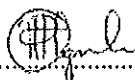
	<b>Specification</b>	<b>Document Classification: Controlled Disclosure</b>
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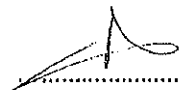
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## **1 INTRODUCTION**

Eskom Telecommunications make use of a large variety of test instruments for maintenance and installation of various equipment in the telecommunications network. In order to achieve accurate readings from the test instruments, it is essential that the test equipment be calibrated on a regular basis and also be repaired when faulty. A service provider is required to provide this service on an ad hoc basis for the duration of the contract. A list of test equipment is provided in section 3.3 below.

## **2 SUPPORTING CLAUSES**

### **2.1 Scope**

#### **2.1.1 Purpose**

The purpose of this document is to specify the scope of work for calibration and repair of test equipment used for maintenance of the Eskom Telecomms network. This document will be used to guide the service provider's expectations as to the scope requirements for the support and repairs.

#### **2.1.2 Applicability**

This document shall apply throughout Eskom Holdings Limited, its divisions, subsidiaries and entities wherein Eskom has a controlling interest.

### **2.2 Normative/Informative References**

Parties using this document shall apply the most recent edition of the documents listed below:

#### **2.2.1 Normative**

- ISO 9001:2000 Quality Management Systems
- 240-76624513 Standard for the calibration of test instruments used by field staff
- 240-95637584 Work Instruction for Control of Monitoring and Measuring Equipment
- 240-53665024 Engineering Quality Manual

### **2.3 Informative**

- ETFM1713 List of ET Equipment for Calibration
- ETPR 0719 Calibration Procedure for Test Equipment

### **2.4 Definitions**

<b>Definition</b>	<b>Explanation</b>
Eskom Telecomms	A business unit in Eskom Holdings.
Service Provider	External party responsible for the repair and calibration of the hardware equipment that is described in the Scope of work
ISO 17025	International standard for calibration and testing

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Definition	Explanation
Calibration Sticker	A sticker affixed to an instrument that shows its calibration status. The sticker typically indicated the instrument's identification; who performed the last calibration and when, and the date of the next scheduled calibration.

## **2.5 Abbreviations**

Abbreviation	Explanation
ET	Eskom Telecomms
OEM	Original Equipment Manufacturer
RSA	Republic of South Africa
SLA	Service Level Agreement
QA	Quality Assurance
SANAS	South African National Accreditation System

## **2.6 Roles and Responsibilities**

As defined in the document content.

## **2.7 Implementation Date**

The implementation date is the date of the authorising signature.

## **2.8 Process for monitoring**

Implementation of the scope will be monitored through the contract process.

## **2.9 Related / Supporting Documents**

N/A

### 3 DOCUMENT CONTENT

#### 3.1 Scope of Work

- 3.1.1 The service provider is expected to assess the faulty equipment and provide Eskom with a quote. The quote shall be for repairing or calibrating the item and delivery to Eskom Telecomms warehouse in Germiston. An order can only be created after a quotation is received by Eskom. Repairs/ calibration shall only be done after receiving an order from Eskom.
- 3.1.2 The support and repairs shall be on an as and when required basis for the duration of the contract.

#### 3.2 Equipment Repair and Calibration Requirements

- 3.2.1 Eskom telecommunications require calibration and repairs of test instruments used in provisioning of telecommunications services on an as and when required basis.
- 3.2.2 Each calibrated or repaired test instrument should be accompanied by a "SANAS certificate (ISO 17025)" and a report stating calibration information (deviation from standard and adjustments).
- a) All equipment listed in section 3.3 shall be calibrated according to SANAS Accreditation stipulations and the relevant certificate to be issued.
  - b) A report of calibration results shall be returned by the service provider indicating both pre and post calibration results.
  - c) The calibration certificates for the equipment that is not SANAS accreditation should reflect the standard the calibration is traceable to.
  - d) Repaired equipment must be accompanied by a QA certificate and a calibration certificate bearing its serial number including the traceable/tracking info of the test equipment used for the calibration.
- 3.2.3 Calibrated equipment shall have a calibration sticker affixed to the instrument indicating the test instrument's calibration status and the next calibration date. The calibration certificate shall be valid for a period of three years.
- 3.2.4 Faulty test instruments must be accompanied by a "root cause analysis" report detailing the cause of the fault and what repairs were done.
- 3.2.5 Supplier shall provide a quote for the work within 5 working days of receiving a request from Eskom.
- 3.2.6 Supplier shall adhere to the Eskom Telecomms Quality procedure whilst calibrating the test equipment.
- 3.2.7 Supplier shall keep records of calibrating certificates and equipment that they calibrated.
- 3.2.8 Supplier shall report on equipment due for calibration at least 6 weeks before expiry.
- 3.2.9 Supplier shall provide monthly report on overdue equipment.
- 3.2.10 Turnaround time for repairs: 30 working days.
- 3.2.11 Turnaround time for calibration: 15 working days.

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3.2.12 State your guaranteed turnaround time

3.2.13 The supplier shall provide at least year warranty for repaired equipment.

3.2.14 Supplier to provide OEM accreditation/ certification as well as own equipment calibration certificates.

3.2.15 The items must be tracked by serial numbers. The same unit that is sent for repair shall be sent back to Eskom whether repairable or not.

3.2.16 All major part replacements (above 15% of the retail value) shall be authorised by Eskom.

3.2.17 A fault report on repaired or irreparable items shall contain, at least, the following information,

- a) The serial number of the device.
- b) Fault description (which module is faulty).
- c) Where possible to identify the cause for the failure.

