

O-Band Optical Interleaver for 5G PON Mux/DeMux

1. Applications

DWDM PON is the choice of 5G PON for the front-haul optical links. For 50GHz grid DWDM for O-band, particularly for outdoor applications where the required operating temperature range from -40°C to +85°C, optical interleaver plus 100GHz thin film filter DWDM is the best solution due to its high performance and excellent temperature stability.

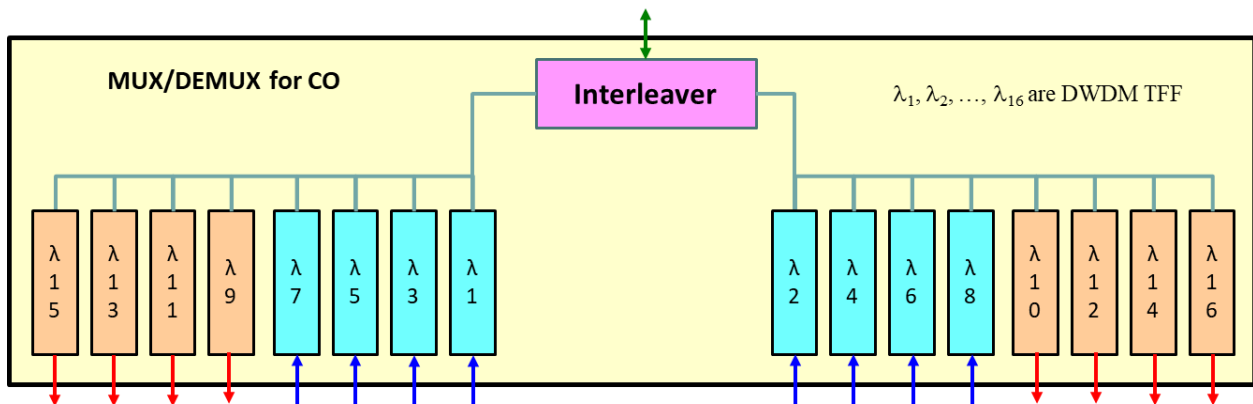


Figure 1, Functional block diagram of optical interleaver and TFF-DWDM mux/demux for center office (CO) 5G PON.

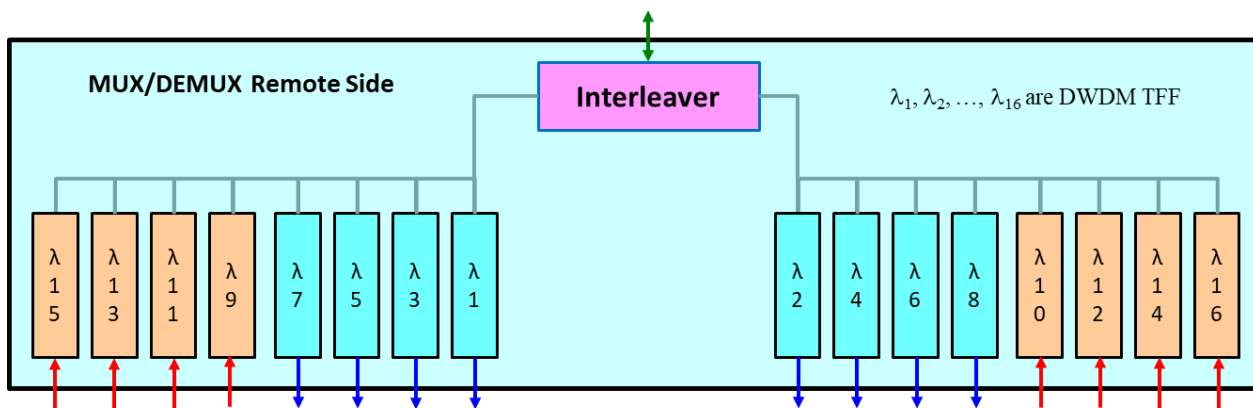


Figure 2, Functional block diagram of optical interleaver and TFF-DWDM mux/demux for remote-site 5G PON.

2. Optoplex and Its Optical Interleavers

2.1 Optoplex

Optoplex has been the leading technology innovator and market leader of optical interleavers for optical communications.

