



Update Vibration Test Results

January, 2015
Yazaki Corporation
Takayuki Tajima



■ Agenda

1. Introduction
2. Header socket measurement setup
3. Results of the test on the header socket
4. Inline connector measurement setup
5. Results of the test on the inline connector
6. Summary



■ 1. Introduction

[Purpose]

Check how vibrations affect the power budget in multilevel communications

[Measurement condition]

Temperature: -40, +25, +95 deg. C

Reference standard: SAE/USCAR_2 Revision4

5.4.6 Vibration/Mechanical Shock

Vibration frequency: 0, 10, 20, 50, 100 and 200Hz

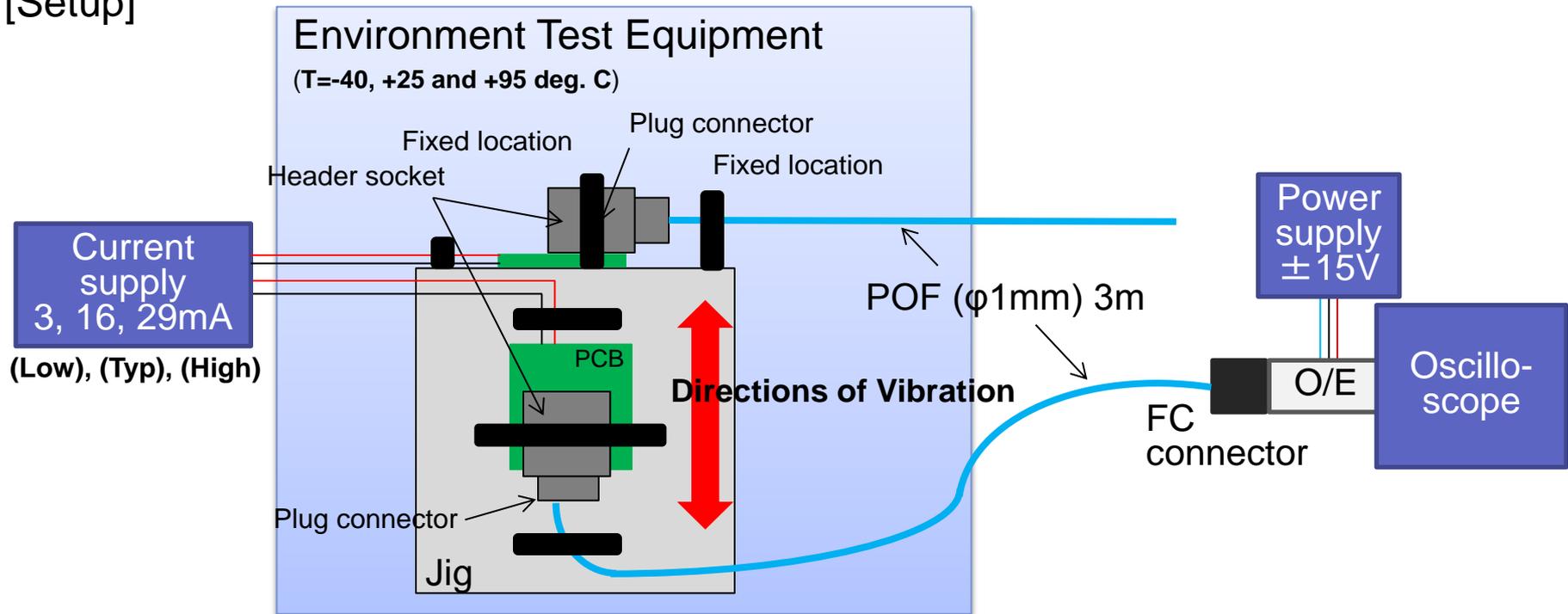
O/E converter: SPD-1 (Graviton)

POF: BHAN - 4001 (Mitsubishi Rayon)



2. Header socket measurement setup

[Setup]



A schematic diagram of a vibration test for the header connector

[Procedures]

