

**Specifications for LIGO I&Q Demodulator**  
**LIGO-T080196-00**  
**R. Abbott, Caltech**  
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**1. Overview**

LIGO is interested in purchasing I & Q RF demodulators. Below is a list of key performance requirements.

**2. Requirements**

**Table 1**

<b><u>Parameter</u></b>	<b><u>Requirement</u></b>
Frequency Range	9 MHz to 100 MHz
Conversion Loss (maximum allowable)	6 dB
1dB Compression (minimum for RF Input)	13 dBm
Maximum LO Level	20 dBm
Amplitude Balance (maximum imbalance)	0.5 dB
Phase Balance (maximum imbalance)	2 degrees
Harmonic Suppression at 3 times LO frequency	-20 dBc
Harmonic Suppression at 5 times LO frequency	-20 dBc
RF and LO Nominal Input Impedance	50 Ohms
Input and Output Connectors	SMA

**3. Miscellaneous**

The detection linearity is of particular interest in this application. The requirements for 1dB compression and maximum LO level may be at odds with the desire for optimal linearity. Please feel free to suggest adjustments that may allow better overall linearity, as well as any other useful suggestions that may arise.

For practical reasons, it's nice to have one device that covers the whole frequency range, but if that is simply impossible, we could look at breaking this range into sub-bands.

Please quote for prototype quantities of 4 units. For technical assistance regarding this order, please contact:

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