C 9.25” XLT VS. C 9.25” VS. 7” LX200 UHTC VS. 7” LX200

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INTRODUCTION:

For those of you who have read our previous article regarding the Nexstar 11 VS. 7” LX200, you should remember that the 7” Mak was the winner for best planetary scope in that comparison. We were very anxious however, to see how the that actual 7” Mak would compare to what is probably the finest optical SCT in history, Celestron’s highly respected 9.25” and what about these new advanced XLT and UHTC coatings? Are they for real or are they really a gimmick? I have to admit that when I first heard about them, I would not be sold until I could first test them for myself to be sure.

First we compared both the 7” Maks to each other and then the 9.25” SCT’s to each other. After that, we decided to pick the best scope from each company and put it into the final comparison to determine the overall winner of this shoot-out between Meade and Celestron. We made comparisons on some deep sky objects and planets to determine contrast differences side by side. Please forgive my terrible pictures, we were pressed for time.

MY TEAM:

I'd like to thank June Trajano for assisting in these tests. June is really fussy about optics and he has a terrific eye. I really enjoy having him for second opinions. I also wish to thank Mark Lapointe and Ron Hines for their assistance as well. Mark's son decided to stand at the side lines and practice his chess game during our review. I know I couldn't stand a chance against him, he's simply brilliant.

LOCATION:

Our tests were conducted on April 13th, 2004 from Southern California where we get good laminar air flow from the ocean for steady seeing. Seeing on this night was about a 7.5 on a scale of 10. This is not the best we get, but good enough to conduct a fair test.

EYEPIECES AND SCOPES:

We had pairs of every eyepiece so comparisons could be conducted easier. Note, that every eyepiece was inspected prior to observations, including everything else.

Focal lengths:
C 9.25" - 2350mm.
7" LX200 - 2670mm.

Eyepieces:
15mm RKE's
19mm Televue Panoptic's
12.5mm Celestron Ultima's
18mm Celestron Ultima's
11mm Televue plossls
26mm Televue plossls

Diagonals:
Televue 99% Everbrite
Lumicon 98% Lumabrite

COOLING THE SCOPES:

First off, June now uses a Lymax cooler for the 9.25" SCT. Cooling takes about 20 to 30 minutes with that system. I really like it alot and strongly recommend it. Since SCT's have a baffle which reaches about several inches into the tube, pointing the scope down will only cool the inside of the baffle itself, but it will not let warm air rise up and out of the optical tube. Instead, the warm air gets trapped inside, around the baffle. According to June, the best method is to park the tube level to the ground and simply insert the Lymax. As far as the 7" Mak, I strongly feel that the cooling issues have been exaggerated from improper cooling methods.

In the case of the 7" Mak, you can point the tube down. Heat will rise an slip behind the mirror and get flushed out by the fan. The worst thing you can do is point it up, because heat rises inside the tube and gets stuck below the corrector, making it harder for the fans to flush it out. I believe that this is the reason why observers have not had success in cooling of the 7" Mak. 30 to 45 minutes is fine for the Mak and it's up and running. My star tests verified that no potential heat hazards were visible in the field of view following this method.

IMPROVEMENTS ON SCOPES:

Let me start by saying that the new 7" LX200 is much nicer than the older model. First, the fan is much stronger and pulls more ambient air in and out of the tube, so cooling was not an issue. The next thing was the noise level of the newer model, it is considerably quieter and much smoother than the older model. Mark and I also commented on how much we liked the newer tripod knobs.

Although they are cheaper plastic, the are easier on your fingers in the dark. I have to admit that although I stated I liked the older LX200 controller, my opinion has changed after seeing how user friendly the newer one was. We also liked the functions on the newer hand controller better. Instead of using code numbers for planets, they are simply laid out by name, making it much easier to find planets in the computer catalogue. The buttons are also easier to press and easier to read.

As far as the 9.25” GT, the mount was much more stable than the older model using aluminum legs. With VSP pads, the vibration is cut to 3 seconds. The GT mount uses a three star alignment and works wonderfully. For only 700$ you can buy this GOTO mount and tripod for refractors or SCT’s 9” and below and it’s every bit as good as my Losmandy GM8 in performance. Although it’s metal parts are cast and not machined like the GM8, it’s still a good bargain.

STAR TESTS:

June and I made sure the collimation on the 9.25’s was perfect and the Maks were already in perfect collimation. As many of you already know, the Maks can not be adjusted and chances are you’ll get a good one anyway. We conducted star tests in all four scopes. All the scopes, with the exception of one delivered impressive star tests on both sides of focus, with hardly any signs of spherical aberration or astigmatism. On the newer 9.25” XLT model, it exhibited some astigmatism.

PERFORMANCE OF THE 7” MAK’s:

We started out with the 7” Maks on the Eskimo nebula in Gemini. This is a pretty bright planetary nebula with a central star. Each scope had a 19mm Panoptic eyepiece. This would give 147x. After all of us went back and forth, we were amazed to see that the

UHTC coatings actually did make a difference here. There was unquestionably more contrast in the UHTC model. We took and educated guess between 10% or 15% more.

I was dumbfounded and actually thought this was just sales hype, but it's not. The nebula and the central star stood out more noticeably in the UHTC. We Then went to M67 in Cancer, an open star cluster. Using the TV 26mm plossls at 103x in each Mak, we looked for faint stars just barely on the threshold of visibility and the UHTC prevailed once again. At that point is was very clear to all of us. If no one told us which scope was which, I guarantee we would have known which one had the UHTC coatings.

