Type Test Procedure for Joint Box

Project Name-
LOA No.-

Following Type tests shall be demonstrated on the Splice Enclosure(s) (Splice Enclosure/Box). For certain tests, lengths of the fibre optic cable shall be installed in the splice box, and the fibres must be spliced and looped in order to simulate conditions of use. The attenuation of the fibres shall be measured, during certain tests, by relevant Fibre Optic Test Procedures (EIA/TIA 455 or IEC 60794-1 procedures).

List of test items

S.No.	TEST NAME	APPLICABLE STANDARD	TEST RESULT (PASS / FAIL)
1	Temperature cycling Test	EIA 445-20/IEC 60794-1-C 10	
2	Humid Heat Test	IEC 60794-1 or EIA/TLA 455	
3	Water Immersion Test	IEC 60060 or EIA/TLA 455	
4	Vibration Test	IEC 60794-1 or EIA/TLA 455	
5	Bending and Torsion Test	IEC 60794-1 or EIA/TLA 455	
6	Tensile Test	IEC 60794-1 or EIA/TLA 455	
7	Drop Test	IEC 60068-2-32	

Type Test procedure for Temperature Cycling Test

Test Name	: **Temperature Cycling Test**
Final Customer	: Power Grid Corporation of India Limited, India.
Project Name	:
Manufacturer	:
Box Type	:
Standard	: (EIA 455-20/IEC 60794-1-C 10).

TEST SET-UP

Fiber Optical cable is installed in the splice enclosure and optical fiber spliced and looped.

TEST PROCEDURE

The Joint box must be subjected to 5 cycles of temperature variations of -40°C to +65°C with a dwell time of at least 2 hours on each extreme.

Fibre loop attenuation shall be measured in accordance with EIA 455-20 / IEC 60794-1-C10.

The variation in attenuation will be recorded in the form of plots/graphs.

ACCEPTANCE CRITERIA

Variation in attenuation shall be less than ±0.05dB.The final humidity level, inside the box, shall not exceed the initial level, at the closing of the box.

Conclusion

The joint box meets the acceptance criteria of temperature cycling test

(TESTED BY)
Sign & Date

(WITNESSED BY)
Sign & Date

Project Name-
LOA No.-

Type Test procedure for Humid Heat Test

Test Name : **Humid Heat Test**

Final Customer : Power Grid Corporation of India Limited, India.
Project Name :
Manufacturer :
: Box Type
Standard : (IEC 60794-1 or EIA/TLA -455).

TEST SET-UP

Fiber Optical cable is installed in the splice enclosure and optical fiber spliced and looped.

TEST PROCEDURE

The sealed Joint box , with fibres spliced and looped inside, must be subjected to a temperature of +55°C ±2°C with a relative humidity rate of between 90% and 95% for 5 days.
The variation attenuation of the fibres will be recorded through graphs.

ACCEPTANCE CRITERIA

The attenuation variation of the fibres during the duration of the test shall be less than ±0.05dB, and the Internal humidity rate measured, less than 2%.

Conclusion

The joint box meets the acceptance criteria of Humid Heat Test.

(TESTED BY)
Sign & Date

(WITNESSED BY)
Sign & Date

Project Name-
LOA No.-

Type Test procedure for Rain Withstand Test/Water Immersion Test

Test Name : **Water Immersion Test.**

Final Customer	: Power Grid Corporation of India Limited, India.
Project Name	:
Manufacturer	:
	: Box Type
Standard	: IEC 60060 or EIA/TLA 455

TEST SET-UP

Fiber Optical cable is installed in the splice enclosure and optical fiber spliced and looped.

TEST PROCEDURE

The Joint Box with optical fibres cable installed and fibres spliced fixed, is subjected to 24 hours of Water immersion in accordance with IEC 60060 testing requirements

ACCEPTANCE CRITERIA

1. No water seepage or moisture was detected in the joint box.
2. The attenuation variation of the fibres after the test shall be less than ±0.05dB.

Conclusion

The joint box meets the acceptance criteria of Rain withstand Test/Water Immersion Test.

(TESTED BY)
Sign & Date

(WITNESSED BY)
Sign & Date

Project Name-
LOA No.-

Type Test procedure for Vibration Test

Test Name : **Vibration Test**

Final Customer : Power Grid Corporation of India Limited, India.
Project Name :
Manufacturer :
: Box Type
Standard : (IEC 60794-1 or EIA/TLA 455).

TEST SET-UP

The Joint box, with fiber united inside, is installed on vibration in the horizontal vertical direction separately with a frequency scanning of 5 to 50HZ.

TEST PROCEDURE

The amplitude of the vibrations shall be constant at 0.450mm, peak to peak, for 2 hours, for each of the Vibrations direction. Variation in attenuation shall be recorded.

ACCEPTANCE CRITERIA

1. The Variation in attenuation, of the fibres, shall be less than ±0.05dB.
2. The joint box shall be examined for any defects or deformation. There shall be no loosening or Visible damage of the OPGW cable at the entry point.

Conclusion

The joint box meets the acceptance criteria of Vibration Test.

(TESTED BY)
Sign & Date

(WITNESSED BY)
Sign & Date

Project Name-
LOA No.-

Type Test procedure for Bending and Torsion Test

Test Name : **Bending and Torsion Test**
Final Customer : Power Grid Corporation of India Limited, India.
Project Name :
Manufacturer :
: Box Type
Standard : (IEC 60794-1 or EIA/TLA 455).

TEST SET-UP
OPGW is installed in the joint box and optical fiber are spliced and looped inside.

TEST PROCEDURE
The splice enclosure, with fibres spliced inside, shall be firmly held in place and be subjected to The Following sequence of mechanical stresses on the cable:

a) 3 torsion cycles of ±180° shall be exercised on the cable. Each cycle shall be less than one minute.

b) 3 bending cycles of ±180° shall be exercise on the cable. Each cycle shall be less than one minute.

ACCEPTANCE CRITERIA

1. The Variation in attenuation, of the fibres, shall be less than ±0.05dB.
2. The cables connection ring shall remain securely fixed to the box with the connection Maintained Firmly.
3. No defects and fissures shall be noted on the joint ring or on the joint box.

Conclusion
The joint box meets the acceptance criteria of Bending And Torsion Test.

(TESTED BY)
Sign & Date

(WITNESSED BY)
Sign & Date

Project Name-
LOA No.-

Type Test Procedure for Tensile Test

Test Name : **Tensile Test.**

Final Customer : Power Grid Corporation of India Limited, India.
Project Name :
Manufacturer :
Box Type :
Standard : (IEC 60794-1 or EIA/TLA 455).

TEST PROCEDURE

The joint box with cable fixed to the boxes is subjected to a minimum tension of 448 N for a period of two minutes.

ACCEPTANCE CRITERIA

No fissure shall be noted in the connections or on the box.

Conclusion

The joint box meets the acceptance criteria of Tensile Test.

(TESTED BY)
Sign & Date

(WITNESSED BY)
Sign & Date

Project Name-
LOA No.-

Type Test Procedure For Drop Test

Test Name : **Drop Test**

Final Customer	: Power Grid Corporation of India Limited, India.
Project Name	:
Manufacturer	:
Box Type	:
Standard	: (IEC 60068-2-32).

TEST PROCEDURE

With 2 lengths of 11 meters of cable fixed to the box, it has to be dropped five times from a height of 10 meters.

ACCEPTANCE CRITERIA

There shall be no fissure, at all, of the box, and the connections shall remain tight.

Conclusion

The joint box meets the acceptance criteria of Drop Test.

(TESTED BY)
Sign & Date

(WITNESSED BY)
Sign & Date