A DP-QPSK Transmitter

# Parts for a DP-QPSK Transmitter

<table>
<thead>
<tr>
<th>Component</th>
<th>Manufacturer</th>
<th>Model Number</th>
<th>Wavelength Range (nm)</th>
<th>Insertion Loss (dB)</th>
<th>Polarization Maintaining (Yes/No)</th>
<th>Price ($)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW Laser</td>
<td>NKT Photonics</td>
<td>Koheras Basik E15</td>
<td>1535-1585 nm</td>
<td>(16 dBm output)</td>
<td>Yes</td>
<td>11K</td>
<td>Mehravar: Piezo tuning capability, needs power supply, up to 40 mW, &lt; 0.1kHz,</td>
</tr>
<tr>
<td>Beam splitters/combiners</td>
<td>OZ OPTICS</td>
<td>FOBS-22P-1111-8/125-P PPPP-1550-50/50-60-3A3A3A3A-1</td>
<td>1520-1570</td>
<td>0.6</td>
<td>Yes</td>
<td>695</td>
<td>Mo: Wide wavelength range, Bi-directional, High extinction ratio, Mode independent behavior in multimode fiber applications.</td>
</tr>
<tr>
<td>Phase modulator</td>
<td>Thorlabs</td>
<td>LN65S-FC-10 GHz</td>
<td>1520 nm-1620nm</td>
<td>4 dB</td>
<td>YES</td>
<td>1550</td>
<td>Kogo: 10 GHz Phase Modulator with polarizer FC/PC Connectors</td>
</tr>
<tr>
<td>Polarization Rotator</td>
<td>ARCoptix</td>
<td>PR5600</td>
<td>350 - 1700nm</td>
<td>~2.0 @ 1550nm, ~0.7 in VIS</td>
<td>N/A</td>
<td>1030</td>
<td>Carpenter: Not ideal in the 1550nm range. I found another product with &lt;1.5 Insertion loss at 1550nm from AC Photonics, however, it didn't offer a price point.</td>
</tr>
<tr>
<td>Polarizing Beamsplitter Cubes</td>
<td>Thorlabs</td>
<td>PBS204</td>
<td>1200nm-1600nm</td>
<td>~0.15dB (98.5% over</td>
<td>Yes</td>
<td>188</td>
<td>Zhang:</td>
</tr>
<tr>
<td>Polarization Maintaining Assemblies</td>
<td>Silicon Lightwave Technology Inc</td>
<td>SM-40S-F1F2-03-1</td>
<td>Wavelengths: 375-980 and IR 1310-1550 nm</td>
<td>≤0.25 dB</td>
<td>Yes</td>
<td>$15.50/meter</td>
<td>Osman: Offers low attenuation and excellent birefringence</td>
</tr>
<tr>
<td>DP-QPSK Single drive</td>
<td>FUJITSU</td>
<td>FTM7977HQA</td>
<td><a href="C-BAND">1528-1565</a> &amp; [1565-1612] (L BAND)</td>
<td>13 dB band C and L</td>
<td>YES</td>
<td>10000</td>
<td>Albana/Lemieux: This is a complete modulator as oppose to single component of the modulator to be built. We should use this info to compare with what we are building in class. Potentially it can achieve up to 120 Gb/s which is even better than whats available in the industry. more info at <a href="http://jp.fujitsu.com/group/foc/downloads/services/100Gln/ln100gdqpsk-e-111102.pdf">http://jp.fujitsu.com/group/foc/downloads/services/100Gln/ln100gdqpsk-e-111102.pdf</a></td>
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OPTI 500, Spring 2012, Lecture 25, Coherent Optical Transmitter Project
Polarizing Beam Splitter

Optical Phase Modulator

Polarization Rotator – Free Space

Optical Collimators

Polarizing Beam Splitter – Free Space


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Polarizing Maintaining Patch Cords

Complete DP-QPSK Transmitter