

TECHNICAL NOTES ON THE OPTICAL CONFIGURATION OF VST INCLUDING AN ADC

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1 Introduction

In the study of ADC to be inserted in the optical design of VST, we considered two possible solutions. In one of them the ADC had flat entrance and exit surfaces and in the other one, the external surfaces were curved. In the next sections the two systems are described. It would be necessary to contact Zeiss to know as soon as possible if both solutions are reliable and to have indications about costs of manufacturing and handling.

2 ADC with entrance and exit curved surfaces

The ADC has curved entrance and exit surfaces and is inserted between the third lens and the filter.

The triplet is the same of the last configuration sent to Zeiss, while the rays of curvature and the conics of the mirrors were modified. In Table 1-1 the ADC optical data are reported.

In Figure 2-1 the camera, ADC, filter and dewar window layout is reported.

In Figures 2-2, 2-3, 2-4 spot diagrams corresponding to the minimum dispersion configuration at zenith, maximum dispersion at 60° and ADC compensation at 60° are shown.

Surface	Material	Ray of curvature	Prism angle	Thickness	Diameter
1	UBK7	1584.9 mm		16 mm	352.948 mm
2	LLF6	infinity	2.8 deg	14 mm	353.420 mm
3	air			3 mm	351.866 mm
4	UBK7	infinity		16 mm	351.912 mm
5	LLF6	-4893.87	-2.8 deg	14 mm	352.687 mm

Table. 2-1 Optical data for the ADC with curved entrance and exit surfaces

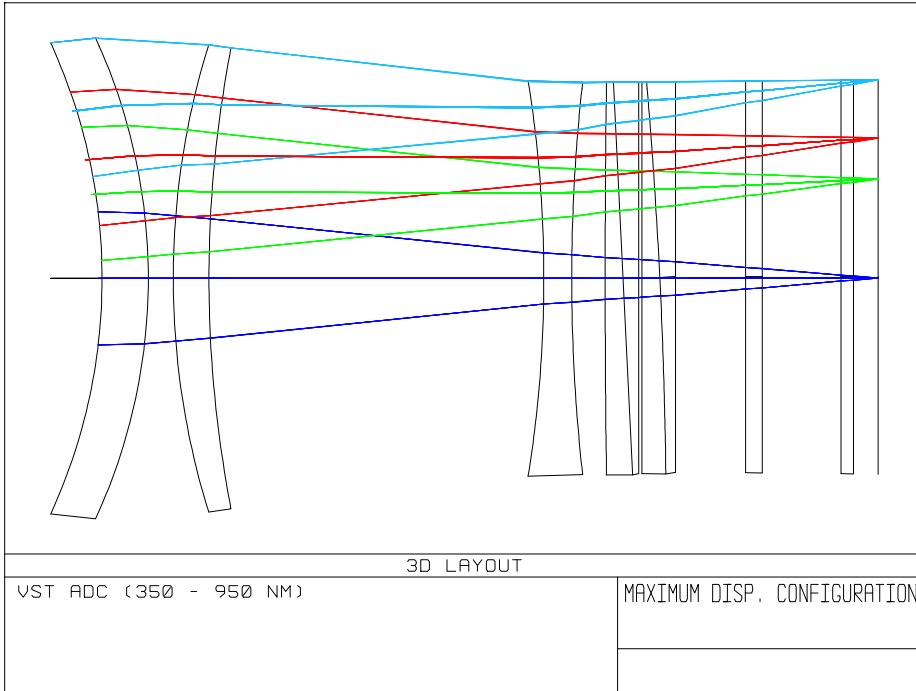


Figure.2-1 Camera and ADC with curved surfaces in the maximum dispersion configuration