3.2.18 All equipment shall be repaired in RSA where possible. In the case where this is not possible Eskom shall authorise the exporting of the item.

3.2.19 The service provider shall provide direct, traceable, access to a fault-logging centre.

### 3.3 . Equipment List

*The following equipment shall be quoted on the repair and replacement of each item.*

Materia l	Description	Quantity	Price
10	TESTER;1310NM,FIBRE OPTIC LASER CAL		
20	TESTER;132A;DIGITAL ANALYSER CAL		
30	TESTER;1417,PCM METER CAL		
40	TESTER;147,DIGITAL ANALYSER CAL		
50	TESTER;1550NM,FIBRE OPTIC LASER CAL		
60	TESTER;195,RCL METER CAL		
70	TESTER;1999, FREQUENCY COUNTER CAL		
80	TESTER;200EP TONE & PROBE TEST CAL		
90	TESTER;2024,OSCILLATOR CAL		
100	TESTER;2031,SIGNAL GENERATOR CAL		

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110	TESTER; 2040, ICT TEST SET CAL		
120	TESTER; 210, HE DENMARK TEST SET CAL		
130	TESTER; 2187, ATTENUATOR CAL		
140	TESTER; 2230, DIGITAL OSCILLOSCOPE CAL		
150	TESTER; 2245A, OSCILLOSCOPE CAL		
160	TESTER; 2390, ANALYSER CAL		
170	TESTER; 2501, LEVEL METER CAL		
180	TESTER; 25B, FREQUENCY COUNTER CAL		
190	TESTER; 2841, ANALYSER CAL		
200	TESTER; 3000A, FREQUENCY COUNTER CAL		
210	TESTER; 3000E, DIGITAL ANALYSER CAL		
220	TESTER; 3022, COUPLER CAL		
230	TESTER; 302X, EXFO POWER METER CAL		
240	TESTER; 314, OSCILLOSCOPE CAL		
250	TESTER; 3151, HIOKI METER CAL		
260	TESTER; 35.20, POWER SUPPLY CAL		
270	TESTER; 3630, DATACOM ANALYSER CAL		
280	TESTER; 3731, AEMCI TEST SET CAL		
290	TESTER; 390, BUTTINSKI PHONE CAL		
300	TESTER; 40, EPROM PROGRAMMER CAL		
310	TESTER; 4000, DIGITAL ANALYSER CAL		
320	TESTER; 4146, LEVEL METER CAL		
330	TESTER; 448974.0, AUDIO MEASURING CAL		
340	TESTER; 468, DIGITAL OSCILLOSCOPE CAL		
350	TESTER; 4G, PROGRAMMER CAL		
360	TESTER; 53320, ANALYSER CAL		
370	TESTER; 5504, OSCILLOSCOPE CAL		
380	TESTER; 60-36, POWER SUPPLY CAL		
390	TESTER; 630, KAO TEST SET CAL		
400	TESTER; 70-1101, EPROM ERASER CAL		
410	TESTER; 740669, LEICA DISTRO METER CAL		
420	TESTER; 8031F, MAJORTECH METER CAL		
430	TESTER; 8080, ATTENUATOR CAL		
440	TESTER; 8412 NO18B, OHM METER CAL		

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450	TESTER;897733-1OSCILLOSCOPE CAL		
460	TESTER;940-114-34,ATTENUATOR CAL		
470	TESTER;940-60-33,ATTENUATOR CAL		
480	TESTER;940-60-34,ATTENUATOR CAL		
490	TESTER;9902,FREQUENCY COUNTER CAL		
500	TESTER;A-800,ANALYSER CAL		
510	TESTER;AR2002,COMMS MONITOR CAL		
520	TESTER;BIRD 33,WATT METER CAL		
530	TESTER;BIRD 4304,WATT METER CAL		
540	TESTER;BIRD 4304A,WATT METER CAL		
550	TESTER;BIRD 50A,WATT METER CAL		
560	TESTER;CJ90020,TEST SET CAL		
570	TESTER;CM.60A,CHARGER CAL		
580	TESTER;CMS 64,COMMS MONITOR CAL		
590	TESTER;CMTA 54,ANALYSER CAL		
600	TESTER;CPM46,POWER METER/FREQUEN CAL		
610	TESTER;DCS7040,OSCILLOSCOPE CAL		
620	TESTER;DM6013A,CAPACITANCE METER CAL		
630	TESTER;DMM 196,MULTIMETER CAL		
640	TESTER;DT85,DATA LOGGER CAL		
650	TESTER;E-10,SUNSET TEST SET CAL		
660	TESTER;E-20,SUNRISE TEST SET CAL		
670	TESTER;ER30T,EPROM ERASER CAL		
680	TESTER;EX-702,PROGRAMMER CAL		
690	TESTER;P3,ORGANO DE-IONISER CAL		
700	TESTER;FB260,OTDR CAL		
710	TESTER;FO7102,FREQUENCY COUNTER CAL		
720	TESTER;FLUKE 10,MULTIMETER CAL		
730	TESTER;FLUKE 100V,MULTIMETER CAL		
740	TESTER;FLUKE 111,MULTIMETER CAL		
750	TESTER;FLUKE 175,MULTIMETER CAL		
760	TESTER;FLUKE 177,MULTIMETER CAL		
770	TESTER;FLUKE 179,MULTIMETER CAL		
780	TESTER;FLUKE 187,DIGITALMULTIMETER CAL		



