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SAUDI TELECOM

SAUDI TELECOM COMPANY

Reference Offer for Data Access (RODA)

Annex C, Attachment 4

TIE CABLE CHARACTERISTCS

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Tie Cable Characteristics

1 INTRODUCTION

1.1.1 This technical specification gives detailed definitions of the electrical parameters of Tie Circuits contained in Tie Cables to be connected to the STC MDF mounted Splitter Unit provided by STC as part of the ADSL DSLAM Site Sharing Service to facilitate Local Loop Sharing Services.

1.1.2 Defined parameters apply to technical performance of the metallic pair Tie Circuits contained in the internal or external Tie Cable from a termination point on the STC Main Distribution Frame (MDF) to a termination point on a Handover Distribution Facility (HDF) located in the OLO ADSL DSLAM Site Sharing Facility.

1.1.3 Internal and External Tie Cables will be provided to connect the ADSL DSLAM Site Sharing Facility HDF to the STC MDF as part of the ADSL DSLAM Site Sharing Service.

2 INTERNAL TIE CABLE

2.1 Description

2.1.1 An Internal Tie Cable will be provided as part of the ADSL DSLAM Site Sharing Service. The Internal Tie Cable facility will include testing, termination and maintenance of metallic tie pairs, in twisted pair cables of 100 pair capacity and a nominal conductor diameter of 0.5 mm gauge. Each STC Internal Tie Cable will connect the STC Splitter Unit on the exchange side of the MDF to an STC External Tie Cable terminated on the Handover Distribution Frame (HDF) at the OLO ADSL DSLAM Site Sharing Facility by means of a cable joint in the STC exchange cable chamber.

2.1.2 Initial minimum supply per OLO: External Tie Cable capacity to meet the forecast requirements for the full life of the ADSL DSLAM Site Sharing

Facility and Internal Tie Cables to meet the forecast requirements for the first 5 years operation of the ADSL DSLAM Site Sharing Facility.

2.1.3 At the time of provision, STC will supply an estimated line length for the Internal and External Tie Cables, to allow the OLO to estimate end-to-end combined tie circuit and MPF characteristics.

2.1.4 When the initial installation capacity is exhausted additional Internal Tie Cable pairs (in units of 100 pairs) will be ordered separately from STC.

2.1.5 The Internal Tie Cable, termination blocks and Splitter Units on the MDF will be the property of STC.

2.2 Performance Specification

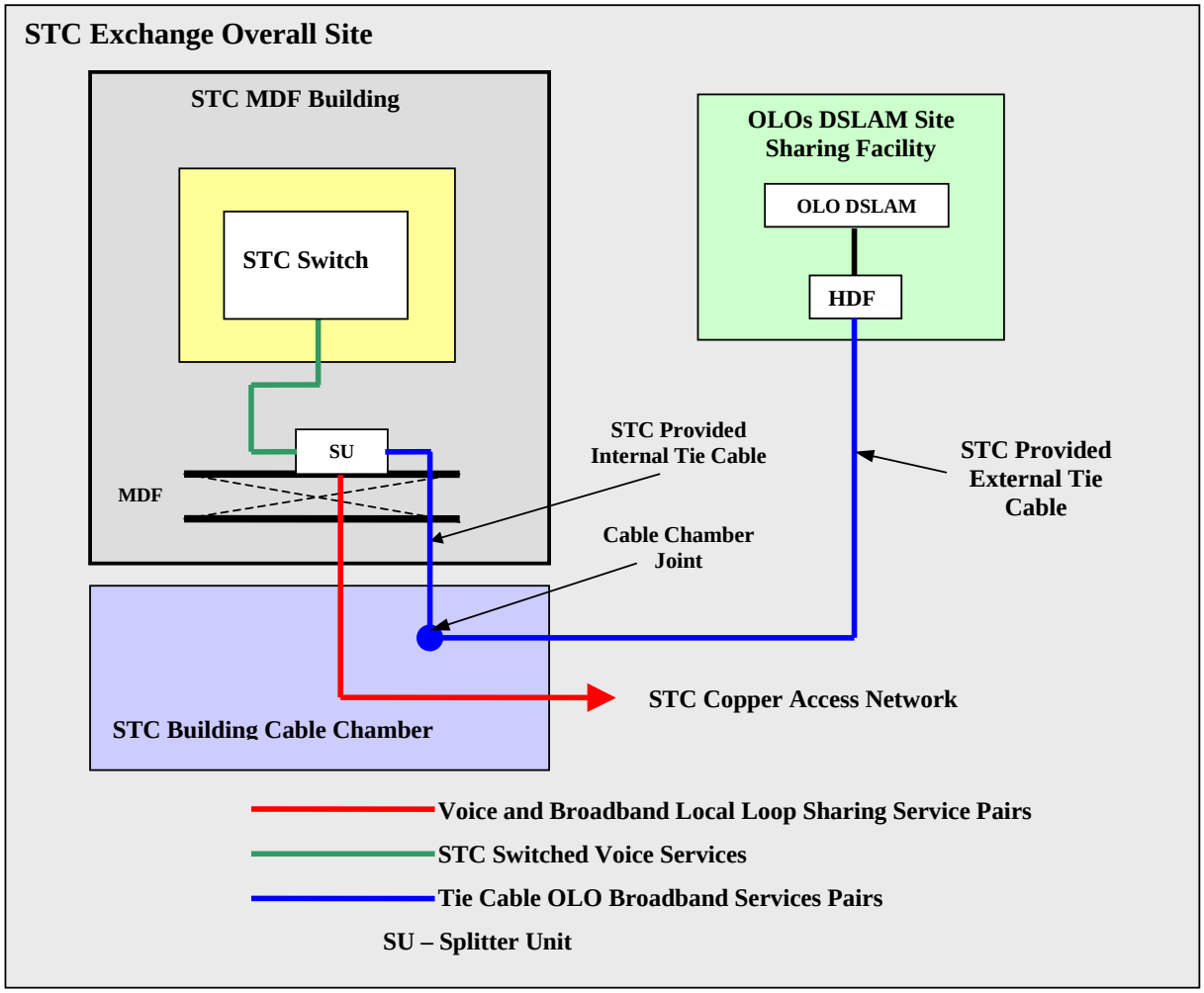
2.2.1 For use in supplying an exchange-side Tie Cable STC does not impose any restrictions on the quality or performance specification of the Internal Tie Cable tie circuit pair. However, in the case of supplying a line side Local Loop Sharing Service, STC will only allow the use of the tie circuit pair where the minimum performance parameters meet the requirements stated in Section 4 of this document.