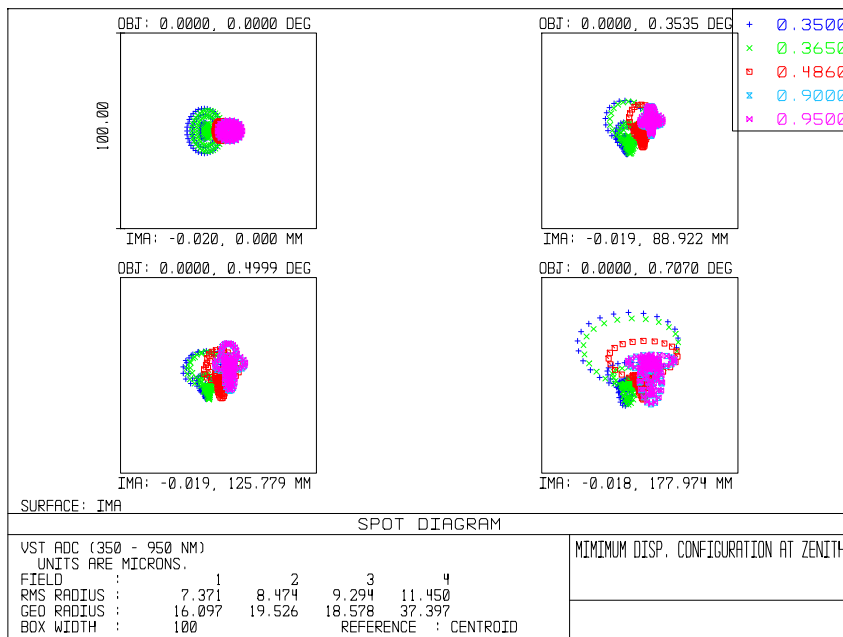


Figure.2-2 Spot corresponding to the configuration of minimum dispersion at zenith