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790	TESTER;FLUKE 199CS,OSCILLOSCOPE CAL		
800	TESTER;FLUKE 650,LAN CABEL METER CAL		
810	TESTER;FLUKE 72,MULTIMETER CAL		
820	TESTER;FLUKE 73 111,MULTIMETER CAL		
830	TESTER;FLUKE 73,MULTIMETER CAL		
840	TESTER;FLUKE 75 11,MULTIMETER CAL		
850	TESTER;FLUKE 75,MULTIMETER CAL		
860	TESTER;FLUKE 76,MULTIMETER CAL		
870	TESTER;FLUKE 77,MULTIMETER CAL		
880	TESTER;FLUKE 77 S11,MULTIMETER CAL		
890	TESTER;FLUKE 79,MULTIMETER CAL		
900	TESTER;FLUKE 8050A,BENCH MULTI CAL		
910	TESTER;FLUKE 8060,MULTIMETER CAL		
920	TESTER;FLUKE 8060A,MULTIMETER CAL		
930	TESTER;FULKE 85,MULTIMETER CAL		
940	TESTER;FLUKE 87 IV, MULTIMETER CAL		
950	TESTER;FLUKE 87,MULTIMETER CAL		
960	TESTER;FLUKE MULTIMETER CAL		
970	TESTER;FLUKE337,CLAMP METER CAL		
980	TESTER;FSH3,COMMS MONITOR CAL		
990	TESTER;GEN:FSM-200,METER CAL		
1000	TESTER;FSM-200,METER CAL		
1010	TESTER;FTB400,EXFO OTDR CAL		
1020	TESTER;FTB-400SM,EXFO OTDR CAL		
1030	TESTER;FTP 3005,AUDIO MEASURING CAL		
1040	TESTER;FVA-60DB,ATTENUATOR CAL		
1050	TESTER;GEGE4088,MULTIMETER CAL		
1060	TESTER;GTA 9A,POWER METER CAL		
1070	TESTER;HP 11581,ATTENUATOR SET CAL		
1080	TESTER; HP 11721A,FREQUENCY DOUBLE CAL		
1090	TESTER;HP 3225A,LEVEL METER CAL		
1100	TESTER;HP3552A,TMS ASIST LVL METER CAL		
1110	TESTER;HP 3702B,TEST SET CAL		
1120	TESTER;HP 3746A,LEVEL METER CAL		

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1130	TESTER;HP 37717C,COOMS MONITOR CAL		
1140	TESTER;HP 3780A,LEVEL GENERATOR CAL		
1150	TESTER;HP 432A,POWER METER CAL		
1160	TESTER;HP 436A,POWER METER CAL		
1170	TESTER;HP 437B,POWER METER CAL		
1180	TESTER;HP 4936A,TMS AUDIO MEASURE CAL		
1190	TESTER;HP 6315A,FREQUENCY COUNT CAL		
1200	TESTER;HP 5340A,FREQUENCY COUNT CAL		
1210	TESTER;HP 5347A,COUNTER POWER ME CAL		
1220	TESTER;53B6A,FREQUENCY COUNT CAL		
1230	TESTER;HP 54200A,OSCILLOSCOPE CAL		
1240	TESTER;HP 54201A,DIGITAL OSCILLOS CAL		
1250	TESTER;HP 54610A,DIGITAL ASCILLOS CAL		
1260	TESTER;HP 6200B,TEST SET CAL		
1270	TESTER;HP 773D,DIRECTIONAL COUPL CAL		
1280	TESTER;HP 778D,COUPLER CAL		
1290	TESTER;HP 83752A,FREQUENCY GENER CAL		
1300	TESTER;HP 8481A,POWER SENSOR CAL		
1310	TESTER;HP 8481D,POWER SENSOR CAL		
1320	TESTER;HP 8481H,POWER SENSOR		
1330	TESTER;HP 85032B,CALIBRATION KIT CAL		
1340	TESTER;HP 86025A,POWER SENSOR CAL		
1350	TESTER;HP 8656A,SIGNAL GENERATOR CAL		
1360	TESTER;HP 8657A,SIGNAL GENERATOR CAL		
1370	TESTER;HP 8920,COMMS MONITOR CAL		
1380	TESTER;HP 8920A,TEST SET CAL		
1390	TESTER;HP P382A,ATTENUATOR CAL		
1400	TESTER;HP SLMS,LEVEL METER CAL		
1410	TESTER;HP11581A,ATTENUATOR CAL		
1420	TESTER;HP11582A,ATTENUATOR CAL		
1430	TESTER;HP3421A,DATA COMM ANALYSER		
1440	TESTER;HP37717C,DIGITAL COMMS AN CAL		
1450	TESTER;HP37732A,DATA COMMS ANALYS CAL		
1460	TESTER;HP77,TONE PROBE TEST SET CAL		

