

The Tele Vue 3.7-mm Ethos-SX

A View from Space...in Your Driveway

By Erik Wilcox

Having reviewed the entire Tele Vue Ethos line of eyepieces over the last year, I was almost convinced that the mechanical and technical limits of wide-field eyepiece design had finally been achieved. From the 21-mm down to the 6-mm, the Ethos represent more than just a revolutionary line of eyepieces; they truly redefine amateur astronomy.

I've often wondered what it would take to recreate the energy and excitement that once existed during the days of the Apollo missions. What new product or idea might

come along to excite young people and interest greater numbers in astronomy? Sadly, it seems that some would rather look at a book filled with full-color Hubble Space Telescope images or at space animation on a computer screen than look through a telescope. But if there is a product that has the potential to get just about anyone excited about amateur astronomy, it may be the Ethos line of eyepieces.

Of course, picture books and computer animation can't compare with the feeling of seeing something for yourself in real-time, and though I confess to searching for faint fuzzies I can barely see with averted vision, it's the showpiece objects and star-filled swaths of sky that tend to get a "Wow!" from the general public. And the Ethos eyepieces evoke that "Wow!" from even the most seasoned and experienced amateur astronomers, no matter what object is in the field of view (FOV).

It makes sense that the 3.7-mm Ethos-SX was inspired by Al Nagler's work designing the Lunar Excursion Module (or "LEM") Simulator Optics for NASA over

four decades ago. Standing a foot away from the LEM window and watching the simulated lunar surface pass by, it is said that the immense 110-degree view was what inspired Al Nagler to begin considering "Ultra-Wide Angle" eyepieces like the Tele Vue Naglers.

With Al's inspiration, Tele Vue Designer Paul Dellechiaie, who designed the rest of the Ethos line, pushed things even farther this time around with the 3.7-mm Ethos-SX. It took 45 years to recreate that 110-degree view through an eyepiece that would maintain Tele Vue's standards of correction across the entire field, but it appears that that's just what they have managed to accomplish with the SX.

Getting into the basic specs, the 3.7-mm Ethos-SX features a 110-degree apparent field of view (AFOV), 15 mm of eye relief, and can be used in either 2-inch or 1.25-inch modes. But the specs only tell part of the story. The 3.7-mm Ethos-SX is an extremely well-thought-out eyepiece. First, it comes with a 2-inch adapter unlike any I have ever seen. The adapter features threads on the *inside* of the unit, which cleverly screw onto the 1.25-inch filter threads on the actual eyepiece. This means that there are no visible threads or marks on the outside of the eyepiece. The 3.7-mm Ethos-SX can be used in either 1.25-inch or 2-inch mode, and using it is entirely comfortable in either. There are no setscrews to remove (and lose); simply a well-fitting adapter that seems more like it was specifically designed as an integral



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part of the eyepiece. I found this to be an incredibly clever design feature; leave it to Tele Vue to come up with something so elegant and yet so simple.

However, the adapter performs an even larger function than just allowing the eyepiece to be used in different modes. In the 2-inch mode, the 3.7-mm Ethos-SX is parfocal with the 10-mm and 13-mm Ethos when they are used in their 2-inch modes. With the adapter removed, the 3.7-mm Ethos-SX in 1.25-inch mode is parfocal with many Tele Vue Naglers, Panoptics, Radians, Plossls, and even Nagler Zoom eyepieces. If you have eyepieces with green lettering in your eyepiece case (and who doesn't?), chances are that the 3.7-mm Ethos-SX is parfocal with many of them.

Though the Ethos is physically large for a high-power eyepiece (just over 6 inches long, with or without the adapter attached), it weighs just 1.1 pounds. Owners of Dobsonians will appreciate the relatively light weight of all the Ethos eyepieces compared to many of the 3-pound monsters out there that can cause scopes to nosedive toward the horizon. Additionally, when using it with my small refractor, I found that it was light enough that it didn't cause the focuser to slip, even when pointed at the zenith.

Under the stars, I found the Ethos-SX to be a real joy to use. Like the rest of the Ethos line, the eye relief is perfect and the soft fold-down eyeguard (the same one used on most Tele Vue eyepieces) is comfortable. In terms of magnification, the 3.7-mm Ethos-SX gives me 151X in my 80-mm, 270X in my 8-inch Newtonian, and 569X in my 16-inch truss-Dob with the Paracorr attached. Aside from testing edge-of-field performance, I found the magnification to be too high to use in my 16-inch on the nights I observed with the 3.7-mm Ethos-SX. This was due to the sky conditions during the testing period rather than any limitations in the eyepiece or scope. I have used over 500X many times in the past, but this magnification usually requires exceptional seeing conditions.