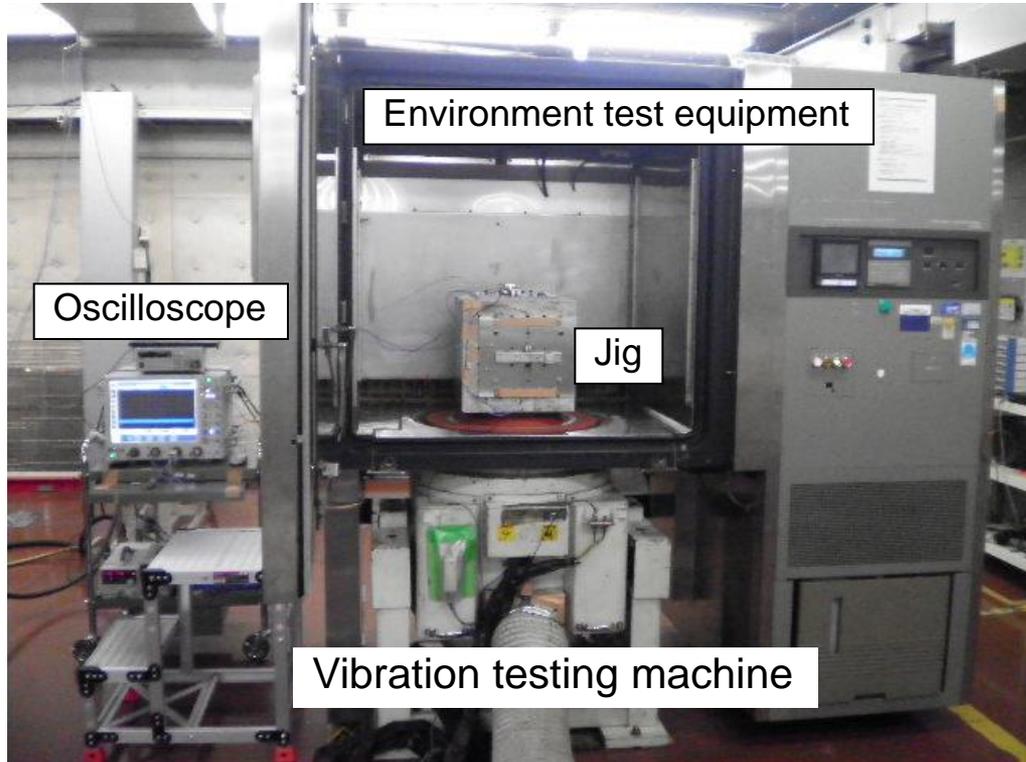
Operate a header socket with constant optical power and detect the DC light with the O/E converter connected to the oscilloscope.

Apply vibrations to the jig with a frequency of 0, 10, 20, 50, 100 and 200Hz on a one-by-one basis.

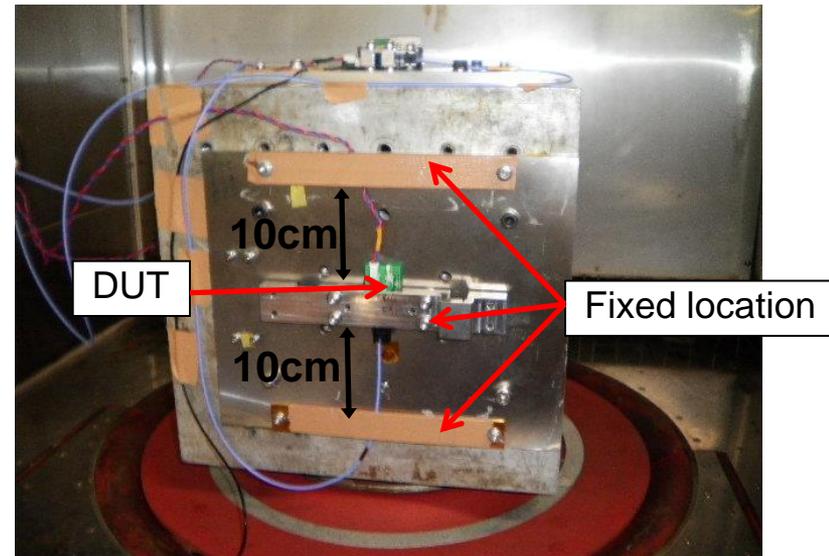
Record the waveforms with which changes in amplitude can be observed.