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1470	TESTER;HP8494A,ATTENUATOR CAL		
1480	TESTER;HP8494B,ATTENUATOR CAL		
1490	TESTER;HP8496A,STEP UP ATTENUATOR CAL		
1500	TESTER;HP8496B,ATTENUATOR CAL		
1510	TESTER;HP8562A,SPECTRUM ANNALYSE CAL		
1520	TESTER;HP8562B,SPECTRUM ANNALYSE CAL		
1530	TESTER;HP8563E,SPECTRUM ANALYSER CAL		
1540	TESTER;HP8593E,SPECTRUM ANALYSER CAL		
1550	TESTER;HP8594E,SPECTRUM ANALYSER CAL		
1560	TESTER;HP859E,SPECTRUM ANALYSER CAL		
1570	TESTER;HP8757E,SCALER ANALYSER CAL		
1580	TESTER;HP8901A,MODULATOR ANALYSE CAL		
1590	TESTER;HP8920A,COMMS MONITOR CAL		
1600	TESTER;HP8930A,AUDIO ANALYSER CAL		
1610	TESTER;HP8949B,ATTENUATOR CAL		
1620	TESTER;HP8949B/8495B,ATTENUATOR CAL		
1630	TESTER;HPJ2302A,DIGITAL COMMS AN CAL		
1640	TESTER;HPJ382A,ATTENUATOR CAL		
1650	TESTER;IC F3GT,TEST SET CAL		
1660	TESTER;IC F4023T,TEST SET CAL		
1670	TESTER;K2004,KYORITSU METER CAL		
1680	TESTER;K2046R,M/TECH METER CAL		
1690	TESTER;K240B,ATTENUATOR CAL		
1700	TESTER;LA6T,EPROM ERASER CAL		
1710	TESTER;LTD/8MK.V,MULTI METER CAL		
1720	TESTER;MC-160,COMMS MONITOR CAL		
1730	TESTER;ME 4510B,ANALYSER CAL		
1740	TESTER;MG 462A,LEVEL GENERATOR CAL		
1750	TESTER;ML524B,ANALYSER CAL		
1760	TESTER;MS331A,FAULT LOCATER CAL		
1770	TESTER;MT 500,MEGGER CAL		
1780	TESTER;MT-850,MULTI METER CAL		
1790	TESTER;MTBM515,MULTI METER CAL		
1800	TESTER;MW 9070B,ARINTSU OTD CAL		

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1810	TESTER;MX2400T,MAGNAVOX CAL		
1820	TESTER;MX430,MULTI METER CAL		
1830	TESTER;OLS1,FIBRE OPTIC LIGHT CAL		
1840	TESTER;OPM1,FIBRE OPTIC LIGHT CAL		
1850	TESTER;P110,PROGRAMMER CAL		
1860	TESTER;PCM 23,TESTER CAL		
1870	TESTER;PM 3305,OSCILLISCOPE CAL		
1880	TESTER;PM 3315,OSCILLOSCOPE CAL		
1890	TESTER;PM 3335,DIGITAL OSCILLOSC CAL		
1900	TESTER;PM 5501,PATTERN GENERATOR CAL		
1910	TESTER;PM2404,AMMETER CAL		
1920	TESTER;PM2505,MULTIMETER CAL		
1930	TESTER;PM6303,RCL METER CAL		
1940	TESTER;PR875,PROGRAMMER CAL		
1950	TESTER;PTS100&PTS200,TONE PROBE CAL		
1960	TESTER;RF 108,LEVEL METER CAL		
1970	TESTER;RSA SMFP2,ANALYSER CAL		
1980	TESTER;S101,DETECTOR CAL		
1990	TESTER;S113,FAULT LOCATER CAL		
2000	TESTER;S331D,ANALYSER CAL		
2010	TESTER;SMFP2,TEST SET CAL		
2020	TESTER;SUNSET 10,ANALYSER CAL		
2030	TESTER;T1820,TEST SET CAL		
2040	TESTER;T2400TH,MULTI METER CAL		
2050	TESTER;TBM811,MULTI METER CAL		
2060	TESTER;GEN:TBM812,MULTI METER CAL		
2070	TESTER,GEN:TDS2012,OSCILLOSCOPE CAL		
2080	TESTER,GEN:TDS220,OSCILLOSCOPE CAL		
2090	TESTER,GEN:TDS320,OSCILLOSCOPE CAL		
2100	TESTER,GEN:TDS420A,OSCILLOSCOPE CAL		
2110	TESTER,GEN:TFS3030,OTDR CAL		
2120	TESTER,GEN:THS730A.OSCILLOSCOPE CAL		
2130	TESTER,GENERIC:TKLAN-30,EXFO OTDR CAL		
2140	TESTER,GEN:TM2192,EPROM PROGRMER CAL		

