

Evaluation of FSO (Full Spectrum Optic) 1.1-10x 30 FFP Rifle Scope

I was given one of the new 1.1 to 10 power scopes for Ed Verdugo, of GRSC Inc., to evaluate the clarity, the ability to remain zeroed, and the durability. The scope will be zeroed on a Ruger SR 762 rifle. Once it is sighted in, the turrets will not be adjusted until the end of the evaluation where I will be doing a "Boxing Evaluation". I will also be using a Remington 700 in .308 with a 22 inch varmint barrel, a Remington 700 in .30-06 with a 24 inch normal contour barrel, and lastly a Ruger Model 77 in 7 mm Remington Magnum, with a 24 inch normal contour barrel. Again, the scope will **not** be adjusted for the aforementioned rifles. I will be listing the ammunition when I get to the actual testing portion of this report. The scope rings and mount are the BOBRO DUAL LEVER PRECISION OPTIC MOUNT. All shots were taken from a portable shooting table utilizing a Harris Bipod, and rear sandbags, unless otherwise noted.

The first thing I wanted to do was check the clarity of the optics as objectively as possible. So I used a Snellen Eye Chart printed on 11 X 17 paper, at 100 yards, and every target, unless noted were at 100 yard.



The chart below depicts the results. The line number in the chart represents the lowest line I could actually make out the letters. The line below the one I could read was blurry except the Vortex and Ed's scope, where I could tell they were letters, but I couldn't tell you what they actually were. Ed's scope has the parallax set at 100 yards, so on the scopes with adjustments, I set the parallax at 100 yards. I used the 10 power setting on all the scopes that went to or above 10 power, and 6 power to compare apples to apples on the GRSC/Norden Performance scope, that only went to 6 power. The centered reading is from just above the reticle, and the top reading is at the upper most edge of the scopes field of view. This was to see if, or how much edge distortion there was. The Sunshade used has a honey comb pattern in it to eliminate reflection.

Scope	Centered		Top
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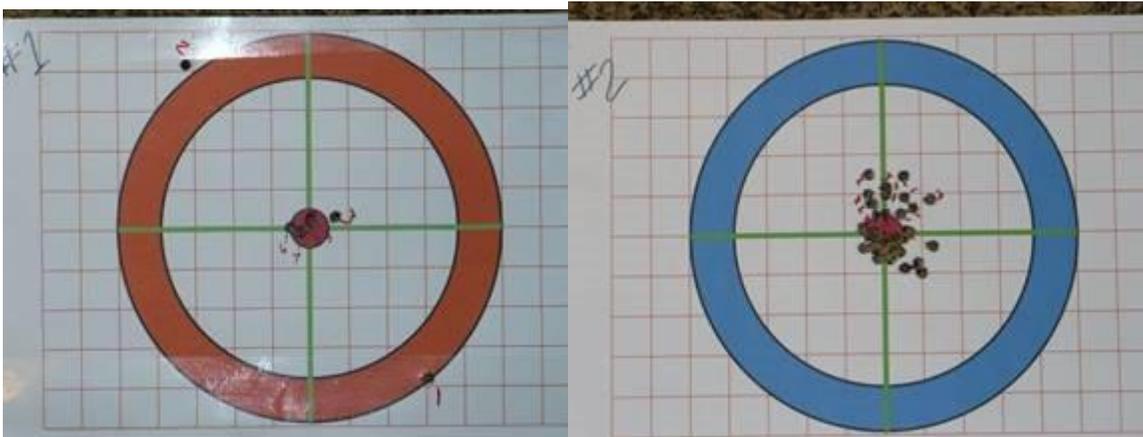
	10X	6X		10X	6X
Ed's 1 - 10X <u>Without</u> Sun Shade	6	3		5	3
Ed's 1 - 10X <u>With</u> Sun Shade	5	3		4	3
GRSC/Norden Performance 1 – 6X		2			2
Nikon Monarch 4 – 16X side focus	5	3		5	3
Nikon Buck Master 4 – 12X side focus	4	3		4	3
Vortex Viper HS LR 4 – 16X	6	5		5	5
UTG Accushot by Leapers 1.5 – 6X		3			2

Now I'm an old guy with glasses, so others results may vary, but I did my best to be as objective as possible, I even rested about 3 to 4 minutes between scopes to give my eyes a rest.