In the 80-mm refractor, I first observed

Jupiter which was then nearly overhead late in the evening. 151X is a nice magnification for the 80-mm scope, and at this power there was a large amount of detail to be seen on Jupiter's disc, as well as the Galilean moons appearing as tiny spheres themselves. I compared the 3.7-mm Ethos to my 9-mm Nagler T6 attached to a 2.5X Powermate (for a magnification of 156X versus 151X with the Ethos-SX), and I have to say that I liked the Ethos much better! This is saying something since the 9-mm Nagler T6 has always been one of my favorite eyepieces. Aside from showing just slightly more detail and a cooler and more aesthetically pleasing view (with whites being noticeably more prominent), the difference in AFOV was simply staggering. Staring at the center of the field of the Ethos-SX, I found that I could still make out the field stop if I looked for it. However, during normal viewing, I never seemed to notice the field stop. It really is as if you're staring into space and the eyepiece and telescope simply "get out of the way."

Over the next couple of weeks, I found myself taking the 3.7-mm Ethos-SX out on nearly every clear night. I observed many objects and virtually everything was astounding. Even at 151X, I found the true field of view (TFOV) to be wide enough that I most often left the 3.7-mm Ethos-SX in the focuser when moving from object to object. There were nights when I didn't even bother to bring out my eyepiece case; the Ethos-SX was all I needed.

As far as aberrations, the Ethos-SX doesn't seem to have any, which is all the more amazing due to its huge AFOV. I could see absolutely no field curvature or astigmatism in any of the scopes I tested it in – zero! – just pinpoint stars sprinkled across the entire FOV. And for planets...well, who ever thought that a 110-degree eyepiece could be accurately called a "planetary eyepiece"? This one can. What's incredible about using a well-corrected, high-power eyepiece like this for planetary viewing is that you can let the object drift from one side of the massive FOV all the way to the other side without any loss of resolution. Every ob-

ject I viewed looked just as perfect right next to the field stop as it did in the center of the FOV.

This is really important to me since none of the scopes I currently own are driven. I found myself purposely placing objects at one corner of the FOV so I could let them slowly drift across the field, giving me more observing time before having to “nudge” the scope. Even the false color that’s often seen on bright objects at the edge of the field through wide-field eyepieces was largely absent in the 3.7-mm Ethos-SX. On Jupiter, I could only see a vague touch of it through the 8-inch Newt just as the gas giant exited the FOV.

There was no scatter or ghosting no matter what objects I observed. I went out one night when the nearly-full moon was brightening up the whole sky to see how the Ethos-SX would perform under those challenging conditions. Placing the moon just outside the FOV, there were no aberrations or any evidence that the moon was nearby (aside from the sky being brighter overall, of course).

Deep sky is also incredible with the 3.7-mm Ethos-SX. With smaller and faster scopes, the magnification is perfect for detailing globular clusters, but within the wide swaths of sky that we normally associate with medium power! In larger and slower scopes, the higher magnification makes it perfect for planetary nebulae, double stars, and close-ups of everything else. The eyelens on the Ethos-SX is very large; there’s no having to peek through a little pinhole like with many high-power eyepieces. And despite the large lens, there’s no “kidney-beaning” or blackouts.

Like all Tele Vue eyepieces, the coatings are excellent. Viewing the eyepiece at an angle, the coatings give off a greenish tint with a vague hint of purple as well. Staring down into the eyepiece, it’s completely black. This is no surprise given Tele Vue’s legendary reputation for exquisite quality and attention to detail, but it’s still nice to see in a new eyepiece.


Build quality is first rate. I’ve spoken

about the beautiful brushed-aluminum adapter in some detail, but it’s also worth mentioning that the bottom of the adapter is also blackened and threaded for filters; likewise with the chrome 1.25-inch portion of the eyepiece. Both also have a safety undercut to prevent the eyepiece from slipping out the focuser. And like most Tele Vue eyepieces, a nice rubber grip is built into the barrel, which makes it easy to hold, even with gloves on.

I wrote in my earlier article that the Tele Vue Ethos line may allow observers to carry fewer eyepieces in their eyepiece cases. This certainly applies to the 3.7-mm Ethos-SX as well and makes the actual cost of owning one lower than the price might suggest at first glance. The 3.7-mm Ethos-SX actually produces more TFOV than the 8-mm Televue Plossl, 6-mm Radian, and the 5-mm Nagler T6, so one could theoretically carry just the 3.7-mm Ethos-SX instead of two or three other eyepieces.

Even compared to the 100-degree Ethos, the Ethos-SX is noticeably wider. De-

spite the large increase in magnification over the 6-mm Ethos, the 3.7-mm Ethos-SX retains 68 percent of the AFOV. And the difference between 110 and 100 degrees is much larger than the numbers would suggest. The difference between 110 and 82, 68, 60, or 50 degrees can’t be described in words; you have to see it for yourself. Looking through a Panoptic or even a Nagler after viewing through the Ethos-SX forces the user to invent new terms of description – it makes eyepieces that previously seemed “wide angle” very narrow by comparison.

The 3.7-mm Ethos-SX is a revolutionary eyepiece that maintains all of Tele Vue’s performance standards while somehow raising the bar even higher. I can’t imagine what new eyepiece magic Tele Vue will unveil next, but I don’t know how they’ll ever be able to outdo the 3.7-mm Ethos-SX. I have no affiliation with Tele Vue, other than being a consumer and fan of their products, but with the 3.7-mm Ethos-SX, their slogan definitely applies: “Even better than you imagined.” 



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