

PRODUCED BY THE OPERATIONS DIRECTORATE OF ENERGY NETWORKS ASSOCIATION



## Engineering Recommendation TELE.4

Issue 1 2016

Code of practice for the installation of ADSS  
optical cable

PUBLISHING AND COPYRIGHT INFORMATION

© 2016 *Energy Networks Association*

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written consent of Energy Networks Association. Specific enquiries concerning this document should be addressed to:

**Operations Directorate  
Energy Networks Association  
6th Floor, Dean Bradley House  
52 Horseferry Rd  
London  
SW1P 2AF**

This document has been prepared for use by members of the Energy Networks Association to take account of the conditions which apply to them. Advice should be taken from an appropriately qualified engineer on the suitability of this document for any other purpose.

First published, March 2016

**Amendments since publication**

<b>Issue</b>	<b>Date</b>	<b>Amendment</b>

## Contents

Foreword.....	4
Introduction .....	5
1 Scope .....	5
2 Normative references.....	5
3 Terms and definitions.....	5
4 ADSS benefits.....	6
5 General considerations .....	7
6 Condition and strength of support structures.....	7
6.1 General.....	7
6.2 Wind loading of intermediate wood poles.....	8
7 ADSS cable positioning.....	9
7.1 General.....	9
7.2 Space potential .....	9
7.2.1 Pole routes.....	10
7.2.2 Tower routes .....	12
7.3 ADSS clashing.....	12
7.4 Structural strength at attachment position .....	13
7.5 Clearances to ground, obstacles, and live conductors .....	13
7.5.1 General.....	13
7.5.2 Sag and tension .....	14
8 Shotgun risk.....	14
9 Strength co-ordination.....	15
10 Installation and maintenance procedures.....	15
10.1 Earthing .....	16
Bibliography .....	17

## Figures

Figure 1 — Space potential plot for 33 kV .....	10
Figure 2 — Space potential plot for 66 kV .....	11
Figure 3 — Space potential plot for 132 kV .....	11

## **Foreword**

This Engineering Recommendation (EREC) is published by the Energy Networks Association (ENA) and comes into effect from date of publication. It has been prepared under the authority of the ENA Engineering Policy and Standards Manager and has been approved for publication by the ENA Electricity Networks and Futures Group (ENFG). The approved abbreviated title of this engineering document is “EREC TELE 4”.

This EREC is intended to be used by ENA Member Company staff, who design and plan the installation of ADSS optical cables on OHL routes.

Where the term “should” is used in this document it means the provision is a recommendation. The term “may” is used to express permission.

NOTE: Commentary, explanation and general informative material is presented in smaller type, and does not constitute a requirement.

## Introduction

Planning and design issues for installation of ADSS cables differ significantly from those considerations normally associated with OHL construction. This EREC is written to highlight key issues that should be considered when designing and planning the installation of ADSS cables on a particular route.

Sensitivities and issues that should be considered are outlined in a step-by-step process. The output from this work will allow utilities to design and plan an installation and understand the engineering detail and procedures required for a particular installation.

This EREC is not intended to be prescriptive but is intended to highlight issues for consideration especially where they differ from normal OHL installation requirements.

## 1 Scope

This EREC describes particular technical and design issues to be considered for ADSS cables prior to the installation process. Both wood pole and tower lines for temporary and permanent installation are covered. This document does not describe the installation procedures to be followed.

## 2 Normative references

The following referenced documents, in whole or part, are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

### Standards publications

EN 60794 ed3 (2014) - *Optical fibre cables - Part 1-2: Generic specification - Cross reference table for optical cable test procedures*

IEC/TR 62263, *Live working – Guidelines for the installation and maintenance of optical fibre cables on overhead power lines*

### Other publications

[N1] The Electricity Safety, Quality and Continuity Regulations 2002 (as amended)

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **All Dielectric Self Supported (ADSS)**

all dielectric optical fibre cable that can support its own weight in a short or long span

### 3.2

#### **dry-band arcing**

an arcing phenomenon that can occur on a wetted ADSS cable at or near the span end as the cable dries and a dry-band is formed

NOTE: Dry-band arcing can occur where the space potential is greater than approximately 10 kV.

### 3.3

#### **EMF**

electromagnetic field surrounding phase conductors