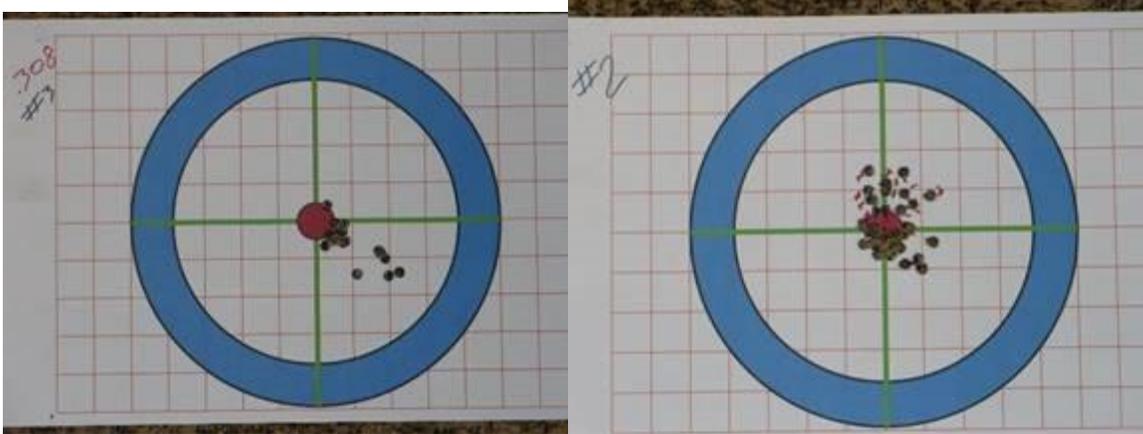
Next came sighting in The Ruger SR 762. For the sighting in, and all checking if the scope was re-zeroed, I used 7.62 NATO M-118 1979 Match 173 grain bullets at about 2550 FPS. I also used this ammo in the Remington 700 .308 rifle. For the rapid fire portion of the test, I used 7.62 WCC 87, 147 grain mil-spec Ball ammo.

The targets I used are on 11 X 17, 64 bond paper with one inch grid. The outside circle is 10 inches in diameter, and the bullseye is one inch. The target I used for the Boxing test, is a NRA 200 yard HIGH POWER RIFLE TARGET.

Target #1 is the sight in target. Seven rounds were used to sight in. After that, the durability test started. I put in a magazine of 20 Ball rounds, and from the shoulder, shooting into a back-stop, I fired as rapidly as I could until the magazine was empty. I then fired 5 rounds of match ammo into target #2, and marked the holes as 1.



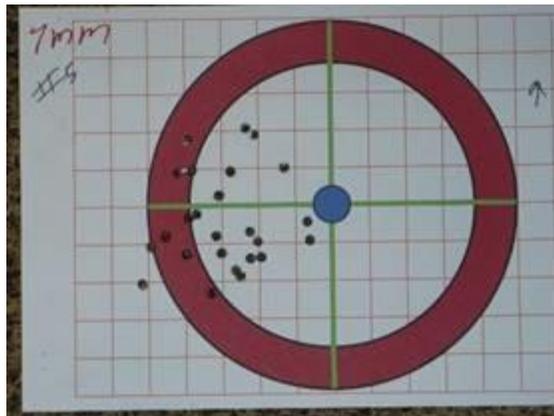
I took the scope off of the Ruger and affixed it to the Remington 700, .308 and fired 10 round into target #3. Then I remounted the scope onto the Ruger 762, and fired 5 more shots into target #2. Then I took another magazine of 20 rounds and fired them as rapidly as I could. I repeated this until I went through 100 rounds of Ball ammo, and 50 rounds in the bolt gun.



I then proceeded to mount the scope onto the .30-06. The ammunition was the reloads that I use to shoot a 20"X30" steal plate at 1760 yards. It has an 180gr, Hornady SST bullet, being pushed by 59.0gr. of Super Performance, @ about 2800 FPS. I would shoot 10 rounds into target #4, always using the bullseye as an aiming point, hence the low left group. I started to put the rifle in a Lead Sled, because I was getting a little recoil shy, and sore, which made aiming a little difficult, hence the wider pattern. As with the .308, after 10 rounds, I would remount on to the Ruger and fire 5 rounds on target # 2. I started to number the groups, but found that it returned to zero so well, I didn't have any idea where on the paper the bullets were hitting, so I stopped, and I was impressed as to how well it returned to zero after changing between the different firearms. Amazingly the groups became tighter as I went, and a little lower. Target #2 has about 70 bullets through it. I shot a total of 50 rounds of .30-06.



