

Photodiode Étienne

These photodiodes were developed by Étienne in cooperation with the AEI and altered to peak at about 16.2MHz.

Schematics Used

- Schematic
- Interactive Schematic
- HAMAMATSU S5971: Photodiode @ 960NM, 100MHz

Notable Changes Made

To achieve a peak at around 16.2MHz, components had to be changed.
Changed components:

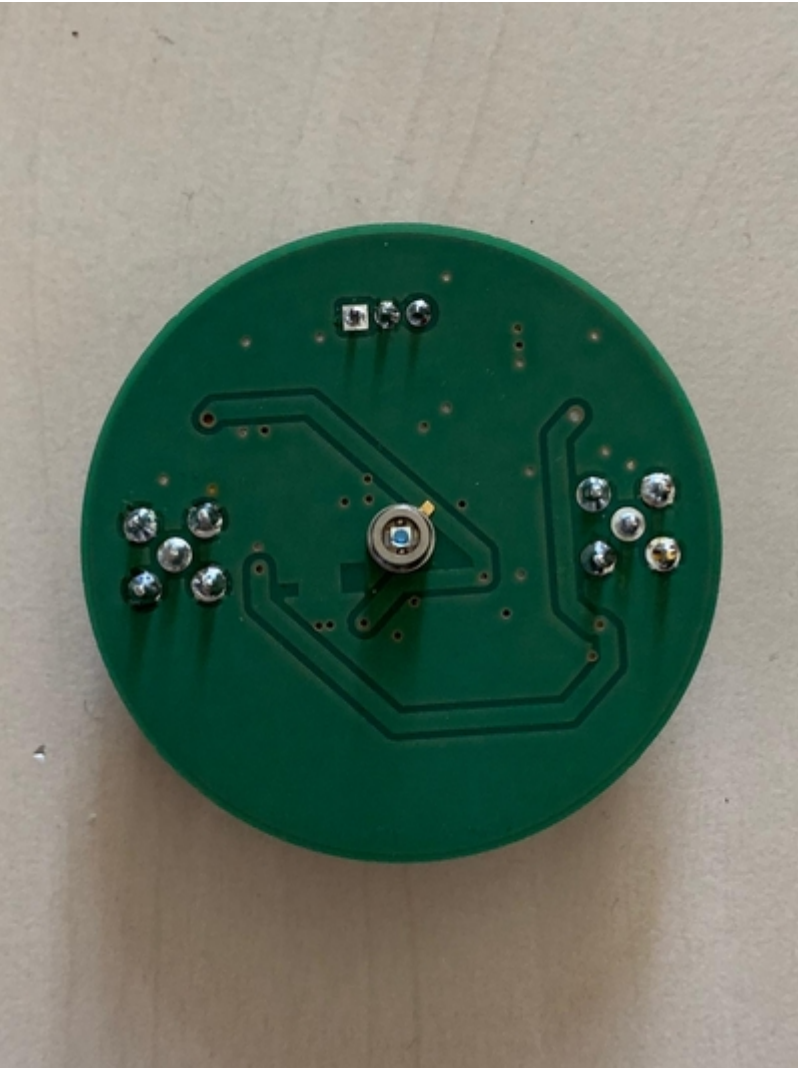
	Schematic Component	Used Component
L1	6u8	6u8
C3	6p	2 x 4.7p
R2	40.2R	40.2R
	Changed only for the 3rd and 4th build	
U5	AD587	LT1236A-10
C19	1u	none

- For Coil L1 the part [1812CS-682XJLC](#) (or at least a part with the same form factor) has to be used
- C3 influences at which frequency the peak will be
- Instead of the AD587, LT1236A-10 can be used
 - When doing this, the C19 component must not be soldered.
 - C19 connects pin 8 of U5 to ground. Pin 8 is not in use in LT1236A-10.

Using The Photodiode

- The photodiode requires a power input of +/- 15V
- AC Output: right SMA connector
- DC Output: left SMA connector
- When using a spectrum-analyzer (e.g. RIGOL DSA815) in combination with the ROHDE&SCHWARZ signal-generator, a 50Ω terminator must be used, too





Measured Data

The

traces
of the amplitude and phase were measured.

