Front-End Fibre Assembly Requirements

Document Number VLT-SPE-MON-14620-1008

Revision: 3.0

Date ..... 8th March 2018

Status ..... Approved

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1 INTRODUCTION

1.1 Scope of Document

This document covers the design, manufacture, assembly, test and delivery of the Front-End Fibre Assembly units (FFA) for MOONS.

1.2 Intended Audience

Contractor for the fibre front-end assembly

1.3 Terminology

The following interpretation shall be associated with the phrasing of requirements in this document:

May	:	Suggested or optional requirement
Shall	:	Mandatory requirement.
Should	:	Non-mandatory requirement which could be a goal.
Will	:	Statement of fact or declaration of purpose.

The **MOONS Consortium**, or Customer, is represented by the UK Astronomy Technology Centre

2 APPLICABLE AND REFERENCE DOCUMENTS

Not Used

3 SCOPE OF WORK

3.1 Quotation Requirements

3.1.1 Firm price quotation, per unit, for FFA assemblies, up to a maximum of 1100 off.

3.1.2 Lead times for the delivery of each FFA assembly, starting from the date of receipt of the free-issued components (see Section 3.3.1).

3.1.3 Non-recurring costs,

3.2 Vendor Scope

3.2.1 Manufacture, test and delivery of FFA assemblies to the design and interface definitions stated in Section 4.

3.2.2 Written description of the design and manufacturing/assembly process, illustrated with drawings as appropriate.

3.2.3 Manufacture and test of a pre-production batch to demonstrate proof of compliance. The pre-production units shall be 100% tested for the tilt of the beam and the focus position.

3.2.4 Test Report and Certificate of Conformity for each FFA.

3.3 Customer Scope

3.3.1 Free-issue of assembled fibres, with ferrules and connectors fitted, by a date commensurate with the lead times quoted in Section 3.1.2.

3.3.2 Verification of pre-production batch against the technical requirements.

4 TECHNICAL REQUIREMENTS

4.1 Requirements

4.1.1 Ferrule and fibre

4.1.1.1 The raw fibre assembly Will be free-issued to the Vendor - see Appendix A. This comprises a fibre glued inside a ferrule and polished. At the opposite end, the fibre is fitted into a smaller diameter ferrule.

4.1.2 Lens

4.1.2.1 The lens Shall conform to the specifications given in Appendix B. Note – the wedge specification on the lens is not critical as long as the final glued assembly is within the requirement for beam tilt.

4.1.3 Mechanical requirements

4.1.3.1 The lens Shall be glued to the ferrule, so as to achieve the specifications given in Appendix D.

Note - the key datum is the optical axis defined by a beam of light emerging from the fibre.

4.1.3.2 A field stop aperture Shall be created in front of the lens, as per the specifications given in Appendix C.

4.1.3.3 A rigid housing, with external dimensions as per the dark outer line on the drawing given in the sleeve drawing in Appendix D, Shall be incorporated around the ferrule. This housing Shall hold the field stop and lens at the correct distance from the rear flange as indicated in the drawings in Appenix C and D.

4.1.3.4 All gluing operations Will use an adhesive appropriate for the operating conditions (see 4.1.4) and instrument wavelength range of 600-1800 nm.