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2150	TESTER,GEN:TMB812,MULTI METER CAL		
2160	TESTER,GEN:TX3, MULTIMETER CAL		
2170	TESTER,GEN:TX90,TONE PROBE TST SET CAL		
2180	TESTER,GEN:VC-6025,OSCILLOSCOPE CAL		
2190	TESTER,GEN:W&G BN2033,LEVL GENERA CAL		
2200	TESTER,GEN:W&GDLA9,DATA LN ANALY CAL		
2210	TESTER;W&G OLS10&OLP10,FIBRE S&D CAL		
2220	TESTER;W&G OS12,LEVEL GENERATOR CAL		
2230	TESTER;W&G PCM23,AUDIO TEST SET CAL		
2240	TESTER;W&G PFA-30,DIGITAL COMMS CAL		
2250	TESTER;W&G PFA-35,DATA COM ANALYS CAL		
2260	TESTER;W&G PMG-13,LEVEL GENERATO CAL		
2270	TESTER;W&G PMP-20,LEVEL METER CAL		
2280	TESTER;W&G PS-10,LEVEL GENERATOR CAL		
2290	TESTER;W&G PS-15,LEVEL GENERATOR CAL		
2300	TESTER;W&G PS-20,LEVEL GENERATOR CAL		
2310	TESTER;W&G PS-3,LEVEL GENERATOR CAL		
2320	TESTER;W&G PS-30,LEVEL GENERATOR CAL		
2330	TESTER;W&G PS-33,LEVEL GENERATOR CAL		
2340	TESTER;W&G PS-33A,LEVEL GENERATOR CAL		
2350	TESTER;W&G SPM-15,SLECTIVE LEVEL CAL		
2360	TESTER;W&G SPM-3,LEVEL METER CAL		
2370	TESTER;W&G SPM-31,LEVEL METER CAL		
2380	TESTER;W&G SPM-32,SLECTIVE LEVEL CAL		
2390	TESTER;W&G SPM-32A,LEVEL GENERAT CAL		
2400	TESTER;W&G SPM-33,LEVEL METER CAL		
2410	TESTER;W&G SPM-34,LEVEL METER CAL		
2420	TESTER;W&G TFH2,LEVEL METER CAL		
2430	TESTER;WG15,ATTENUATOR CAL		
2440	TESTER;XL3120,FREQUENCY COUNTER CAL		
2450	TESTER;YSS 1315,OTDR CAL		
2460	TESTER;FTB-1003,EXFO OTDR CAL		
2470	TESTER;FSM-40S,FUJIKURA FUSION SPLICER		
2480	TESTER;PAD-55-10L,KIKISUI POWER SUPPLY C		

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2490	TESTER;NGB;POWER SUPPLY CAL		
2500	TESTER;UT60B;MULTIMETER UNI-T CAL		
2510	UNIT:MT24;MAJORTECH MULTIMETER CAL		
2520	TESTER;BIRD 4304A,WATT METER CAL		
2530	TESTER:AMS;ESD AUDIO MEASURING SET		
2540	TESTER:CMS52;R&S RADIO COMMS MONITOR		
2550	TESTER:K345A;LAMODA REGULATED P/S CAL		
2560	TESTER;HP8562B,SPECTRUM ANNALYSE CAL		
2570	TESTER;1200S,COMMS MONITOR IFR CAL		
2580	TESTER;SAGE JDSU OTDR CAL		
	Price list for repairs.		
2590	TESTER;1310NM,FIBRE OPTIC LASER REP		
2600	TESTER;132A,DIGITAL ANALYSER REP		
2610	TESTER;1417,PCM METER REP		
2620	TESTER;147,DIGITAL ANALYSER REP		
2630	TESTER;1550NM,FIBRE OPTIC LASER REP		
2640	TESTER;195,RCL METER REP		
2650	TESTER;1999,FREQUENCY COUNTER REP		
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2720	TESTER;2187,ATTENUATOR REP		
2730	TESTER;2230,DIGITAL OSCILLOSCOPE REP		
2740	TESTER;2245A,OSCILLOSCOPE REP		
2750	TESTER;2390,ANALYSER REP		
2760	TESTER;2501,LEVEL METER REP		
2770	TESTER;25B,FREQUENCY COUNTER REP		
2780	TESTER;2841,ANALYSER REP		
2790	TESTER;3000A,FREQUENCY COUNTER REP		
2800	TESTER;3000E,DIGITAL ANALYSER REP		
2810	TESTER;3022,COUPLER REP		
2820	TESTER;302X,EXFO POWER METER REP		

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2830	TESTER;314,OSCILLOSCOPE REP		
2840	TESTER;3151,HIOKI METER REP		
2850	TESTER;35-20,POWER SUPPLY REP		
2860	TESTER;3530,DATACOM ANALYSER REP		
2870	TESTER;3731,AEMCI TEST SET REP		
2880	TESTER;390,BUTTINSKI PHONE REP		
2890	TESTER;40,EPROM PROGRAMMER REP		
2900	TESTER;4000,DIGITAL ANALYSER REP		
2910	TESTER;4145,LEVEL METER REP		
2920	TESTER;448974-0,AUDIO MEASURING REP		
2930	TESTER;486,DIGITAL OSCILLOSCOPE REP		
2940	TESTER;4G,PROGRAMMER REP		
2950	TESTER;53320,ANALYSER REP		
2960	TESTER;5504,OSCILLOSCOPE REP		
2970	TESTER;60-36,POWER SUPPLY REP		
2980	TESTER;630,KAG TEST SET REP		
2990	TESTER;70-1101,EPROM ERASER REP		
3000	TESTER;740689,LEICA DISTO METER REP		
3010	TESTER;8031F,MAJORTECH METER REP		
3020	TESTER;8080,ATTENUATOR REP		
3030	TESTER;84/2 NO18B,OHM METER REP		
3040	TESTER;897733-1,OSCILLOSCOPE REP		
3050	TESTER;940-114-34,ATTENUATOR REP		
3060	TESTER;940-60-33,ATTENUATOR REP		
3070	TESTER;940-60-34,ATTENUATOR REP		
3080	TESTER;9902,FREQUENCY COUNTER REP		
3090	TESTER;A-800,ANALYSER REP		
3100	TESTER;AR2002,COMMS MONITOR REP		
3110	TESTER;BIRD 33,WATT METER REP		
3120	TESTER;BIRD 4304,WATT METER REP		
3130	TESTER;BIRD 4304A,WATT METER REP		
3140	TESTER;BIRD 50A,WATT METER REP		
3150	TESTER;CJ90020,TEST SET REP		
3160	TESTER;CM-60A,CHARGER REP		