I then proceeded to mount the scope onto the 7 mm Remington Magnum. The ammunition was Winchester 175gr. Power Point and I chose that to be as close to the weight of the .308 and .30-06, plus that's all I had on hand. I would shoot 5 rounds into target #5, always using the bullseye as an aiming point, hence the left group. I used the Lead Sled, because I was really getting a recoil shy, and pretty sore, which made aiming a little difficult. After 5 rounds, I would remount the scope onto the Ruger SR 762 and fire 5 rounds on target # 2, and shot a total of 25 rounds of 7 mm Rem. Mag..

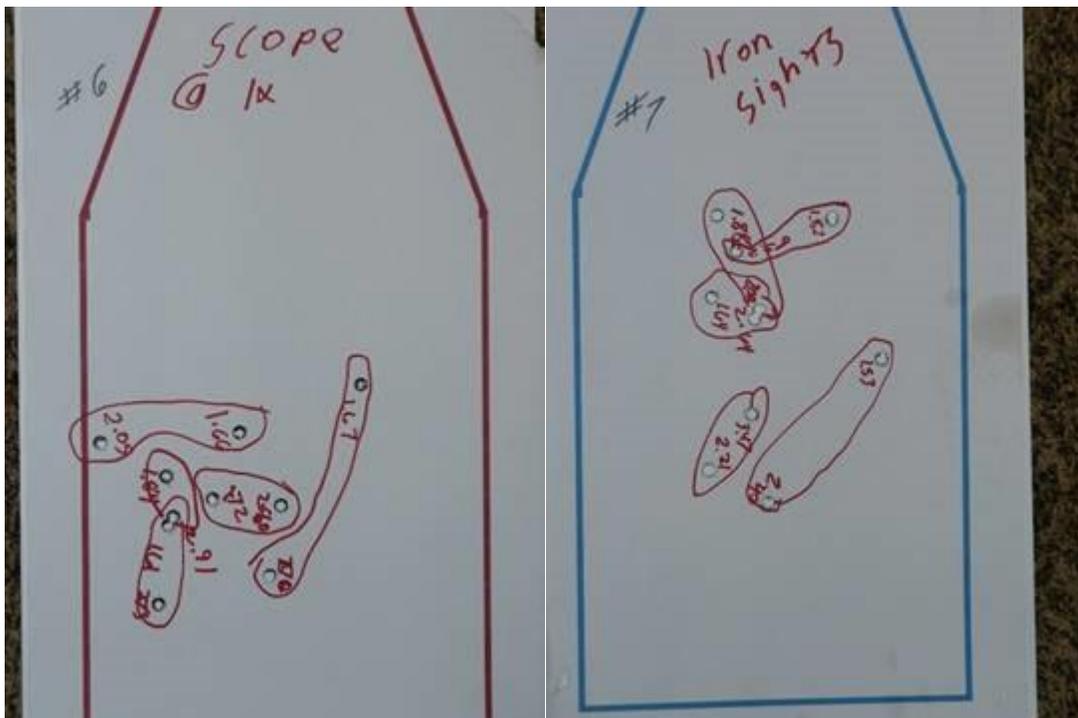


My next experiment was to Box a Target. I shot 3 rounds of the M-118ammo out of the SR 762 at large bullseye target. As an afterthought, I should have used a gridded target. Oh well..... I fired 3 rounds into the bullseye. I am impressed that it is still zeroed. Then I turned the elevation turret up 10 clicks and fired 3 more rounds. I then turned the windage turret 10 clicks to the right, and repeated the 3 shots. Then down 20 and repeat. Next left 20 and repeat. Then up 20 and repeat. Last but not least, 10 right and 10 down. The entire boxing maneuver was a little disappointing but the final group was about $\frac{1}{4}$ inch left, and $\frac{1}{4}$ inch low of the original zero. The adjustment are $\frac{1}{10}$ of a Mil, and I have done this test with several scopes and the results are about a little above average. Group sizes are acceptable, and so far all is well. The group in the lower right corner had a flyer, (just below the ruler), that was entirely my fault.