2. Header socket measurement setup



Entire measurement setup



DUT positioned

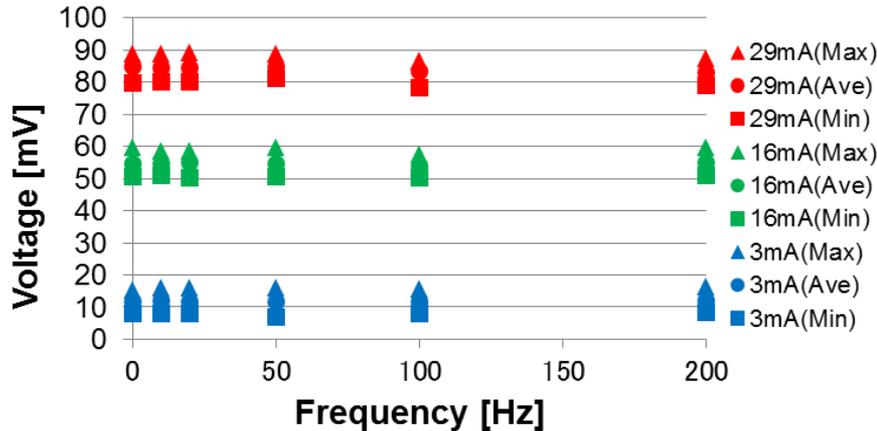


3. Results of the test on the header socket

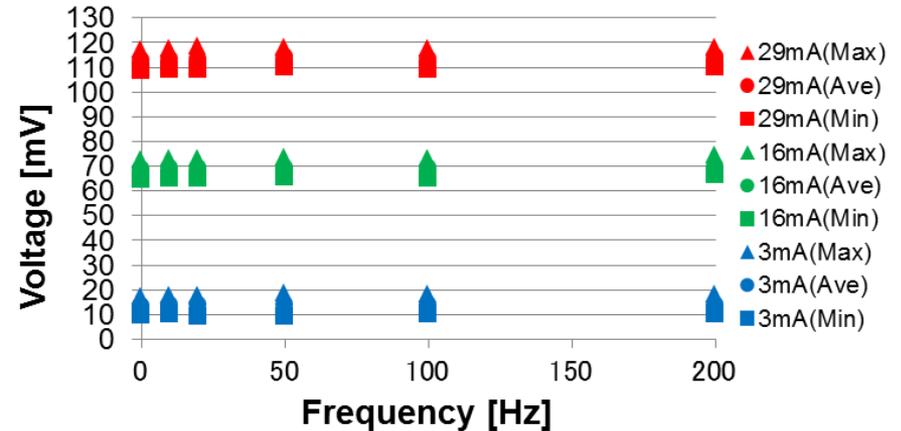
Temperature: -40, 25 and 95 deg. C

Vibration: 0, 10, 20, 50, 100 and 200Hz

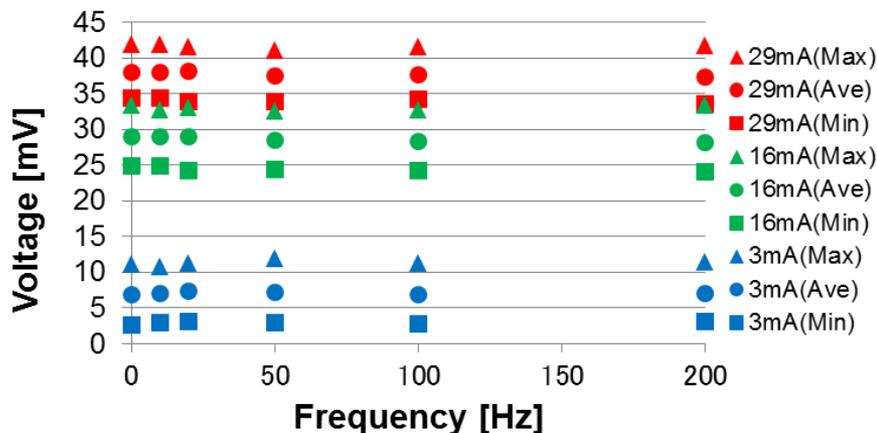
25 deg.C



-40 deg.C



95 deg.C