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3170	TESTER;CMS 54,COMMS MONITOR REP		
3180	TESTER;CMTA 54,ANALYSER REP		
3190	TESTER;CPM46,POWER METER/FREQUEN REP		
3200	TESTER;DCS7040,OSCILLOSCOPE REP		
3210	TESTER;DM6013A,CAPACITANCE METER REP		
3220	TESTER;DMM 196,MULTIMETER REP		
3230	TESTER;DT85,DATA LOGGER REP		
3240	TESTER;E 10,SUNSET TEST SET REP		
3250	TESTER;E-20,SUNRISE TEST SET REP		
3260	TESTER;ER30T,EPROM ERASER REP		
3270	TESTER;EX-702,PROGRAMMER REP		
3280	TESTER;F3,ORGANO DE-IONISER REP		
3290	TESTER;FB250,OTDR REP		
3300	TESTER;FC7102,FREQUENCY COUNTER REP		
3310	TESTER;FLUKE 10,MULTIMETER REP		
3320	TESTER;FLUKE 1000V,MULTIMETER REP		
3330	TESTER;FLUKE 111,MULTIMETER REP		
3340	TESTER;FLUKE 175,MULTIMETER REP		
3350	TESTER;FLUKE 177,MULTIMETER REP		
3360	TESTER;FLUKE 179,MULTIMETER REP		
3370	TESTER;FLUKE 187,DIGITAL MULTIME REP		
3380	TESTER;FLUKE 199CS,OSCILLOSCOPE REP		
3390	TESTER;FLUKE 650,LAN CABEL METER REP		
3400	TESTER;FLUKE 72,MULTIMETER REP		
3410	TESTER;FLUKE 73 111,MULTIMETER REP		
3420	TESTER;FLUKE 73,MULTIMETER REP		
3430	TESTER;FLUKE 75 11,MULTIMETER REP		
3440	TESTER;FLUKE 75,MULTIMETER REP		
3450	TESTER;FLUKE 76,MULTIMETER REP		
3460	TESTER;FLUKE 77,MULTIMETER REP		
3470	TESTER;FLUKE 77 S11,MULTIMETER REP		
3480	TESTER;FLUKE 79,MULTIMETER REP		
3490	TESTER;FLUKE 8050A,BENCH MULTI REP		
3500	TESTER;FLUKE 8060,MULTIMETER REP		



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3510	TESTER;FLUKE 8060A,MULTIMETER REP		
3520	TESTER;FLUKE 85,MULTIMETER REP		
3530	TESTER;FLUKE 87 IV,MULTIMETER REP		
3540	TESTER;FLUKE 87,MULTIMETER REP		
3550	TESTER;FLUKE MULTIMETER REP		
3560	TESTER;FLUKE337,CLAMP METER REP		
3570	TESTER;FSH3,COMMS MONITOR REP		
3580	TESTER;FSM-200,METER REP		
3590	TESTER;FSM-500,METER REP		
3600	TESTER;FTB400,EXFO OTDR REP		
3610	TESTER;FTB-400SM,EXFO OTDR REP		
3620	TESTER;FTP 3005,AUDIO MEASURING REP		
3630	TESTER;FVA-60DB,ATTENUATOR REP		
3640	TESTER;GE4088,MULTIMETER REP		
3650	TESTER;GTA 9A,POWER METER REP		
3660	TESTER;HP 11581,ATTENUATOR SET REP		
3670	TESTER;HP 11721A,FREQUENCY DOUBL REP		
3680	TESTER;HP 3225A,LEVEL METER REP		
3690	TESTER;HP 3552A,TMS ASIST LEVEL REP		
3700	TESTER;HP 3702B,TEST SET REP		
3710	TESTER;HP 3746A,LEVEL METER REP		
3720	TESTER;HP 37717C,COMMS MONITOR REP		
3730	TESTER;HP 3708A,LEVEL GENERATOR REP		
3740	TESTER;HP 432A,POWER METER REP		
3750	TESTER;HP 435A,POWER METER REP		
3760	TESTER;HP 437B,POWER METER REP		
3770	TESTER;HP 4936A,TMS AUDIO MEASUR REP		
3780	TESTER;HP 5315A,FREQUENCY COUNT REP		
3790	TESTER;HP 5340A,FREQUENCY COUNT REP		
3800	TESTER;HP 5347A,COUNT POWER ME REP		
3810	TESTER;HP 5386A,FREQUENCY COUNT REP		
3820	TESTER;HP 54200A,OSCILLOSCOPE REP		
3830	TESTER;HP 54201A,DIGITAL OSCILLOS REP		
3840	TESTER;HP 54610A,DIGITAL OSCILOS REP		