Now it was time for Jupiter. We slipped a 15mm RKE in each scope. This would give 178x. As some of you may recall, I commented on how pale and white the images of Jupiter were in the older 7" Mak. In this case, the UHTC coatings made a phenomenal difference. Not only did Jupiter actually look brighter, but it also revealed more surface colors and thus better contrast. Even Mark and June commented on this as well. At this point it was all over. The 7" LX200 with UHTC was the clear winner. The older Mak that I once loved was clearly beat.

PERFORMANCE OF THE C 9.25's:

Now it was time to compare the C 9.25 scopes to each other side by side. We chose the Eskimo Nebula using the 18mm Ultima's. This would produce 131x. After going back and forth between the scopes there was absolutely no question that the XLT model was giving a more contrasty image over the standard Starbright coatings. Once again, I couldn't believe it. June, Ron, Mark and I agreed. We then went to M67 and repeated the same routine we did for the Maks. On M67 the XLT was revealing stars with direct vision that almost required averted vision in the older model.

Ron will admit that his vision may not be the best, but even he could see these differences. Something you may find interesting is that the difference between the two Celestron's was not as dramatic as the differences between the two Meade's to eachother. My educated guess is about 10 or 15% improvement for the Meade and about 10% for the Celestron.

It was now time to compare Jupiter in each C 9.25". We decided to use the 12.5" Ultima's. This would give 188x. As each of us went back and forth, we noticed that the XLT was undoubtedly giving a brighter image of Jupiter, but it was not producing as much definition as the older model on Jupiter's belts and the color on the belts was about the same. Sadly, the slight astigmatism we mentioned earlier was undoubtedly robbing the newer XLT model.

The image in the XLT was still surprisingly good, but still not good enough to beat the good figure on the standard Starbright model. If we didn't have the older model to compare it to, we would never know we were being robbed of resolution. When a brighter image is combined with slight astigmatism at this level of scrutiny, it only compounds the problem. I now realized that the older Star Bright model would have to be

placed into the final comparison with Meade's well respected 7" Mak daddy. I wish to state that I see no reason what so ever why the newer XLT shouldn't out perform the older model, granted the optics are right on par.

MEADE 7" MAK UHTC VS. C 9.25" SCT STANDARD STAR BRIGHT COATINGS:

It was now time for the final battle. Could Celestron's notorious C 9.25" contend with Meade's infamous 7" Mak on Jupiter? June and I decided to choose the TV 11mm plossl for the 9.25", producing 213x. For the Mak, we decided to go with the 12.5mm Ultima. As luck would have it, this would also give 213x. We all started out with the Mak, then went back to the 9.25". There was this awkward silence in the group as everyone was moving back and forth between the two scopes and making decisions in their minds. I said, OK guys which is it? Here is the final verdict.

June - C 9.25
Mark - C 9.25
Ron - C 9.25
Daniel - C 9.25

Even though Meade's 7" Mak put up a good fight, it was lacking in resolving power when compared to the Celestron. The images in the standard 9.25" alone were more colorful and even sharper than the Mak at 213x. I could not believe how sharp the 9.25" was. There was no light scatter whatsoever in either scope and the images just snapped right in with the 9.25".

I was so impressed with the 9.25" though, that I called up John Risti and suggested we put it head to head with his AP 155EDF. The results will be posted in part 3 of this shoot-out, so stay tuned. Remember that the AP beat out the older 7" Mak in our previous comparison, so it ought to be interesting. I can only imagine that the newer GPS model would be even better than this standard model, considering it utilizes a carbon fiber tube with better thermal properties, XLT coatings and most likely a great star test. Celestron is usually consistent and I'm sure our XLT unit was just a fluke.

WHAT'S SO UNIQUE ABOUT THE CELESTRON 9.25"?

It's too bad that Celestron doesn't design the C11 or C14 optics the same way as the 9.25". If they did, I would own the 14" TODAY and wouldn't think twice about it! I can on assume this is because the tubes would be longer and costly to make. Although most observers think the 9.25's great performance comes from a smaller secondary, it doesn't. Ironically the 9.25" actually has the largest central obstruction relative to primary diameter than any other SCT in the Celestron line.

The truth lies in the focal length of the optics. In a typical F-10 SCT, the primary is figured to F-2, while the secondary is figured to F-5. 2 x 5 = F-10. Because the primary in SCT's usually shift (mirror shift), the collimation is changed and what little field of perfect definition you have on the secondary gets knocked off axis to one side. F-2's are

extremely sensitive to collimation. Just the slightest deviation causes degradation to the image quality on planets.

The results are blobby looking images that flare to one side when moving in and out of focus. This is why you are always fussing to get the images to snap-in on most SCT's. For the 9.25" that's not the case. According to Celestron, the optical system is still set at F-10 but the primary is a longer focal length. Instead of being F-2, it's an F- 2.35, while the secondary is about F-4.3. 2.35 x 4.3 = F-10.1. Not only is the field of perfect definition to the secondary larger, but any mirror shift is less sensitive on the secondary and thus, you get a sharper, tighter looking image overall with no light scatter at the limbs.

CONCLUSIONS:

I can't wait to pit June's 9.25" up against Risti's AP155 EDF. As far as I'm concerned, if the Moon and planets are your thing and you are considering an SCT, I would have to say that Celestron's C 9.25" is the best SCT there is. One thing I can assure you of, is that the 9.25" will beat out any $8,000 5" apo system there is for planets and we'll soon see if it can outperform a $10,000 6" apo, but we'll just have to wait and see to be absolutely sure.

Steady Skies!
Daniel Mounsey

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