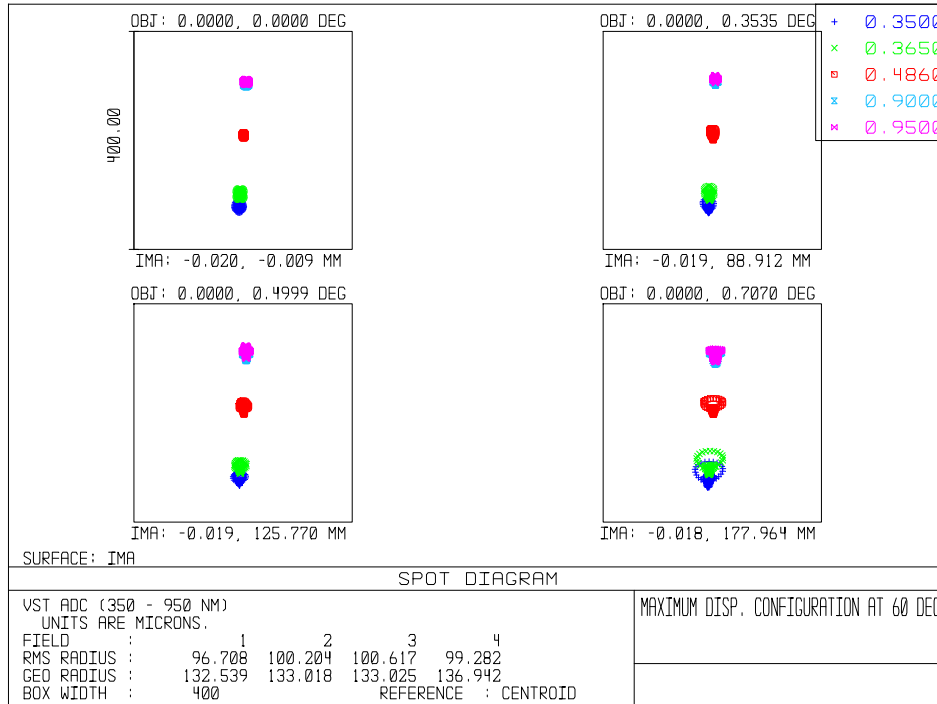


Figure.2-3 Spot corresponding to maximum dispersion at 60°

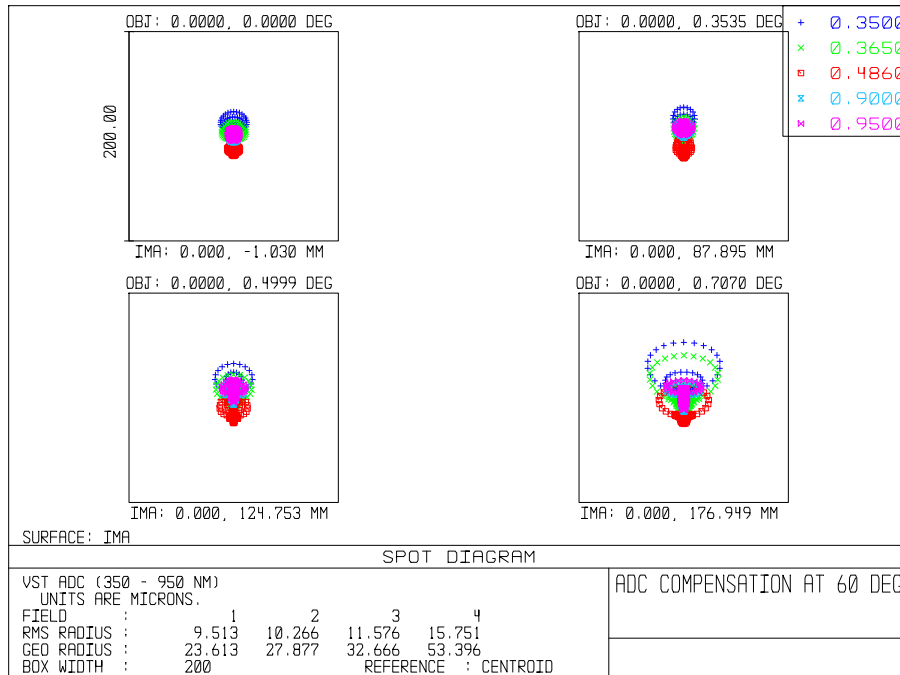


Figure.2-4 Spot corresponding to the ADC compensation at 60°

3 ADC with flat entrance and exit surfaces configuration

This design has an ADC with all flat surfaces. The lenses of the camera were reoptimized together with the mirrors parameters respect to the previous solution. The rays of curvatures were normalized to Din Tables.

In Table 3-1 the ADC optical data are reported.

In Figure 3-1 the camera, ADC, filter and dewar window layout is reported.

In Figures 3-2, 3-3, 3-4 spot diagrams corresponding to the minimum dispersion configuration at zenith, maximum dispersion at 60° and ADC compensation at 60° are shown.

Surface	Material	Ray of curvature	Prism angle	Thickness	Diameter
1	UBK7	Infinity		15 mm	352.336 mm
2	LLF6	Infinity	3 deg	15 mm	353.13 mm
3	air			3 mm	354.28 mm
4	UBK7	Infinity		15 mm	354.336 mm
5	LLF6	Infinity	-3 deg	15 mm	354.89 mm

Table. 3-1 Optical data for the ADC with curved entrance and exit surfaces

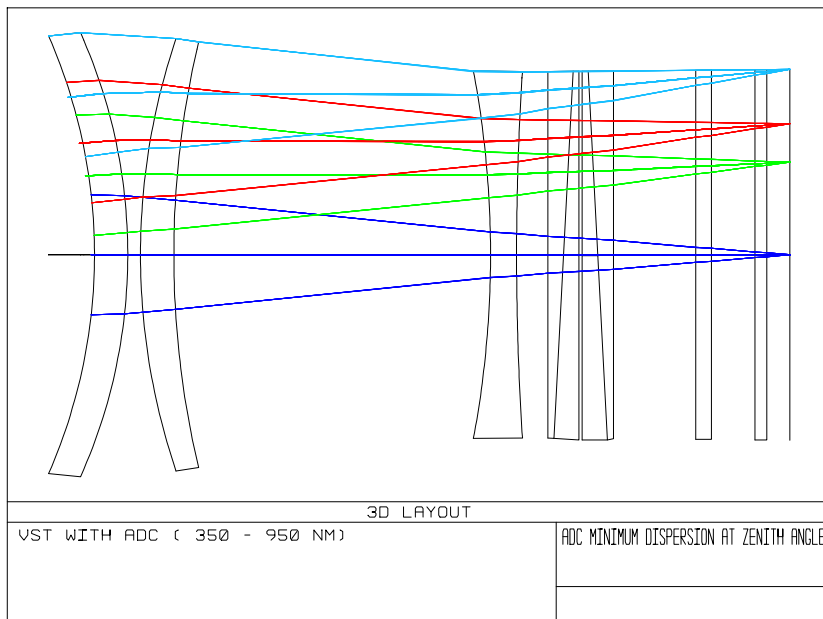


Figure. 3-1 Camera and ADC with flat surfaces in the minimum dispersion configuration

