Note - The NA of the collecting optics in I b) and I c) must be large enough not to affect the measurement results.

I.Far-field domain

A nominal 1300 mn light source for illuminating the core shall be used. The light source shall be adjustable in intensity and stable in position, intensity and wavelength over a time period sufficiently long to complete the measurement procedure. The spectral characteristics of this source should be chosen to preclude multimode operation. A second light source with similar characteristics can be used, if necessary, for illuminating the cladding. The spectral characteristics of the second light source must not cause defocussing of the image.

Note - The validity of the image shearing technique is under study and needs to be confirmed.

Care should be taken that higher order modes do not propagate. For this purpose it may be necessary to introduce a loop of suitable radius or another mode filter in order to remove higher order modes.

The specimen shall be a short length of the optical fibre to be measured. Primary fibre coating shall be removed from the section of the fibre inserted in the mode stripper, if used. The fibre ends shall be clean, smooth and perpendicular to the fibre axes. It is recommended that the end faces be flat and perpendicular to the fibre axes to within 1^{o}. For the offset joint technique, the fibre will be cut into two approximately equal lengths.

B.1.2.7 Offset or scan apparatus

a) Far-field scan system

A mechanism to scan the far-field intensity distribution shall be used (for example, a scanning photodetector with pinhole aperature or a scanning pig-tailed photodetector). The scan may be either angular or linear. The detector should be at least 20 mm from the fibre end, and the detector's active area should not subtend too large an angle in the far field. This can be assured by placing the detector at a distance from the fibre end greater than 20 Wb/+, where 2 W is the expected mode field diameter of the fibre to be measured, and b is the diameter of the active area of the detector.

II.Offset joint domain

Traversing joint

The joint shall be constructed such that the relative offset of the fibre axes can be adjusted. A means of measuring the offset to within 0.1 μm is recommended. The optical power transmitted through the traversing joint is measured by a detector.

III.Near-field domain

Annex B

(to Recommendation G.652)

Test methods for single-mode fibres

The mode field diameter may be determined in the far-field domain from the far field intensity distribution, $F^2(q)$, from the knife-edge transmission function, K(+); or from the complementary aperture power transmission function, ∝(+); ιν τηε οφφσετ φοιντ δομαιν φρομ τηε σθυαρε οφ τηε αυτοχορρελατιον φυνχτιον, T(_); ιν τηε νεαρ−φιελδ δομαιν φρομ τηε νεαρ φιελδ ιντενσιτψ διστριβυτιον, $\phi^2(\rho)$; αχχορδινγ το τηε εθυιϖαλεντ δεφινιτιονσ σηοων ιν/ A.1 ιν Αννεξ Α το Ρεχομμενδατιον Γ.652.

B.1.2Test apparatus

It is customary to modulate the light source in order to improve the signal/noise ratio at the receiver. If such a procedure is adopted, the detector should be linked to a signal processing system synchronous with the source modulation frequency. The detecting system should have substantially linear sensitivity characteristics.

B.1.2.4 Launching conditions

The launching conditions used must be sufficient to excite the fundamental (LP_{01}) mode. For example, suitable launching techniques could be: