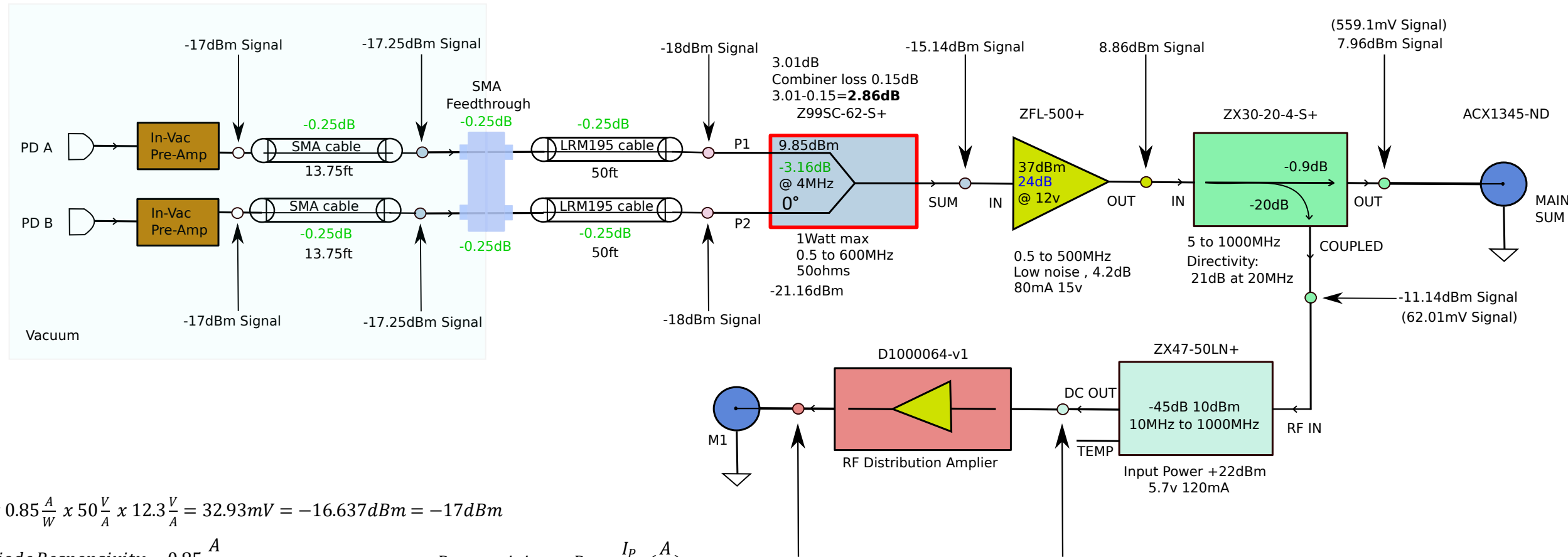


Block Diagram for Squeezer 3.125Mhz Combiner for O4_D2100764-v1



$$63\mu W \times 0.85 \frac{A}{W} \times 50 \frac{V}{A} \times 12.3 \frac{V}{A} = 32.93mV = -16.637dBm = -17dBm$$

$$\text{Photodiode Responsivity} = 0.85 \frac{A}{W}$$

$$\text{Load Resistor} = 50ohms = 50 \frac{V}{A}$$

$$\text{Transimpedance Gain} = 12.3 \frac{V}{A}$$

$$\text{Photodiode power} = 20mW$$

$$\text{IFO signal from out the OMC} = 100mW$$

$$SSB = 2$$

$$\sqrt{\text{IFO signal out OMC} * \text{Photodiode Power} * SSB}$$

$$\sqrt{100nW * 20mW * 2} = 63\mu W$$

$$\text{Responsivity} = R_\lambda = \frac{I_p}{P} \left(\frac{A}{W} \right)$$

$$\text{Current (Photons)} = R_\lambda \left(\frac{A}{W} \right) \times P(W) = (A)$$

$$I = 0.85 \frac{A}{W} \times 63\mu W = 53.55\mu A$$

adding the transimpedance gain and multiplying the 50ohms load to get the voltage

$$V_{\text{Total}} = I (A) \times 12.3 \left(\frac{V}{A} \right) \times 50 \left(\frac{V}{A} \right) = 53.55\mu A \times 12.3 \frac{V}{A} \times 50 \frac{V}{A} = 32.93mV$$

volts to dbm

$$P(dBm) = 10 \log \left[\frac{0.03293^2}{50ohms \times 1mW} \right] = -16.637dBm = -17dBm$$

$$P(dBm) = 10 \log \left[\frac{v^2}{50ohms \times 1mW} \right]$$

$$V(rms) = \sqrt{\frac{50ohms}{1000}} \times 10^{\frac{dBm}{20}}$$