- Technology and market leader of interleaver for optical communications
- Dominant supplier of optical interleaver for global subsea network applications
- 1st company of **25GHz interleaver**
- Proprietary **Co-Packaged interleaver** (Mux/DeMux)
- Proprietary **“Super” wide passband interleaver**
- A leading company of O- and E-band optical interleavers for 5G Mux/DeMux applications

2.2 Features of Optoplex’s Interleavers

- Operating Temperature Range: -40°C to + 85°C
- Wide-Pass Bandwidth
- Low Insertion Loss
- Low Temperature Dependent Frequency Shift (TDFS)
- Low Temperature Dependent Loss (TDL)
- High Isolation
- Cover both H-wave (16 DWDM ch) and L-wave (16 DWDM ch)
- Can expand into E-, S-, C-, and L-Bands

3. O-Band CWDM Interleavers

3.1 Optical Performance

Parameter	Unit	Condition	Specification	Note
-0.5dB BW	GHz		>= +/-17	
-1.0dB BW	GHz		>= +/-19	
-3.0dB BW	GHz		>= +/-24	
Specification Passband	GHz	B _{Pi}	>= +/-10	
Specification Stopband	GHz	B _{Si}	>= +/-8	
Insertion Loss	dB	-5°C ~ +65°C	<= 1.6	
	dB	-40°C ~ +85°C	<=2.0	
Isolation	dB	At room temperature	>= 25	
	dB	-5°C ~ +65°C	>= 23	
	dB	-40°C ~ +85°C	>= 21	

3.2 Mechanical Properties

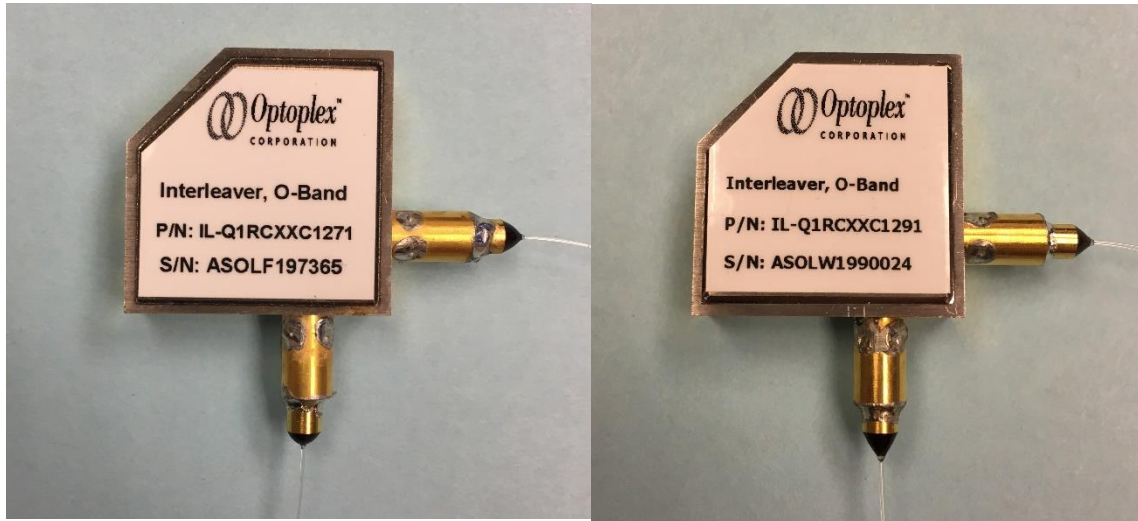


Figure 3, Photos of O-Band (1271nm and 1291nm) Interleavers

Device Dimension (excluding the collimator metal sleeves)

- 27.7 x 27.7 x 10.5 mm

3.3 Measured Performance (for reference)

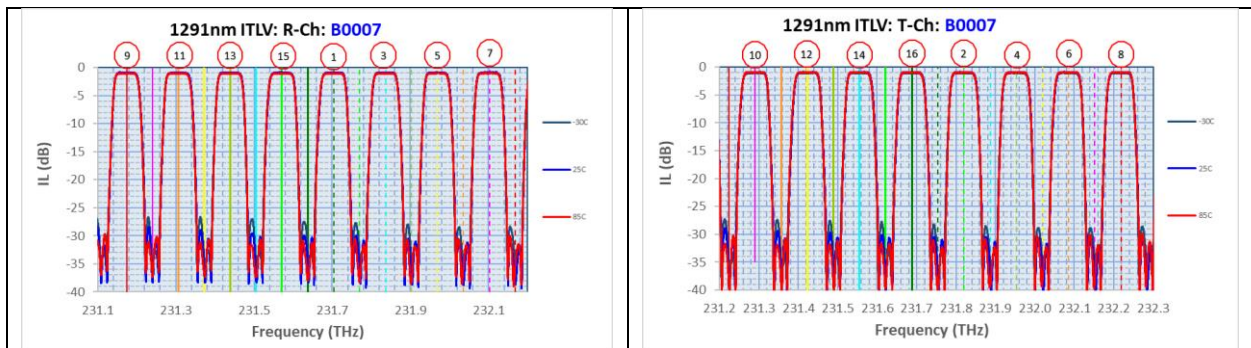


Figure 4. Measured optical performance spectra of 1291nm Interleaver, Typical, for reference only

