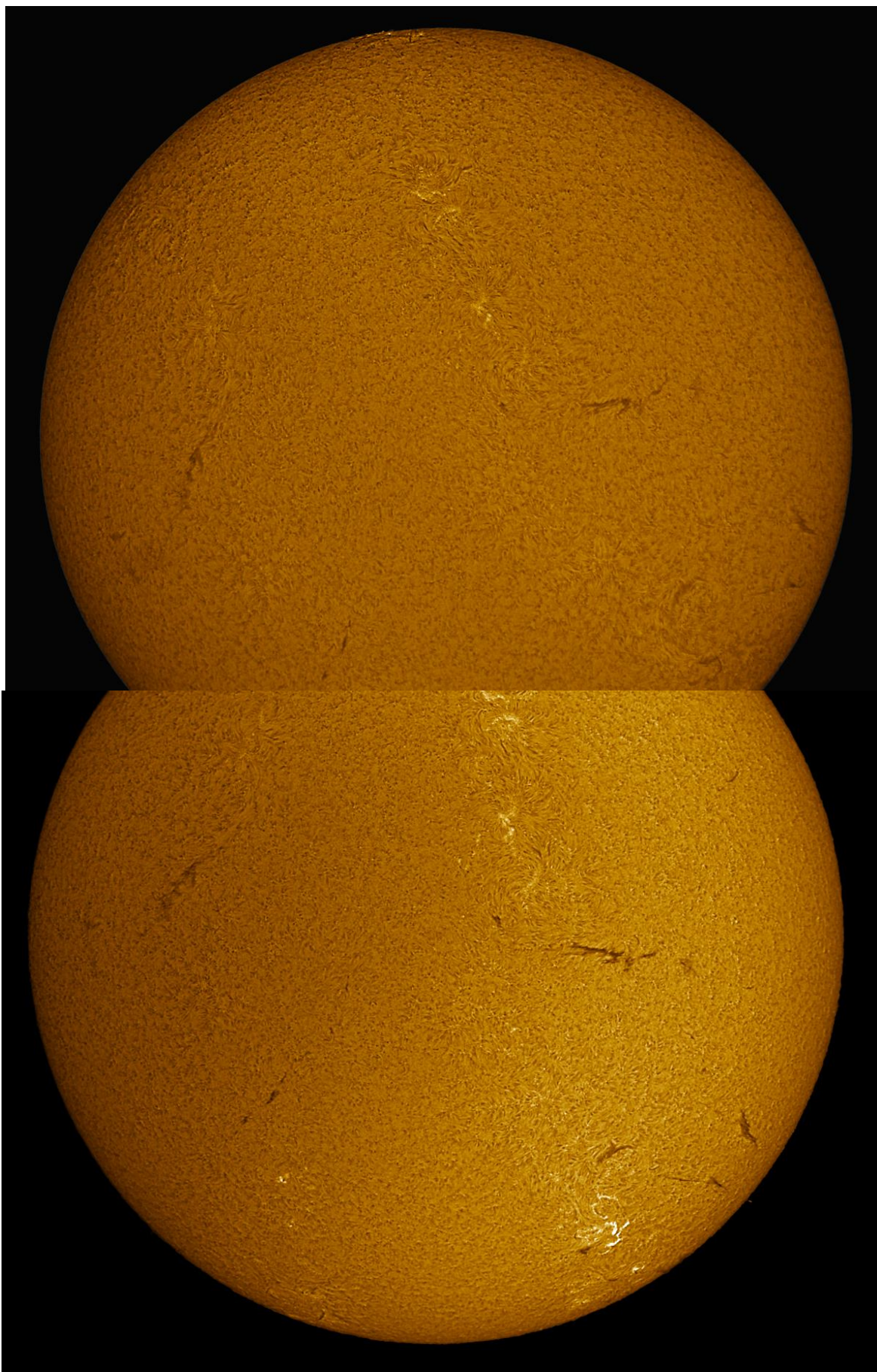
The next week when the skies finally cleared I went out and did some extensive imaging with the LS80DSII. I used a DMK41 camera, IC capture and Registax 6.



Here is an image in color with the LS80 first and the LS80DSII below it:



And here is the same image taken with the DSII module installed:



These images are no means the best obtainable from this scope but they are the first day of imaging from a seasoned imager using the new equipment. I believe that I could have worked with the illumination issue a little more but I just publish what comes out.

The live image on the laptop showed significantly more detail with the DSII installed.

Thank you for reading the review and I would like to let you know that these reviews, the outreach program and www.solarastronomy.org are supported by member donations. If you can spare a few dollars to help keep us educating the public about the Sun feel free to make a tax deductible donation through the website paypal link www.charliebates.org It would be greatly appreciated..

PROS

Extremely innovative design

High precision machining and very stylish

This double stacking system gives you a double stacked H-Alpha scope for about ¼ the going price for an externally double stacked system from the competition.

In stock and available for shipping

Fantastic visual and imaging performance

Fits perfectly in the original case

Very easy on/off installation in the field

CONS

Slightly uneven illumination/ focusing no big deal

The pressure tuners are both a little difficult to rethread correctly



Thank you for reading,

Stephen W. Ramsden

www.solarastronomy.org

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