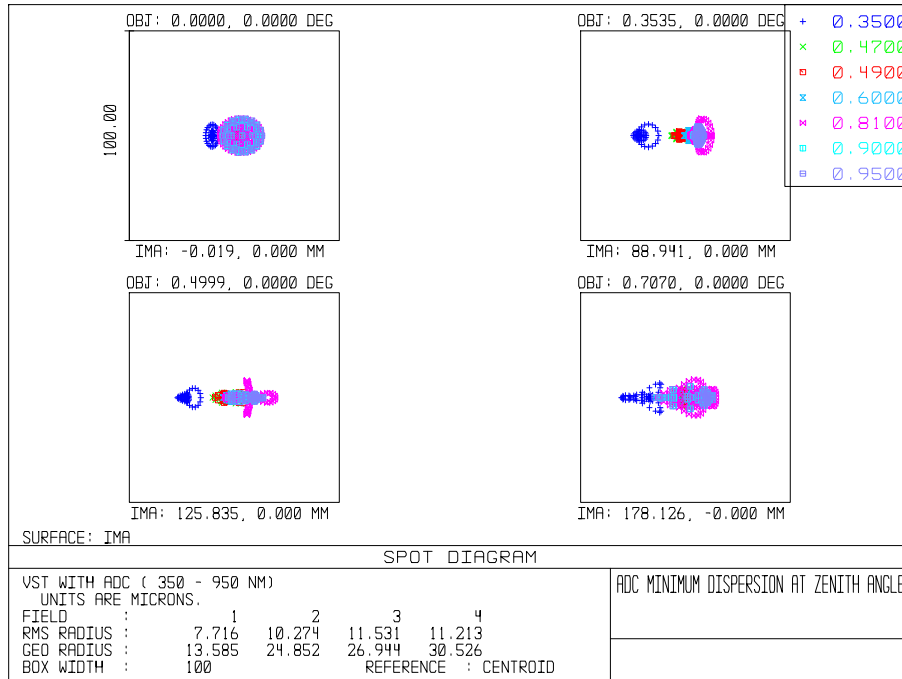
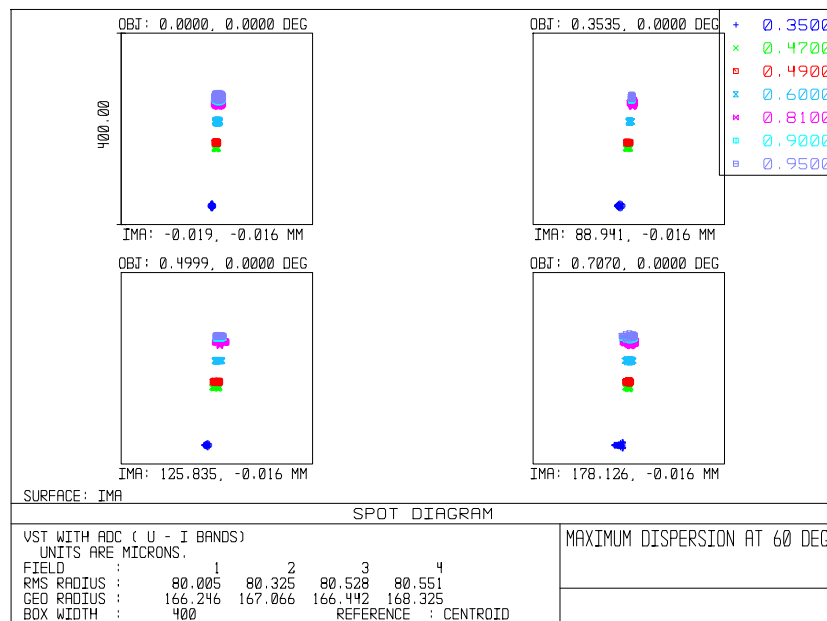


Figure. 3-2 Spot corresponding to the minimum dispersion at the zenith angle with ADC



Figur 3-3 Spot corresponding to the maximum dispersion at 60°

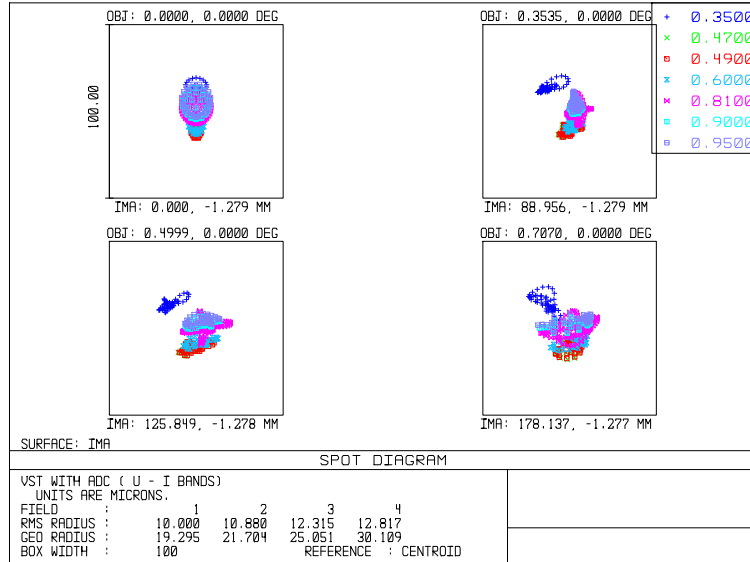


Figure. 3-4 Spot corresponding to the ADC compensation at 60°