



# **Technical Guide**

## **Auto-Tuning for 25G Tunable DWDM Transceiver**



**HISILICON**  
OPTOELECTRONICS

# CONTENTS

1. Overview .....	1
2. Auto-Tuning Principle .....	1
3. Summary .....	1

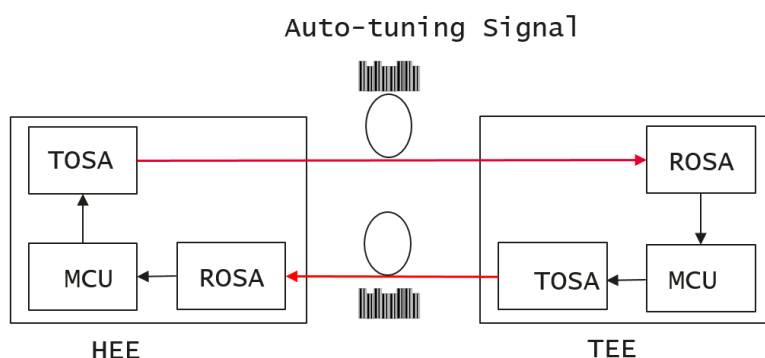
## 1. Overview

With the emergence of new services, the increased bandwidth consumption is forcing network operators to make continuous changes to their front-haul infrastructure to increase network capacity. HiSilicon Optoelectronics developed auto-tuning technology to SFP28 tunable DWDM optics to boost the capacity of front-haul networks without significant changes to existing hardware equipment and fiber resources. What's more, with automated tuning capabilities it also reduces inventory and provisioning efforts to a minimum.

## 2. Auto-Tuning Principle

HiSilicon Optoelectronics' auto-tuning solution is shown in the following system schematic, a low frequency auto-tuning signal is overlaid on top of the normal signal as a kind of out-band pilot tone modulation information channel, the transmitter/receiver's wavelength related information are carried in the information channel to let both HEE (head-end-equipment) and TEE (tail-end-equipment) automatically match each other. HEE and TEE play the same role in auto-tuning procedure, which is different from G.698.4 (known as G.metro), where auto-negotiation mechanism is based on master/slave mode.

The wavelength negotiation is started from channel 1 up to the matched channel, and adjustment time is less than 8 seconds between two neighbor channels. Furthermore, the sensitivity loss (0.5-1 dB) caused by pilot tone modulation is within the link margin scope, which does not compromise fiber transmission performance. This solution does not involve complex circuits and significantly improves network O&M efficiency at lower costs.



## 3. Summary

HiSilicon Optoelectronics' auto-tuning technology for tunable DWDM SFP28 optical help customers simplify on-site setup of wireless front-haul network, simply plug into a host device and passive mux, the transceiver does the rest, reduce operational expenditure.

**Copyright © HiSilicon Optoelectronics Co., Ltd. 2021. All rights reserved.**

No part of this document may be reproduced or transmitted in any form or by any means without prior written consent of HiSilicon Optoelectronics Co., Ltd.

#### **Trademarks and Permissions**

 is a trademark of HiSilicon Optoelectronics Co., Ltd.

All other trademarks and trade names mentioned in this document are the property of their respective holders.

#### **Notice**

The purchased products, services and features are stipulated by the contract made between HiSilicon Optoelectronics Co., Ltd. and the customer. All or part of the products, services and features described in this document may not be within the purchase scope or the usage scope. Unless otherwise specified in the contract, all statements, information, and recommendations in this document are provided "AS IS" without warranties, guarantees or representations of any kind, either express or implied.

The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.