

<b>John Henry Group</b>	<b>JHG Operations Method Statements</b>	
<b>Reference Number:</b> PRO-JHG-MS201	<b>Version Number:</b> 2	
<b>Published Date:</b> 24/08/2023	<b>Next Review Date:</b> 24/08/2024	
<b>Document Owner:</b> Head of Health & Safety	<b>Approved By:</b> HSEQ Director	

## F-JHG MS13: Fibre Testing and Commissioning

### Scope of Works

Fibre Testing & Commissioning Procedure.

*Note: A Site-Specific POWRA shall be completed prior to commencement of works. The particular hazards associated with this task are documented in the library of Risk Assessments.*

### Sequence of Works

- Park vehicle safely.
- Ensure that a HSEQ Manual is on site, together with complete job pack
- Check and ensure that all relevant site access permits, safety cards and paperwork is available on site and correct before commencement of works.
- Check and ensure that all plant and machinery are in good working order, have up to date certification and the operators have the compliant and in date licenses
- Check that client and relevant persons are informed and agree commencement date
- Check that all required materials are available and on site when required.
- Ensure that Briefing and Toolbox talk documents are available.
- Ensure that the site has been booked in to upon attendance (site provider requirement, check job pack)
- Check site for potential hazards and note on POWRA. Rectify if possible. Mark danger area & inform crew regarding potential hazard.
- Place emergency equipment (fire extinguisher & first aid kit) in designated area.
- Select an appropriate Traffic Management plan.
- Ensure that all task specific PPE is available, has been checked and is in good working order prior to carrying out any activities.
- Ensure that all relevant and appropriate Health and Safety Barriers & traffic management signage are in place before commencement of work.
- Only trained personnel will test and commission fibers. They must be fully conversant with the hazards and procedures for working with lasers and fibers.
- All fibers must be tested with a power meter to ensure there are no lasers connected at the distant end before making any other tests
- All test equipment must be within the calibration date
- Because different clients have different types of cable and various specifications, the OTDR (Optical Time Domain Reflectometer) operator is responsible for obtaining this information and ensuring the clients specification is met.
- If OTDR (Optical Time Domain Reflectometer) testing from one exchange to another, the staff at the far end must be informed that testing will be taking place to avoid accidental exposure from the OTDR laser.
- If the building is unmanned, a warning label should be hung on the ODF (Optical Distribution Frames)
- A suitable OTDR will be used to determine splice losses and any remedial action. Traces must be taken from both ends of the cable and the average splice losses recorded. Any splice failing the client's specification will be re-spliced up to three times to try and bring it into spec. Failing this, the splice loss and position will be recorded and passed to the client for further instruction
- Multi-mode cables will be tested in the 850nm window
- Single mode fibers will be tested in both the 1310nm and 1550nm windows. At the customer's request, they will also be tested in the 1625nm window.
- If requested CD testing (Chromatic Dispersion) and PMD testing (Polaroid mode dispersion) may be carried out at customer connection.

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- At the client's request, a launch lead of similar fibre and at least 1km long may be connected between the OTDR and the cable to prove connector launches
- Once the cable is acceptable and ALL remedial action complete. The fibre traces will be recorded and stored to disk in analysis format. A suitable distance and loss scale must be used to display the trace over the OTDR screen. A suitable pulse width must be selected to avoid over or under saturation of the fibre.
- The optical attenuation measurements are then recorded by utilising a stabilised light source and power meter. The light source and power meter must be referenced before taking the attenuation results
- Attenuation results should be taken from both directions and are only acceptable if they pass the "System Budget" of the cable
- The system budget can be calculated by using the following formula
  - $X \text{ (attenuation)} = (\text{Km} \times A + N_s \times B) + C$
  - Where Km = length of fibre under test
  - A = manufactures/customers fibre loss per Kilometer
  - $N_s$  = Number of splices in fibre under test
  - B = customers splice specification
  - C = Manufacturers/customers allowance for optical connectors.
- All dust covers must be replaced on the ODF connections on completion
- A package is then produced for the customer with the test data in both paper and computer format to an agreed layout
- Tidy the site, removing all rubbish. Ensure the site is left in a safe and secure condition.
- Text out/Call the Third-Party Site Provider when leaving the site.

#### Plant & Equipment and Certification Required

OTDR & Insertion Loss Measurement test set (ILM), Optimal Time Domain Reflectometer, Module for CD & PMD Testing, Optical Light source for CD & PMD Testing. Operatives shall be fully trained and be in possession of calibrated equipment and correct PPE.

#### Staff Involved and Certification Required

Only authorised personnel shall be permitted to carry out works. A minimum of two work team member will be on site at all times, no lone working permitted. All staff must have completed Laser Safety Training.

#### Access and Egress Points

Only permitted access/egress points will be used

#### Interface with Public

All required third party notification will be addressed by the Site Supervisor.

#### Working hours

Normal Working Hours will be circa 08.00-17.00.

#### PPE

Safety Boots, Helmet, Gloves, Hi Viz Clothing, Eye protection (as required), Ear protection (as required), Dust Mask (as required)