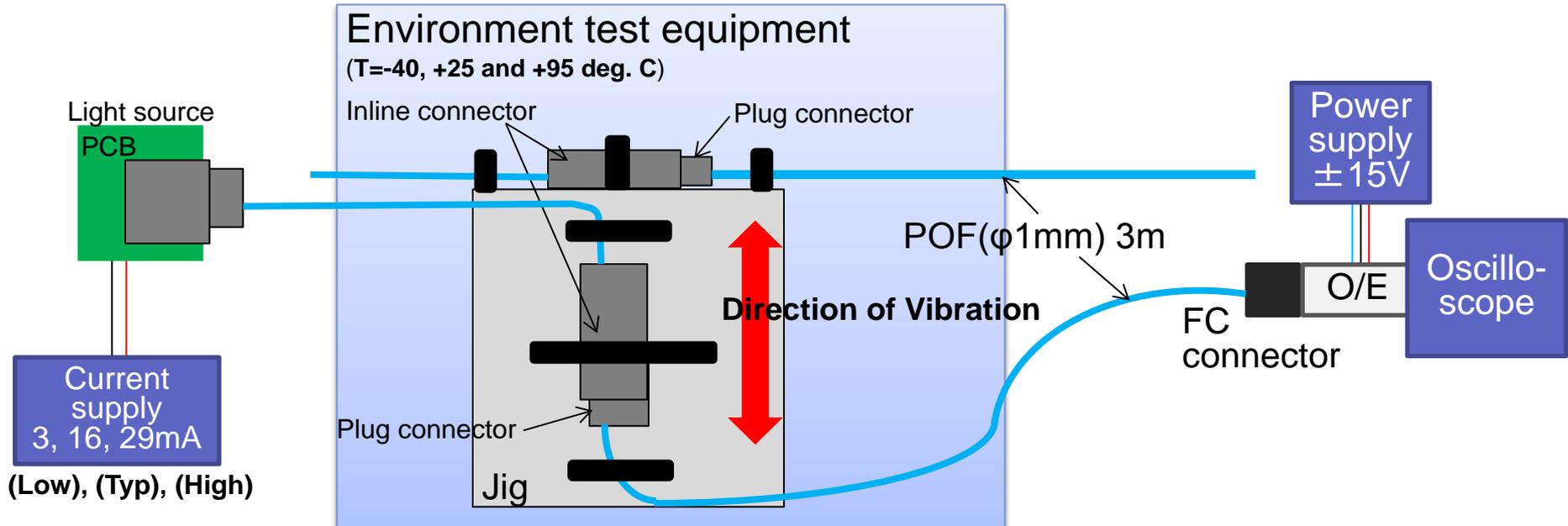


Does not change the amplitude by a change in vibration frequency.



4. Inline connector measurement setup

[Setup]



A schematic diagram of “a vibration test for inline connectors”

[Procedure]

Operate a header socket with constant optical power and detect the DC light with the O/E converter connected to the oscilloscope.