3 EXTERNAL TIE CABLE

3.1 Description

3.1.1 An External Tie Cable will be provided as part of the STC ADSL DSLAM Site Sharing Service. The provision of the External Tie Cable will include testing, termination and maintenance of metallic tie pairs, in twisted pair cables, connecting an STC Splitter Unit on the exchange side of the MDF to an HDF at an OLO ADSL DSLAM Site Sharing Facility. The External Tie Cable will be jointed in the STC MDF Site Cable Chamber to an Internal Tie Cable, as shown below in Figure 1, which is provided automatically.

Figure 1: STC DSLAM Site Sharing Service



3.1.2 The provision of the External Tie Cable will include termination blocks at the operator end, to enable connection to the HDF. At the time of provision, STC will supply an estimated line length for the total tie cable length between the STC MDF and the OLO HDF, in order to allow the OLO to estimate end-to-end combined tie circuit and MPF characteristics

3.1.3 The External Tie Cable, including the HDF and internal tie cable elements, will be the property of STC.

3.2 Construction Specification

3.2.1 The STC External Tie Cable should be dimensioned and provided to meet the tie cable pair requirements for the full life of the ADSL DSLAM Site Sharing Facility.

3.2.2 The STC External Tie Cable will be a Primary Network cable of 400, 600 or 800 pair capacity with conductors of 0.4 mm nominal diameter. The cable will be "jelly filled" with a synthetic compound and will conform to the following primary specifications:

3.2.3 Resistance and Mutual Capacitance

Conductor Diameter	Resistance at 20ºC Ohms per 1,000m of cable		Mutual Capacitance nF per 1,000m of cable	
Nominal	Maximum Average	Maximum for 99% of cases	Maximum average	Maximum for 99% of cases
mm	Ohm	Ohm	nF	nF
0.4	143	150	56	64

3.3 Performance Specification

3.3.1 In supplying the Local Loop Sharing service, STC will only allow the use of the tie circuit pair where the minimum performance parameters meet the requirements stated in Section 4 of this document.

4 TIE CABLE CIRCUITS

4.1 Performance Specification

4.1.1 The following performance specification for tie circuits contained in Internal and External Tie Cables connecting an STC MDF to an HDF. All tie circuits must comply with this specification at all times. Under normal operational circumstances compliance will not be an issue but problems may be experienced in cases of ADSL DSLAM Site Sharing Facilities requiring exceptionally long external tie cables to connect to the MDF site.

4.1.2 The insertion of tie circuits into transmission paths introduces factors that increase signal loss, impedance and crosstalk affecting transmissions from the service source to the end user. Compliance with the following specifications will minimise the detrimental effects of tie circuits on the MPF performance. The following specifications represent the definitive limits of tie circuit signal performance and will apply to any discrete tie circuit transmission path regardless of the direction of transmission.

a) A tie cable will be constructed from multiple insulated copper conductors twisted to form pairs.

b) The maximum dc loop resistance will be 85 Ohms.

c) The maximum loop mutual capacitance will be 27.5 nF.

d) The acceptable range of the ratio of capacitance to dc resistance will be 0.2 to 0.45 nF/Ohm.

e) The maximum insertion loss measured between 600 Ohm loads at 1600 Hz will be 0.7 dB.

f) The maximum insertion loss measured between 135 Ohm loads at 100 Hz will be 4.0 dB.

g) The minimum return loss of the characteristic impedance of the cable to 135 Ohms will be 13 dB @ 100 kHz.

h) For cables containing more than 50 pairs the maximum near-end crosstalk power sum for the nearest 49 adjacent pairs of the tie cable received at any single isolated pair will be 55 dB below the near end generated signal level at 100 kHz. For cables containing less than 50 pairs the specification will apply to one less than the total number of pairs.

i) For cables containing more than 50 pairs the maximum far-end crosstalk power sum for the nearest 49 adjacent pairs of the tie cable received at any single isolated pair will be 53 dB below the near end generated signal level at 100 kHz. For cables containing less than 50 pairs this specification will apply to one less than the total number of pairs.