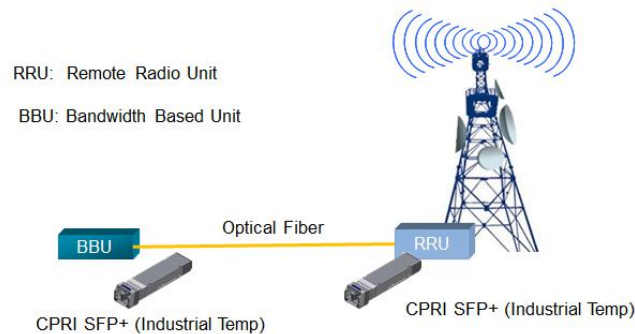


## Introduction of SFP+/SFP28 Optical Module of CPRI Common Public RF Digital Interface

Common Public Radio Digital Interface (CPRI) is a standardized protocol that defines the digital interface between the Radio Equipment Control (REC) and RF Equipment (RE) of wireless infrastructure base station. This realizes the interoperability among different supplier devices and protects the software investment of wireless service provider. CPRI is still evolving and the wire rate is also rising. At present, the latest standard **V7.0** maximum operating speed (Line Bit Rate) has been up to 24.3Gbps, so 25Gbps SFP28 optical module can meet its needs for working rate.

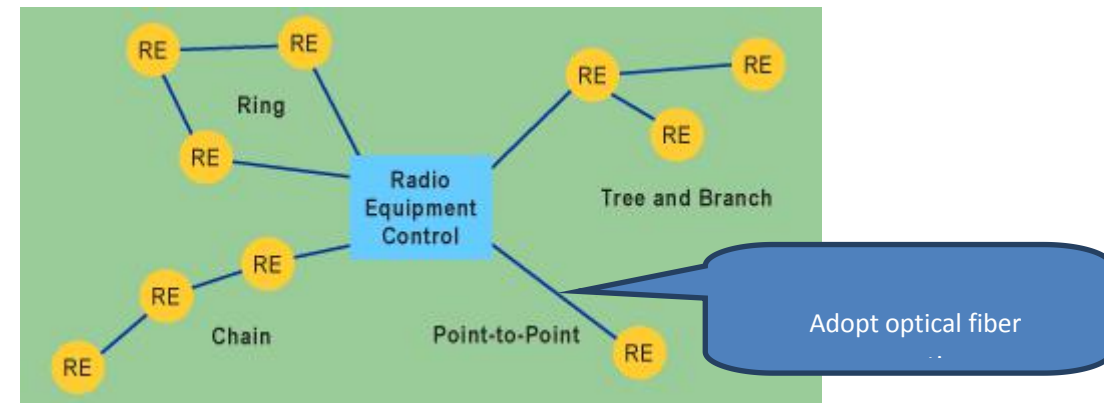
CPRI supports the use of a distributed architecture, the base station comprising REC is connected to remote radio front-end (RRH or RE) via the optical fiber link carrying CPRI data. Because it is only required to install the remote radio front-end at the place with poor environment, this architecture reduces the cost of service provider. The base station may be located in the heart place with good environment, which is an area with ideal signal coverage, climate and power supply. In a typical network, several remote radio front-ends will be connected to the same base station via the topology shown in Fig. 1, and the blue line in the figure represents CPRI link.



## CPRI Specification V7.0 (2015-10-09)

Interface Specification

### Common Public Radio Interface (CPRI); Interface Specification



BBU is called baseband processing unit and RRU is radio remote unit. They are connected using digital optical modules. RRU will emit the digital baseband signals via the antenna after processing, frequency conversion, radio filtering and radio amplification.

For CPRI (Common Public Radio Digital Interface), Gigalight developed a complete set of SFP + / SFP28 optical module product line which meets CPRI working rate, especially developed CPRI optical module that can meet industrial operating temperature. The optical interface types are optional (dual-fiber and single fiber), the working distance is up to 60/80 km, so it can fully meet client needs.