4.1.3.5 There Shall be no air gap between the ferrule and the lens.

4.1.4 Operating Conditions

4.1.4.1 The FFA Shall be robust to an ambient temperature range of -10°C to 30°C.

4.1.4.2 The FFA Shall be robust to an ambient humidity range of 3% to 60%.

APPENDIX A. FERRULE AND FIBRE DETAILS

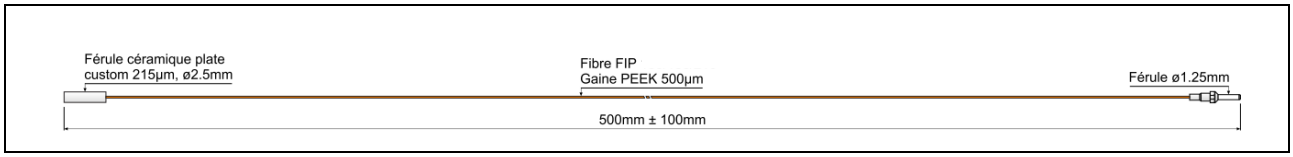


Figure 5-1 – Fibre assembly

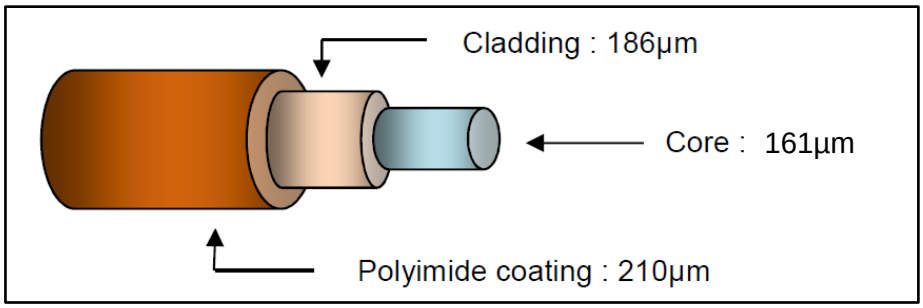


Figure 5-2 – Fibre dimensions

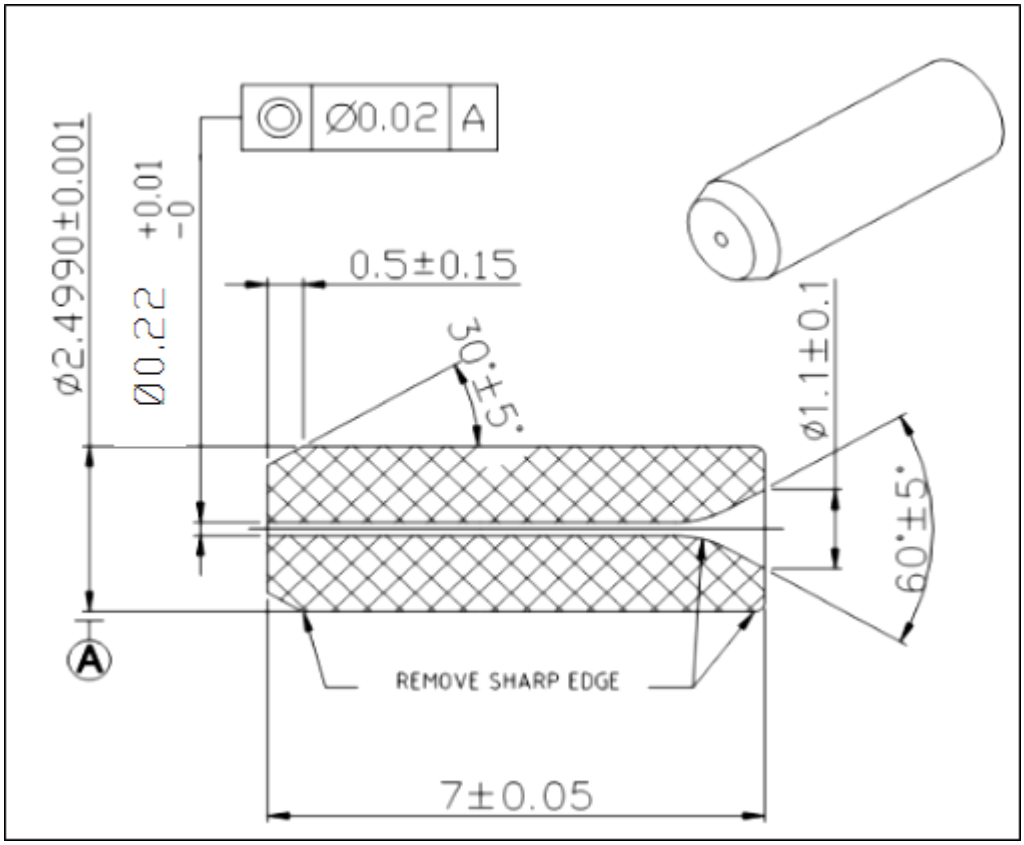