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3850	TESTER;HP 6200B,TEST SET REP		
3860	TESTER;HP 773D,DIRECTIONAL COUPL REP		
3870	TESTER;HP 778D,COUPLER REP		
3880	TESTER;HP 83752A,FREQUENCY GENER REP		
3890	TESTER;HP 8481A,POWER SENSOR REP		
3900	TESTER;HP 8481D,POWER SENSOR REP		
3910	TESTER;HP 8481H,POWER SENSOR REP		
3920	TESTER;HP 85032B,CALIBRATION KIT REP		
3930	TESTER;HP 86025A,POWER SENSOR REP		
3940	TESTER;HP 8656A,SIGNAL GENERATOR REP		
3950	TESTER;HP 8657A,SIGNAL GENERATOR REP		
3960	TESTER;HP 8920,COMMS MONITOR REP		
3970	TESTER;HP 8920A,TSET SET REP		
3980	TESTER;HP P382A,ATTENUATOR REP		
3990	TESTER;HP SLMS,LEVEL METER REP		
4000	TESTER;HP11581A,ATTENUATOR REP		
4010	TESTER;HP11582A,ATTENUATOR REP		
4020	TESTER;HP3421A,DATA COMM ANALYSER REP		
4030	TESTER;HP37717C,DIGITAL COMMS AN REP		
4040	TESTER;HP37732A,DATA COMMS ANALYS REP		
4050	TESTER;HP77,TONE PROBE TEST SET REP		
4060	TESTER;HP8494A,ATTENUATOR REP		
4070	TESTER;HP8494B,ATTENUATOR REP		
4080	TESTER;HP8496A,STEP UP ATTENUATOR REP		
4090	TESTER;HP8496B,ATTENUATOR REP		
4100	TESTER;HP8562A,SPECTRUM ANALYSE REP		
4110	TESTER;HP8562B,SPECTRUM ANALYSE REP		
4120	TESTER;HP8563E,SPECTRUM ANALYSER REP		
4130	TESTER;HP8593E,SPECTRUM ANALYSER REP		
4140	TESTER;HP8594E,SPECTRUM ANALYSER REP		
4150	TESTER;HP859E,SPECTRUM ANALYSER REP		
4160	TESTER;HP8757E,SCALER ANALYSER REP		
4170	TESTER;HP8901A,MODULATOR ANALYSE REP		
4180	TESTER;HP8920A,COMMS MONITOR REP		

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4190	TESTER;HP8930A,AUDIO ANALYSER REP		
4200	TESTER;HP8949B,ATTENUATOR REP		
4210	TESTER;HP8949B/8495B,ATTENUATOR REP		
4220	TESTER;HPJ2302A,DIGITAL COMMS AN REP		
4230	TESTER;HPJ382A,ATTENUATOR REP		
4240	TESTER;IC F3GT,TEST SET REP		
4250	TESTER;IC F40223T,TEST SET REP		
4260	TESTER;K2004,KYORITSU METER REP		
4270	TESTER;K2046R,M/TECH METER REP		
4280	TESTER;K240B,ATTENUATOR REP		
4290	TESTER;LA6T,EPROM ERASER REP		
4300	TESTER;LTD/8MK.V,MULTI METER REP		
4310	TESTER;MC-160,COMMS MONITOR REP		
4320	TESTER;ME 4510B,ANALYSER REP		
4330	TESTER;MG 462A,LEVEL GENERATOR REP		
4340	TESTER;ML524B,ANALYSER REP		
4350	TESTER;MS331A,FAULT LOCATER REP		
4360	TESTER;MT 500,MEGGER REP		
4370	TESTER;MT-850,MULTI METER REP		
4380	TESTER;MTBM515,MULTI METER REP		
4390	TESTER;MW 9070B,ARINTSU OTDR REP		
4400	TESTER;MXM430,MULTI METER REP		
4410	TESTER;OLS1,FIBRE OPTIC LIGHT REP		
4420	TESTER;OPM1,FIBRE OPTIC LIGHT REP		
4430	TESTER;P110,PROGRAMMER REP		
4440	TESTER;PCM 23,TESTER REP		
4450	TESTER;PM 3305,OSCILLISCOPE REP		
4460	TESTER;PM 3315,OSCILLOSCOPE REP		
4470	TESTER;PM 3335,DIGITAL OSCILLOSC REP		
4480	TESTER;PM 5501,PATTERN GENERATOR REP		
4490	TESTER;PM2404,AMMETER REP		
4500	TESTER;PM2505,MULTIMETER REP		
4510	TESTER;PM6303,RCL METER REP		
4520	TESTER;PR875,PROGRAMMER REP		

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4530	TESTER;PTS100&PTS200,TONE PROBE REP		
4540	TESTER;RF 108,LEVEL METER REP		
4550	TESTER;RSA SMFP2,ANALYSER REP		
4560	TESTER;S101,DETECTOR REP		
4570	TESTER;S113,FAULT LOCATER REP		
4580	TESTER;S331D,ANALYSER REP		
4590	TESTER;SMFP2,TEST SET REP		
4600	TESTER;SUNSET 10,ANALYSER REP		
4610	TESTER;T1820,TEST STE REP		
4620	TESTER;T2400TH,MULTI METER REP		
4630	TESTER;TBM811,MULTI METER REP		
4640	TESTER;TBM812,MULTI METER REP		
4650	TESTER;TDS2012,OSCILLOSCOPE REP		
4660	TESTER;TDS220,OSCILLOSCOPE REP		
4670	TESTER;TDS320,OSCILLOSCOPE REP		
4680	TESTER;TDS420A,OSCILLOSCOPE REP		
4690	TESTER;THS730A,OSCILLOSCOPE REP		
4700	TESTER;TFS3030,OTDR REP		
4710	TESTER;TKLAN-30,EXFO OTDR REP		
4720	TESTER;TM2192,EPROM PROGRAMMER REP		
4730	TESTER;TMB812,MULTI METER REP		
4740	TESTER;TX3,MULTIMETER REP		
4750	TESTER;TX90,TONE PROBE TEST SET REP		
4760	TESTER;VC-6025,OSCILLOSCOPE REP		
4770	TESTER;W&G BN2033,LEVEL GENERATOR REP		
4780	TESTER;W&G DLA9,DATA LINE ANALYS REP		
4790	TESTER;W&G OLS10&OLP10,FIBRE S&D REP		
4800	TESTER;W&G OS12,LEVEL GENERATOR REP		
4810	TESTER;W&G PCM23,AUDIO TEST SET REP		
4820	TESTER;W&G PFA-30,DIGITAL COMMS REP		
4830	TESTER;W&G PFA-35,DATA COM ANALYS REP		
4840	TESTER;W&G PMG-13,LEVEL GENERATOR REP		
4850	TESTER;W&G PMP-20,LEVEL METER REP		
4860	TESTER;W&G PS-10,LEVEL GENERATOR REP		