4. Channel Plan of O-Band CWDM Interleavers

4.1 High-Band Channel Plan

		Ch	1271	1291	1311	1331	1351	1411	1431	1451
High-Wave Band	Group A: COT	1	1271.27	1291.27	1311.27	1331.27	1351.27	1411.27	1431.27	1451.27
		2	1271.64	1291.64	1311.64	1331.64	1351.64	1411.64	1431.64	1451.64
		3	1272.01	1292.01	1312.01	1332.01	1352.01	1412.01	1432.01	1452.01
		4	1272.38	1292.38	1312.38	1332.38	1352.38	1412.38	1432.38	1452.38
		5	1272.75	1292.75	1312.75	1332.75	1352.75	1412.75	1432.75	1452.75
		6	1273.12	1293.12	1313.12	1333.12	1353.12	1413.12	1433.12	1453.12
		7	1273.49	1293.49	1313.49	1333.49	1353.49	1413.49	1433.49	1453.49
		8	1273.86	1293.86	1313.86	1333.86	1353.86	1413.86	1433.86	1453.86
	Group B: Cell Site, RN	9	1274.23	1294.23	1314.23	1334.23	1354.23	1414.23	1434.23	1454.23
		10	1274.60	1294.60	1314.60	1334.60	1354.60	1414.60	1434.60	1454.60
		11	1274.97	1294.97	1314.97	1334.97	1354.97	1414.97	1434.97	1454.97
		12	1275.34	1295.34	1315.34	1335.34	1355.34	1415.34	1435.34	1455.34
		13	1275.71	1295.71	1315.71	1335.71	1355.71	1415.71	1435.71	1455.71
		14	1276.08	1296.08	1316.08	1336.08	1356.08	1416.08	1436.08	1456.08
		15	1276.45	1296.45	1316.45	1336.45	1356.45	1416.45	1436.45	1456.45
		16	1276.82	1296.82	1316.82	1336.82	1356.82	1416.82	1436.82	1456.82

4.2 Low-Band Channel Plan

		Ch	1271	1291	1311	1331	1351	1411	1431	1451
Low-Wave Band	Group A: COT	1	1264.32	1284.32	1304.32	1324.32	1344.32	1404.32	1424.32	1444.32
		2	1264.68	1284.68	1304.68	1324.68	1344.68	1404.68	1424.68	1444.68
		3	1265.05	1285.05	1305.05	1325.05	1345.05	1405.05	1425.05	1445.05
		4	1265.41	1285.41	1305.41	1325.41	1345.41	1405.41	1425.41	1445.41
		5	1265.78	1285.78	1305.78	1325.78	1345.78	1405.78	1425.78	1445.78
		6	1266.14	1286.14	1306.14	1326.14	1346.14	1406.14	1426.14	1446.14
		7	1266.51	1286.51	1306.51	1326.51	1346.51	1406.51	1426.51	1446.51
		8	1266.87	1286.87	1306.87	1326.87	1346.87	1406.87	1426.87	1446.87
	Group B: Cell Site, RN	9	1267.24	1287.24	1307.24	1327.24	1347.24	1407.24	1427.24	1447.24
		10	1267.61	1287.61	1307.61	1327.61	1347.61	1407.61	1427.61	1447.61
		11	1267.97	1287.97	1307.97	1327.97	1347.97	1407.97	1427.97	1447.97
		12	1268.34	1288.34	1308.34	1328.34	1348.34	1408.34	1428.34	1448.34
		13	1268.71	1288.71	1308.71	1328.71	1348.71	1408.71	1428.71	1448.71
		14	1269.07	1289.07	1309.07	1329.07	1349.07	1409.07	1429.07	1449.07
		15	1269.44	1289.44	1309.44	1329.44	1349.44	1409.44	1429.44	1449.44
		16	1269.81	1289.81	1309.81	1329.81	1349.81	1409.81	1429.81	1449.81

5. Channel Plan of O-Band CWDM Interleavers

CWDM Channel	High-Band			Low-Band		
	MPN	Wavelegnth Range (nm)		MPN	Wavelegnth Range (nm)	
		Min	Max		Min	Max
1271	IL-Q1RCXXH1271	1271	1278	IL-Q1RCXXL1271	1264	1270
1291	IL-Q1RCXXH1291	1291	1298	IL-Q1RCXXL1291	1284	1290
1311	IL-Q1RCXXH1311	1311	1318	IL-Q1RCXXL1311	1304	1310
1331	IL-Q1RCXXH1331	1331	1338	IL-Q1RCXXL1331	1324	1330
1351	IL-Q1RCXXH1351	1351	1358	IL-Q1RCXXL1351	1344	1350
1371	IL-E1RCXXH1371	1371	1378	IL-E1RCXXL1371	1364	1370
1411	IL-E1RCXXH1411	1411	1418	IL-E1RCXXL1411	1404	1410
1431	IL-E1RCXXH1431	1431	1438	IL-E1RCXXL1431	1426	1430
1451	IL-E1RCXXH1451	1451	1458	IL-E1RCXXL1451	1346	1450
1471	IL-S1RCXXH1471	1471	1478	IL-S1RCXXL1471	1464	1470

6. Contact Information

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