CERTIFICATE OF ACCREDITATION

In terms of section 22(2) (b) of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006), read with sections 23(1), (2) and (3) of the said Act, I hereby certify that:-

NATIONAL METROLOGY INSTITUTE OF SOUTH AFRICA FIBRE OPTICS CALIBRATION LABORATORY

Accreditation Number: 1618

is a South African National Accreditation System accredited Calibration Laboratory provided that all SANAS conditions and requirements are complied with

This certificate is valid as per the scope as stated in the accompanying scope of accreditation Annexure "A", bearing the above accreditation number for

FIBRE OPTICS METROLOGY

The facility is accredited in accordance with the recognised International Standard

ISO/IEC 17025:2017

The accreditation demonstrates technical competency for a defined scope and the operation of a laboratory quality management system

While this certificate remains valid, the Accredited Facility named above is authorised to use the relevant SANAS accreditation symbol to issue facility reports and/or certificates

Mr M Phaloane Acting Chief Executive Officer

Effective Date: 03 November 2020 Certificate Expires: 31 March 2024

ANNEXURE A

SCOPE OF ACCREDITATION

FIBRE OPTICS METROLOGY

Accreditation Number: 1618

Permanent Address of Laboratory: National Metrology Institute of SA Fibre Optics Calibration Laboratory Building 5, CSIR Campus Meiring Naude Road Brummeria, Pretoria 0001 Postal Address: Private Bag X34 Lynnwood Ridge Pretoria 0040			<u>Technical Signatories:</u> Nominated Representative:		Ms M Nel Mr P Jivan Ms LN Ntatamala				
Tel:	(012) 841-3193		Issue No).:	09				
Fax:	(012) 841-4458		Date of I	ssue:	03 November 2020				
E-mail	nail: <u>Intatamala@nmisa.org</u>		Expiry Date:		31 March 2024				
ITEM	MEASURED QUANTITY OR TYPE OF GAUGE OR INSTRUMENT	MEASUREMENT CON	DITIONS	RANGE OF MEASURED QUANTITY	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	METHOD/ PROCEDURE			
7 FIBRE OPTICS									
7.1.0	Fibre Optic Power - responsivity	Nominal Wavelength: 1 310 nm and 1 518 nm to 1 632 nm Type of Fibre: single mode		1 μW to 10 mW (or -30 dBm to 10 dBm)	1,5 % (or 0,065 dB)	Calibration by comparison with a laboratory standard			
	Nominal Wavelength: 850 Type of Fibre: multi mode Nominal Wavelength: 1 3 Type of Fibre: multi mode		50 nm de	1 μW to 2 mW (or -30 dBm to 3 dBm)	1,8 % (or 0,078 dB)	Calibration by comparison with a laboratory standard			
			300 nm de	1 μW to 10 mW (or -30 dBm to 10 dBm)	1,5 % (or 0,065 dB)	Calibration by comparison with a laboratory standard			
7.2.0	Wavelength - of a Source			600 nm to 1 750 nm (Excluding wavelengths covered below)	0,2 nm	Direct measurement with laboratory standard			
				1 511 nm to 1625 nm	0,05 nm	Direct measurement with laboratory standard OR/AND Power absorption method using reference absorption peaks			

Original Date of Accreditation: 29 September 2009

Page 1 of 2

The CMC, expressed as an expanded uncertainty of measurement, is stated as the standard uncertainty of measurement multiplied by a coverage factor k = 2, corresponding to a confidence level of approximately 95%

ANNEXURE A

Accreditation No.: 1618 Date of Issue: 03 November 2020 Expiry Date: 31 March 2024

ITEM	MEASURED QUANTITY OR TYPE OF GAUGE OR INSTRUMENT	MEASUREMENT CONDITIONS	RANGE OF MEASURED QUANTITY	CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±)	METHOD / PROCEDURE
7.2.1	Wavelength - scale of Optical Spectrum Analyser		600 nm to 1 750 nm (Excluding wavelengths covered below)	0,2 nm	Direct comparison with a laboratory standard
			1 511 nm to 1625 nm	0,01 nm	Direct comparison with a laboratory standard
7.2.2	Wavelength - scale of wavelength meter		600 nm to 1750 nm (Excluding wavelengths covered below)	0,2 nm	Direct comparison with a laboratory standard
			1 511 nm to 1625 nm	0,005 nm	Direct comparison with a laboratory standard
7.5.2	OTDR loss scale deviation	Attenuation range OTDR Nominal Wavelength	37 dB to 14 dB 1310 nm and 1550 nm	0,014 dB/dB	Standard fibre method
7.10.0	Optical length	Nominal Wavelength: 1 310 nm 1 550 nm 1 625 nm Type of Fibre: single mode	5 ns to 300 μs	2•10 ⁻⁵ t + 200 ps	Calibration using time of flight method
		Wavelength: 1 300 nm Type of Fibre: multimode	5 ns to 50 μs		Calibration using time of flight method
		Wavelength Range: 1 550 nm to 1 625 nm Type of Fibre: Single mode	5 ns to 300 µs	2•10 ⁻⁵ t + 300 ps	Calibration using time of flight method
7.10.1	OTDR distance and location scale	Distance scale deviation Location offset Wavelength 1 310 nm, 1 550 nm Type of Fibre: single mode		3,6•10⁻⁵ 0,64m	Concatenated fibre method AND Calibration by using a calibrated fibre standard
		Distance scale deviation Location offset Wavelength 1625 nm Type of Fibre: single mode		4,2•10 ⁻⁵ 0,75 m	Concatenated fibre method AND Calibration by using a calibrated fibre standard

Original Date of Accreditation: 29 September 2009

Page 2 of 2

The CMC, expressed as an expanded uncertainty of measurement, is stated as the standard uncertainty of measurement multiplied by a coverage factor k = 2, corresponding to a confidence level of approximately 95%

ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Accreditation Manager