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4870	TESTER;W&G PS-15,LEVEL GENERATOR REP		
4880	TESTER;W&G PS-20,LEVEL GENERATOR REP		
4890	TESTER;W&G PS-3,LEVEL GENERATOR REP		
4900	TESTER;W&G PS-30,LEVEL GENERATOR REP		
4910	TESTER;W&G PS-33,LEVEL GENERATOR REP		
4920	TESTER;W&G PS-33A,LEVEL GENERATOR REP		
4930	TESTER;W&G SPM-15,SLECTIVE LEVEL REP		
4940	TESTER;W&G SPM-3,LEVEL METER REP		
4950	TESTER;W&G SPM-31,LEVEL METER REP		
4960	TESTER;W&G SPM-32,SLECTIVE LEVEL REP		
4970	TESTER;W&G SPM-32A,LEVEL GENERATO REP		
4980	TESTER;W&G SPM-33,LEVEL METER REP		
4990	TESTER;W&G SPM-34,LEVEL METER REP		
5000	TESTER;W&G TFH2,LEVEL METER REP		
5010	TESTER;W&G15,ATTENUATOR REP		
5020	TESTER;XL3120,FREQUENCY COUNTER REP		
5030	TESTER;YSS 1315,OTDR REP		
5040	TESTER;FTB-100B,EXFO OTDR REP		
5050	TESTER;FSM-40S,FUJIKURA FUSION SPLICER		
5060	TESTER;PAD-55-10L,KIKISUI POWER SUPPLY R		
5070	TESTER;NGB;POWER SUPPLY REP		
5080	TESTER;UT60B;MULTIMETER UNI-T REP		
5090	UNIT:MT24;MAJORTECH MULTIMETER REP		
5100	TESTER;BIRD 4304A,WATT METER REP		
5110	TESTER;AMS;ESD AUDIO MEASURING SET REP		
5120	TESTER;CMS52;R&S RADIO COMMS MONIT REP		
5130	TESTER;K345A;LAMODA REGULATED P/S REP		
5140	TESTER;HP8562B,SPECTRUM ANNALYSE REP		
5150	TESTER;1200S,COMMS MONITOR IFR REP		
5160	TESTER;SAGE JDSU OTDR REP		
5170	TESTER;S820E,ANRITSU SITEMASTER REP		
5180	TESTER;VePAL TX300E VeEX Datacom tester REP		
5190	TESTER;OPM-50 Optical power meter - ShinewayTech		
5200	TESTER;VeEx MLX100 (IP loopbox)		

5210	TESTER;Ideal Networks UniPro MGig1 (IP tester)		
5220	TESTER;Albedo AT-2048 (E1 & Datacom analyser)		
5230	TESTER;SS-5705,OSCILLOSCOPE REP		
5240	TESTER;MARCONI 2945 COMMS SERVICE MONITOR REP		
5250	TESTER;JDSU OLT-55 OPTICAL POWER METER		
5260	TESTER;FIBRE SPLICER FUJIKURA 70S		
5270	TESTER;FIBRE SPLICERMICRO CORE SUMITOMO TYPE-39		
5280	TESTER;HP4934 TMS		
5290	TESTER;JDSU OLT-55,LIGHT SOURCE		
5300	TESTER;TYPE-71C+,SUMITOMO ELECTRIC		
5310	TESTER;EXFO FLS300 - FIBRE OPTIC LIGHTSOURCE		
5320	TESTER;FLUKE 1630 - EARTH GROUND CLAMP		
5330	TESTER;GRANDWAY FHA2S01 - FIBRE OPTIC ATTENUATOR		
5340	TESTER;GRANDWAY FHP2B04 FIBRE OPTIC POWER METER		
5350	TESTER;GRANDWAY FHS2D02 FIBRE OPTIC LIGHTSOURCE		
5360	TESTER;KENWOOD PD56/10AD POWER SUPPLY		
5370	TESTER;MEGABRAS EM4055 DIGITAL EARTH TESTER		
5380	TESTER;SHINEWAYTECH PALM OTDR		
5390	TESTER;TOPTRONIC TBM525 MULTIMETER		
5400	TESTER;VDV 11 PRO CABLE VERIFIER		
	TESTER;VeEX VePAL Tx130E		

### 3.4 General Document Guideline

#### 3.4.1 Keywords

Calibration, Test Equipment, Tester

#### 3.4.2 Audience

The document will be issued as a scope of work for the enquiry.

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### **3.4.3 Assumptions and restrictions**

It is assumed that readers are familiar with the technology concepts discussed in this document.

## **4 AUTHORISATION**

<b>Name</b>	<b>Designation</b>
Joe Manyisa	Acting ET Senior Manager

## **5 REVISIONS**

<b>Date</b>	<b>Rev.</b>	<b>Remarks</b>
August 2017	1	First Issue

## **6 DEVELOPMENT TEAM**

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