

Draft Phase Reference/Timing Distribution Component Costs

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Draft Component Costs

Phase Reference Transmitter

| | | | | | |
|----------------------|--|---|-------|------------|------------|
| Laser Transmitter | Direct Modulated Isolated DFB Laser Module | 1 | each | \$484.00 | \$484.00 |
| Fiber Optic Receiver | APD Receiver | 1 | each | \$169.00 | \$169.00 |
| Directional Coupler | Directional Coupler 60/40 | 1 | each | \$150.00 | \$150.00 |
| Circulator | | 1 | each | \$100.00 | \$200.00 |
| Phase Shifter | | 1 | each | \$5,000.00 | \$5,000.00 |
| Feedback Controller | | 1 | each | \$1,000.00 | \$1,000.00 |
| Phase Detector | | 1 | each | \$19.89 | \$19.89 |
| Misc | | 1 | each | \$1,000.00 | \$1,000.00 |
| | | | Total | | \$8,022.89 |

Draft Component Costs

Phase Reference Receiver

| | | | | | |
|----------------------|--|---|------|------------|-------------|
| Fiber Optic Receiver | APD Receiver | 1 | each | \$169.00 | \$169.00 |
| Directional Coupler | Directional Coupler 60/40 | 1 | each | \$150.00 | \$150.00 |
| DRO 1.3 GHz | 1.3 GHz Free Running Dielectric Resonator Osc. | 1 | each | \$5,230.00 | \$5,230.00 |
| Mirror | FC Connector, 1meter fiber, High Refectivity coating (99%) | 1 | each | \$85.00 | \$85.00 |
| PLL | Phase Lock Module | 1 | each | \$3,060.00 | \$3,060.00 |
| Controller | | 1 | each | \$800.00 | \$800.00 |
| Amplifier | 1.3 GHz Amplifier | 1 | each | \$200.00 | \$200.00 |
| Misc | | 1 | each | \$1,000.00 | \$1,000.00 |
| | | | | Total | \$10,694.00 |

Draft Component Costs

Global Phase/Timing Distribution per Sector

| | | | | |
|--|---|------|-------------|-------------|
| Transmitter | 2 | each | \$8,022.89 | \$16,045.78 |
| Receiver | 2 | each | \$10,694.00 | \$21,388.00 |
| Fiber cable | 2 | each | \$9,600.00 | \$19,200.00 |
| Phase Comparator | 1 | each | \$5,000.00 | \$5,000.00 |
| Sector timing control and distribution | 1 | each | \$4,000.00 | \$4,000.00 |
| | | | Total | \$65,633.78 |

Draft Component Costs

Total Cost: Phase Reference/Timing to Sectors

| | | | | |
|---------------------------------------|-----|------|-------------|----------------|
| Phase Reference Links | 104 | each | \$79,033.78 | \$8,219,513.12 |
| Event Generators | 2 | each | \$4,000.00 | \$8,000.00 |
| Master Oscillators | 3 | each | \$60,000.00 | \$180,000.00 |
| Central Phase Distribution Controller | 2 | each | \$5,000.00 | \$10,000.00 |
| Total | | | | \$8,417,513.12 |

Draft Component Costs

Local (Intra Sector) Phase/Timing Distribution

| Item | Quantity | Units | Unit Price | Cost |
|------------------------------|----------|--------|-------------|----------------|
| Phase Reference Cable | 576 | meters | \$9.84 | \$5,667.84 |
| LO cable | 576 | meters | \$9.84 | \$5,667.84 |
| Fiducial | 576 | meters | \$8.25 | \$4,752.00 |
| Event System | 576 | meters | \$2.00 | \$1,152.00 |
| Directional Couplers | 48 | each | \$55.00 | \$2,640.00 |
| Connector | 64 | each | \$40.00 | \$2,560.00 |
| Connector | 32 | each | \$34.95 | \$1,118.40 |
| Cable for drops | 400 | meters | \$4.52 | \$1,808.00 |
| Connector | 96 | each | \$18.64 | \$1,789.44 |
| Amplifiers | 4 | each | \$1,500.00 | \$6,000.00 |
| Driver | 2 | each | \$5,000.00 | \$10,000.00 |
| Misc | 1 | each | \$5,000.00 | \$6,000.00 |
| Phase Reference Temp control | 2 | each | \$10,000.00 | \$20,000.00 |
| Total | | | | \$69,155.52 |
| Local Distribution | 52 | each | \$69,155.52 | \$3,596,087.04 |

Draft Component Costs