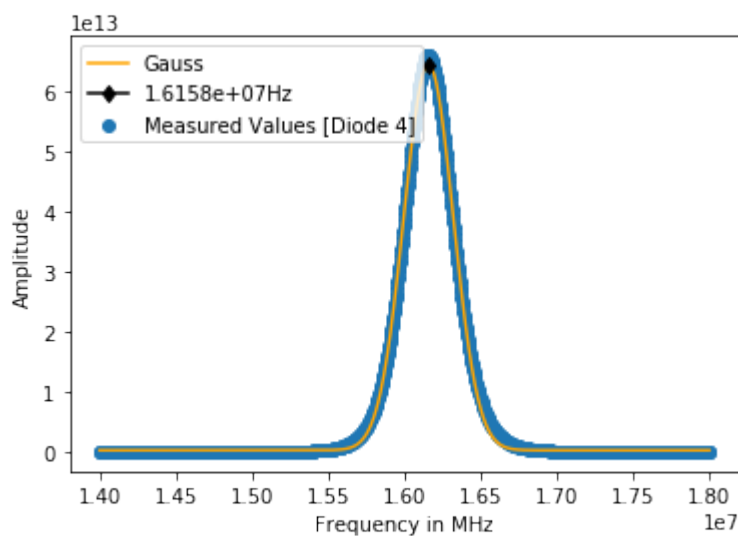
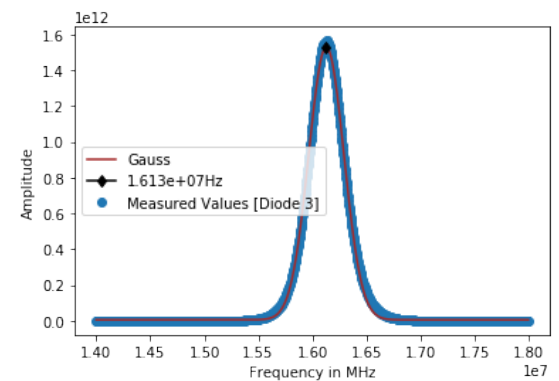
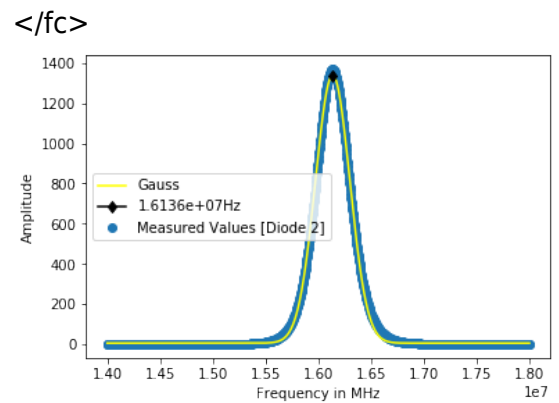
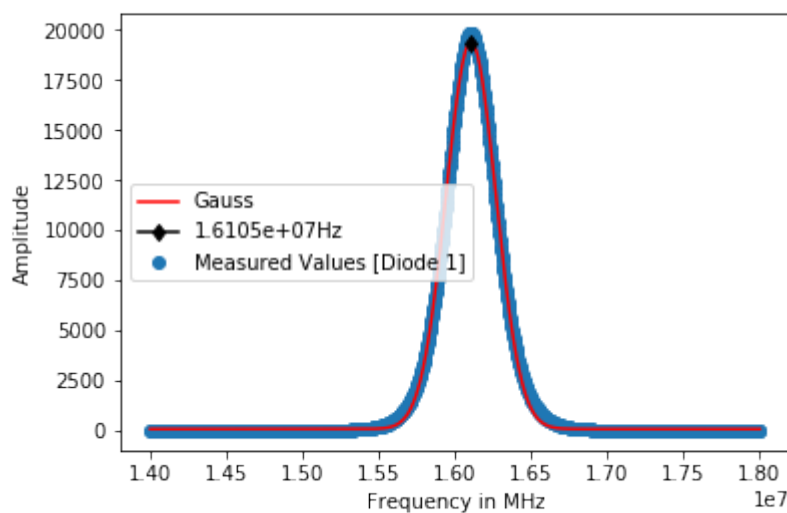
- A `<fc #ff0000>RIGOL Network Analyzer</fc>` was used to gather that data from the AC output
- A 9V test-laser with a modulation of -10dB @ 100MHz was used in this experimental setup
- The traces of the diodes were fitted in Python

The results:

Diode	Resonance frequency [MHz]	Resonance peak hight over noise [dB]	FWHM with Gauß-Fit [kHz]	Phase	Comment
1	16.105		271.75		

Diode	Resonance frequency [MHz]	Resonance peak height over noise [dB]	FWHM with Gauß-Fit [kHz]	Phase	Comment
2	16.136		270.98		
3	16.13		271.45		
4	16.158		269.72		

- <fc #ff0000>Es fehlt der Fehler von der Linienbreite und des Max Peaks</fc>
- Höhe des Resonanz-Peaks über Rauschen
- <fc #ff0000>Daten der Phasen-Messung fehlen + Auswertung/Result</fc>



From:

<https://iqwiki.iqo.uni-hannover.de/> - IQwiki

Permanent link:

<https://iqwiki.iqo.uni-hannover.de/doku.php?id=groups:mg:private:resonatoren:photodiodeetienne:start&rev=1570693410>

Last update: **2019/10/10 07:43**

