HEX Systems comments on the report "Accuracy Comparison Of An Open Vs Closed Electronic Target Systems".

Firstly, we would like to commend those who were involved with this exercise. To carry out the testing that was done is a major exercise with a lot of preliminary planning prior to the event and then the subsequent report detailing the results had to be completed. Thank you for the excellent efforts, especially as the only return to those involved is newfound knowledge which is being shared with the fellow shooters around the world.

It gives the shooters an unbiased source of missing information about the performance of Electronic Targets (ET).
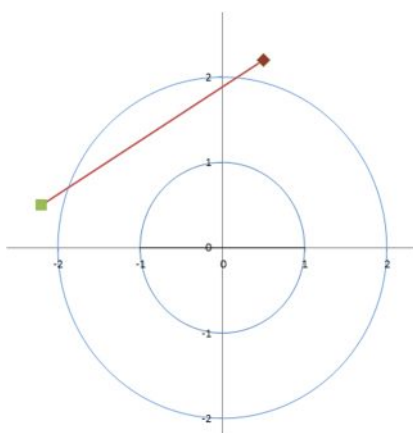
This result very much fits with our expectation and also correlates very well with the reports previously done by David Stewart and Peter Smith in Australia on 27th October 2017:

https://www.hexsystems.com.au/wp-content/uploads/2017/12/SMT-CAIRNS-880y-2017-FINAL.pdf

When reviewing the document, HEX Systems has noticed a few anomalies in the report which we would like to highlight in the following paragraphs to address in the future.

1. The report is **not** a comparison of "Open" and "Closed" ET systems as the title might suggest. ET SOLO is an improved version of the original open 4-sensor SMT system. A comparison between the HEXTA-002v2 and the original "open" SMT 4-sensor system would be significantly different. Also, HEXTA now has an improved version (HEXTA-002v3) available which has been shown to be more accurate than the version used in this test. Therefore, the document presented is a comparison of two specific target models: HEXTA -002v2 and SMT SOLO and not a "Comparison of Open and Closed system" as the title suggests.

2. The method used to calculate the ET errors in the report is different from the standard accepted ET error calculation method therefore the results are not quite correct. Please refer to the picture below. The method which is employed in the report calculates the error between the ET reported shot position and the measured paper position (see picture) **as 0 (zero)**, while the actual error is 3.2 feet. If this method were to be adopted by the NRA for approval, then any target system with such errors would be approved for competition which is obviously not acceptable.

Example: Actual shot posiiton (green dot) and ET reported shot (red dot). The distance between them is 3.2 feet.

The results calculated from the report data using the traditional methods (where the error is the distance between shot on the centred paper and shot reported by ET) are available as excel spreadsheet:

http://www.hexsystems.com.au/wp-content/uploads/2019/07/RattleSnake_tests_data_Radial_Error_calc_and_Std_calc_method_incl_NRA_reg.xlsx

The summary results are presented in the table below:

SUMMARY STATISTICS OF ABSOLUTE "RADIAL" ERROR and MAXIMUM ERROR FOR THE SESSION

NRA req=0.25inch	HEXTA, %	HEXTA MAX err, inch	SOLO, %	SOLO MAX err, inch
600YD	94.4% (34of36)	0.266	33.3% (12of36)	1.189
800YD	95.0% (19of20)	0.338	20.0% (4of20)	2.919
1000YD	88.0% (22of25)	0.444	4.0% (1of25)	1.972

NOTE : - With such a limited number of samples, when a single shot falls outside the NRA limit a "cost" penalty increment of 5% of the accuracy performance is the result. It shows how critical the measurement process is. The number of acquired samples used is not enough to present information percentage-wise as the results have a very poor resolution (quantization).

3. It is accepted that usually about 5% of the errors are introduced by misreading the ruler during the measurement process, so all extremes should be re-verified. Unfortunately the original data plot scan is not included into the report therefore it is impossible to validate the extremes.

4. The important parameter of maximum errors (MAX errors) has been observed during the test session but is not immediately visible in the report document due to "nesting" of the data files. We believe that the maximum error during the shooting session is what most shooters would have related to when they voted on the US forum for the level of "acceptable error" and that this is also the meaning of the error in the current NRA requirements. Below is the table which includes recalculated plain target errors and maximum errors observed during the test. All data has been derived from the report.

SUMMARY STATISTICS OF ERROR, inch

	HEXTA			SOLO		
	Average	SD	MAX	Average	SD	MAX
600YD	0.103	0.069	0.266	0.459	0.266	1.189
800YD	0.106	0.077	0.338	0.686	0.602	2.919
1000YD	0.168	0.087	0.444	0.936	0.518	1.972

5. This test has not addressed the ET's functionality in a noisy (more than one target if on the range) environment. The practical aspects of the use of multiple ET's side by side on a shooting range where more than one target is in use simultaneously should also be evaluated.

6. The test report also does not appear to offer any comment concerning the apparent movement of the SOLO acoustical centre when shooting from different range distances which is evident in the report's results.

Despite the above-mentioned issues, HEX Systems is extremely grateful to and applauds the efforts of the many people involved with this exercise as their efforts extended far and beyond that of writing this report. We feel it is vital to encourage people to continue to independently review and provide feedback about the ET Systems on offer throughout the world. This information is an essential resource for potential purchasers to make a considered and informed choice when purchasing an ET System.