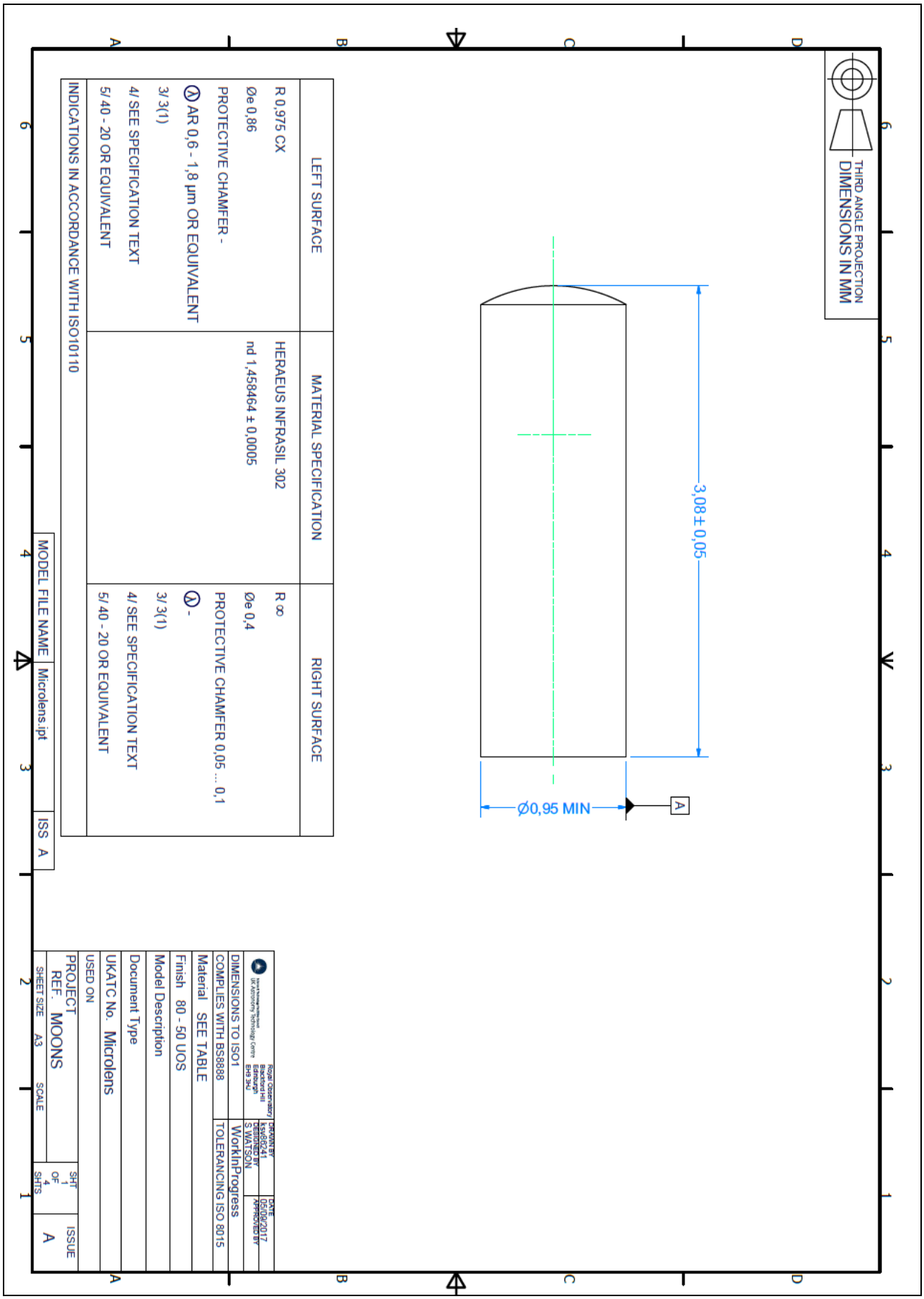
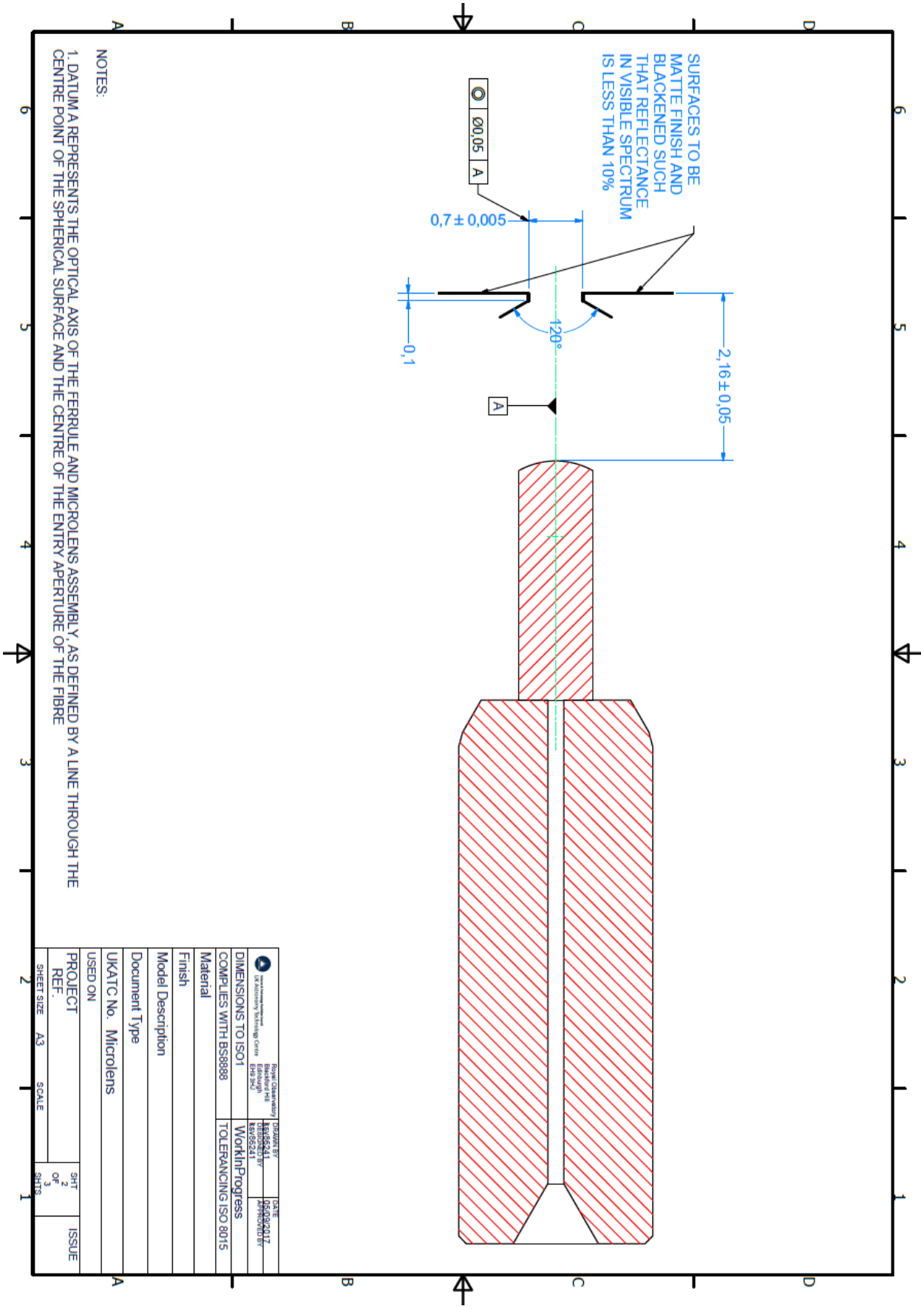


Figure 5-3 – Ferrule dimensions

APPENDIX B: MICROLENS DRAWING



APPENDIX C: FIELD STOP DEFINITION



APPENDIX D: SLEEVE DRAWING