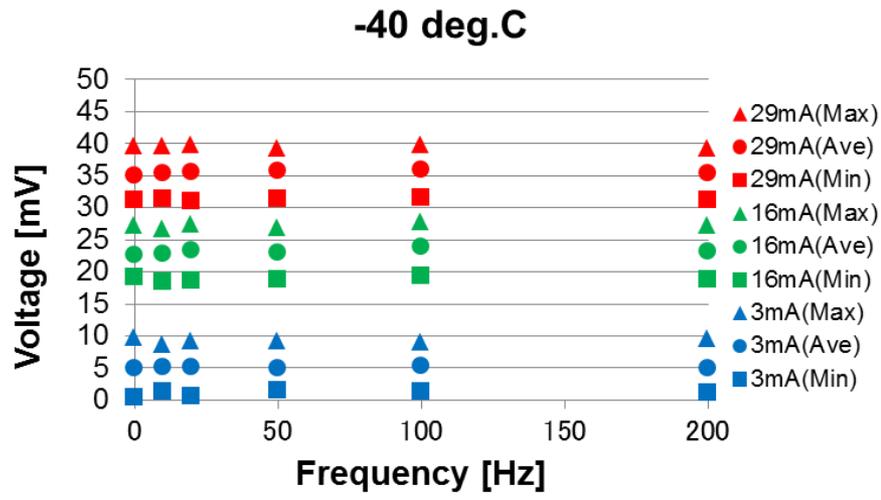
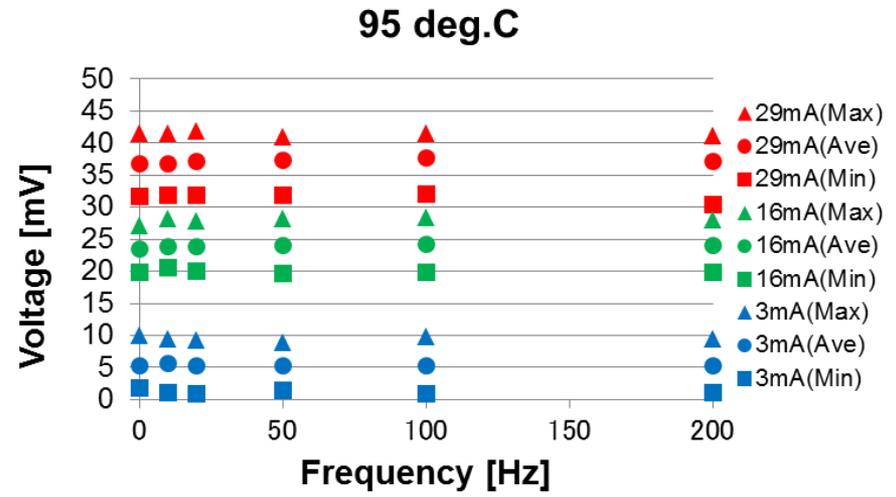
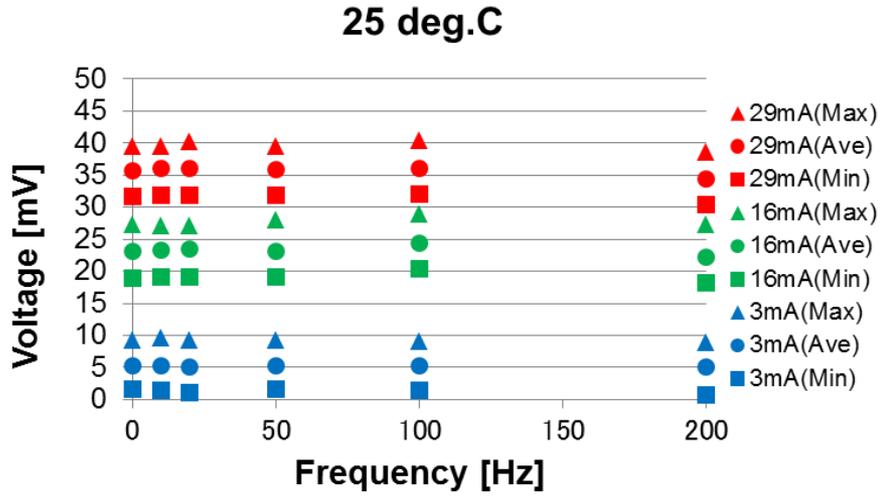
Apply vibrations to the jig with a frequency of 0, 10, 20, 50 and 200Hz on a one-by-one basis.

Record the waveforms with which changes in amplitude can be observed.



5. Results of the test on the inline connector

Temperature: -40, 25 and 95 deg. C
Vibration: 0, 10, 20, 50, 100 and 200Hz



Does not change the amplitude by a change in vibration frequency.



■ Summary

- **Optical power is stable even if vibrations are applied to a header socket and an inline connector at temperature between -40 deg. C and +95 deg. C.**
- **Vibration does not affect the optical power.**



Thank you