The next test was at 15 yards at what would be the center of Oregon State Police qualification targets. This was a speed exercise at 1 power compared to iron sights. The object of this exercise is to see how quickly one can pick up a target, in a CQB arena and fire 2 rounds into that target. Most people don't have 45 foot rooms, but the idea is to not be able to just point and shoot. I made an effort to make sure I had a sight picture before squeezing the trigger. This is the least scientific test, but a lot of fun. Times between shots may seem a little slow, but remember this is a .308 and the recoil makes it so that to get back on target takes an extra moment, and as I said, I only pulled the trigger when I had a sight picture. Below is a chart with the results. The scoped rifle was first, then the iron military sights. The start was initiated and timed by a Competition Electronics Pocket Pro II. A delay of 3 seconds was set so I could press the start button and have time to set it on the table next to me, then have the rifle on my shoulder at a low ready. It was held at an angle of about 40 degrees to the ground.

Scope			Iron sights	
1 st Shot	2 nd Shot		1 st Shot	2 nd Shot
1.66	2.05		1.53	2.40
1.84	2.91		2.21	3.47
1.67	2.70		1.64	2.64
1.72	2.80		1.88	2.08
1.61	2.73		1.82	2.69



The scope was a little bit easier to pick up a decent sight picture, but this is such a subjective and nonscientific test, but I found after doing this, I preferred to use the optics over the iron sights. Remember I'm old and not as fast or coordinated as I once was.

The only thing I will say about the illumination is that it still worked after the durability test. The only thing that happened was that the Eye Bell, behind the power Selector Ring, came loose and would turn about 5 degrees clockwise and counter clockwise. So I remounted the scope and fired 5 more shots on target #8, and found that I was about an inch low and the group was about 1 inch and one of the five shots went through one of the other holes and isn't readily discernable on the target. I can't comment any further until the manufacturer gets the scope back and lets us know what happened. This is a preproduction scope, so whatever the problem may be, the manufacturer will make it right. The manufacturer has been extremely helpful and cooperative throughout the development process.



SUMMARY and PERSONAL IMPRESSIONS

At first I wasn't impressed by this scope. Of course I was playing with it prior to being mounted, and inside a house. Once I mounted it and started to work with it, I became impressed. The eye relief and eye box is generous from 1 power to 7 power. From 8 to 10 power, head plant is a bit more critical, but no worse than most scopes at full power. For the use as a combat scope, 8 to 10 power would seldom be used when speed is of the essence, so at those power ranges, a soldier would have the time to acquire a proper head plant. We're talking about milliseconds here, not any unreasonable amount of time. One thing that was impressive is that, in most of my scopes, the target becomes blurry at ranges less than 100 yards, no matter what the power.

The image in this scope was clear at any power throughout the ranges from 25 to 100 yards. At 100 yards, I had no need for a spotting scope.

I also became impressed with my Ruger SR 762. With Match ammo it performed outstandingly. This is the first time since I've owned it that I've taken it out and do some serious work with it. The scope certainly enhance this rifles capabilities.

I know that the other preproduction scope was mounted on a full-auto 5.56 X 45 NATO Rifle and had 500 rounds of full auto to test its durability and had no problems. But, having it mounted to a bolt gun in 7.62 caliber and 2 large caliber bolt guns, then shot from a basically a solid rest, well, that is a torture test for any optic. That's a total of over 300 rounds of 7.62 ammo, 50 rounds of .30-06, and 25 rounds of 7MM Remington Magnum ammunition.

Still the jury is out until we find out what may have failed. Even after being damaged, it still performed admirably. A 5 shot group with all the holes touching each other is hard enough to do with pristine optics, let alone one that has some damage.

In the arena of CGB, it gives you the ability to acquire and identify your target as well if not better than iron sights, (with iron sights you have two aiming points to align). It also gives you the ability to move at full ready with one eye looking through the scope, and the other watching for peripheral targets. I have used its predecessor, (the GRSC/Norde Performance 1 – 6X), In CQB scenarios, and I prefer it over the AGOG, (fixed 4 power) and did as well as Aim Point optics.

The illumination works well indoors and in low light situations, and continued to work after all the torture the scope went through. Yes, Yes, I know the illumination doesn't work well outdoors on a sunny day, but I think God took care of that problem with the sun. Let's face it, what is the practicality of illumination outside, on a sunny day.

I was impressed with its ability to hold the zero under severe recoil, and hats off to Bobro for its mount that allows you to maximize the scopes ability to hold a zero, under torturous conditions and for quick changes without tools.

My final word, I going buy this scope and put them on my AR 10 platform rifles.