



FIJI ELECTRICITY AUTHORITY

DESIGN, MANUFACTURE, TEST AND SUPPLY

OF

OVERHEAD LINE CONDUCTOR

Codename: Hydrogen

TECHNICAL SPECIFICATION

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SPECIFICATION

Aerial Bare Overhead Line Conductor

1.0 INTRODUCTION

This document covers the general requirements and performance of bare overhead stranded Aluminium Alloy conductor (based on AAAC – 1120) for the design, manufacture, testing and supply to the Authority for use for the overhead distribution power-lines.

The Appendix A of the document requires Bidders to provide the technical parameters with and guaranteed values approved by the Manufacturers.

2.0 SERVICE CONDITIONS

The conductor shall be exposed to the following environmental conditions:

Ambient Temperature Range	10 - 40 Degrees Centigrade.
Solar Radiation Level	1100 watts per square metre with high ultraviolet content.
Precipitation	An annual rainfall in excess of 1500 mm. Heavy rainfall experienced during Tropical summer storms with gust wind speeds above 140km/h.
Humidity	Extended periods of relative humidity in excess of 90% R.H.
Atmospheric Conditions	Heavy - Areas of coastal salt spray and industrial pollution with equivalent salt deposit densities in the range 2.0 - 3.0 g/m ² .

3.0 SYSTEM DETAILS

PARAMETERS	SPECIFIED VALUE FOR MEDIUM VOLTAGE SYSTEM	SPECIFIED VALUE FOR HIGH VOLTAGE SYSTEM
Rated Voltage (kV)	0.6/1.0	11/6.35
Highest System Voltage (kV)	1.1	12.0
Rated Frequency (Hz)	50	50
Rated Lightning Impulse (kV)		75

4.0 REFERENCE STANDARDS

The following standards documents are to be referred:

AS 1531, Part 2;
ISO 9001 - Quality Management Systems;
Or any other relevant applicable international Standard.

5.0 Construction and Specification for All Aluminium Alloy Conductor (AAAC)

5.1 Conductor Technical Structure – Code Name: Hydrogen

Parameter		Unit	Value
Structure	Centre: Aluminium Alloy wire	No./mm	1/4.50
	Layer 1: Aluminium Alloy wire		6/4.50
Standard			AS1531 – Part 2
Stranding direction of outer layer		Direction	Right
Conductor diameter		Mm	13.5
Cross section area		mm ²	111.3
Conductor weight		Kg/km	305
Rated tensile strength		kN	24.3
Modulus of Elasticity		GPa	59
Coefficient of linear expansion		10 ⁻⁶ / °C	23
Max. DC resistance at 20 °C		Ω/km	0.266
Lay Ratio		Times	6 wire layer 10-17

5.2 Properties of Electrical characteristics

Parameter		Unit	Value
Max. AC resistance at 75 °C		Ω/km	0.325
Current Rating at 75 °C			
	Summer Noon	A	250
Inductive Reactance		Ω/km	0.341

Note: The above technical parameters mentioned in the above table shall be guaranteed on the manufactured conductor by the prominent manufacturers with the documentary evidences.

5.3 Packing and Drum Detail for Conductor

The required marking shall be printed with weather-proof material on the outsides of drum according to FEA needs as per details

Conductor Type	Cable Length in Drum (m)	Gross weight (kg) [to be provided]	Drum Type
AAAC - Hydrogen	2000		Wooden & Iron

6.0 TEST COMPLIANCE REQUIREMENTS

All routine tests shall be carried out and certified copies of all test results shall be submitted by an independent accredited Testing Authority. All relevant details of the Testing Authority shall be submitted with the test results.

7.0 DELIVERY OF CONDUCTOR

The conductor shall be delivered to the Authority's stores at regions to be advised by the Supply Chain.

8.0 TENDER BID SUBMISSION

All tenders bids shall be clearly specified in the currency applicable, to the country of manufacture or stock keep and valued for the total work scope, as specified and required by Fiji Electricity Authority.

All bids shall comprise of all specific costs involved for the manufacture, test and delivery of the **Hydrogen** conductor with test certificates and guaranteed values of all parameters of the conductor.