## 4.2. Physical Layer (Layer 1) Specification

### 4.2.1. Line Bit Rate

In order to achieve the required flexibility and cost efficiency, several different line bit rates are defined. Therefore, the CPRI line bit rate may be selected from the following option list:

- CPRI line bit rate option 1: 614.4 Mbit/s, 8B/10B line coding (1 x 491.52 x 10/8 Mbit/s)
- CPRI line bit rate option 2: 1228.8 Mbit/s, 8B/10B line coding (2 x 491.52 x 10/8 Mbit/s)
- CPRI line bit rate option 3: 2457.6 Mbit/s, 8B/10B line coding (4 x 491.52 x 10/8 Mbit/s)
- CPRI line bit rate option 4: 3072.0 Mbit/s, 8B/10B line coding (5 x 491.52 x 10/8 Mbit/s)
- CPRI line bit rate option 5: 4915.2 Mbit/s, 8B/10B line coding (8 x 491.52 x 10/8 Mbit/s)
- CPRI line bit rate option 6: 6144.0 Mbit/s, 8B/10B line coding (10 x 491.52 x 10/8 Mbit/s)
- CPRI line bit rate option 7: 9830.4 Mbit/s, 8B/10B line coding (16 x 491.52 x 10/8 Mbit/s)
- CPRI line bit rate option 7A: 8110.08 Mbit/s, 64B/66B line coding (16 x 491.52 x 66/64 Mbit/s)
- CPRI line bit rate option 8: 10137.6 Mbit/s, 64B/66B line coding (20 x 491.52 x 66/64 Mbit/s)
- CPRI line bit rate option 9: 12165.12 Mbit/s, 64B/66B line coding (24 x 491.52 x 66/64 Mbit/s)
- CPRI line bit rate option 10: 24330.24 Mbit/s, 64B/66B line coding (48 x 491.52 x 66/64 Mbit/s)

It is mandatory that each REC and RE support at least one of the above cited CPRI line bit rates.

### CPRI product line of Gigalight

CPRI supporting rate	Optical module packaging	Product model	Type	Working	Working
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				distance	temperature
2.4576Gbps/3.0720Gbps/4.9142Gbps	SFP	GBP-31555G-L4TI	Single-fiber	40km	-40 ~ 85
2.4576Gbps/3.0720Gbps/4.9143Gbps	SFP	GBP-55315G-L4TI	Single-fiber	40km	-40 ~ 85
2.4576Gbps/3.0720Gbps/4.9143Gbps	SFP	GBP-31555G-L8TI	Single-fiber	80km	-40 ~ 85
2.4576Gbps/3.0720Gbps/4.9143Gbps	SFP	GBP-55315G-L8TI	Single-fiber	80km	-40 ~ 85
2.4576Gbps/3.0720Gbps/4.9143Gbps	SFP	GP-315G-L2TI	Dual-fiber	20km	-40 ~ 85
2.4576Gbps/3.0720Gbps/4.9143Gbps	SFP	GP-315G-L4TI	Dual-fiber	40km	-40 ~ 85
6.1440Gbps/9.8304Gbps/10.1376Gbps	SFP+	GPP-31192-L2TI	Dual-fiber	20km	-40 ~ 85
6.1440Gbps/9.8304Gbps/10.1376Gbps	SFP+	GPP-31192-L4TI	Dual-fiber	40km	-40 ~ 85
6.1440Gbps/9.8304Gbps/10.1376Gbps	SFP+	GBP-2733192-L2TI	Single-fiber	20km	-40 ~ 85
6.1440Gbps/9.8304Gbps/10.1376Gbps	SFP+	GBP-3327192-L2TI	Single-fiber	20km	-40 ~ 85
6.1440Gbps/9.8304Gbps/10.1376Gbps	SFP+	GBP-2733192-ERTI	Single-fiber	40km	-40 ~ 85
6.1440Gbps/9.8304Gbps/10.1376Gbps	SFP+	GBP-3327192-ERTI	Single-fiber	40km	-40 ~ 85
6.1440Gbps/9.8304Gbps/10.1376Gbps	SFP+	GBP-2733192-E6TI	Single-fiber	60km	-40 ~ 85
6.1440Gbps/9.8304Gbps/10.1376Gbps	SFP+	GBP-3327192-E6TI	Single-fiber	60km	-40 ~ 85
12.16512Gbps	SFP+	GPP-8514G-SRC	Dual-fiber	150m	0~70
24.33024Gbps	SFP28	GPP-85250-SRC	Dual-fiber	100m	0~70
24.33024Gbps	SFP28	GPP-31250-LRC	Dual-fiber	10km	0~70



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