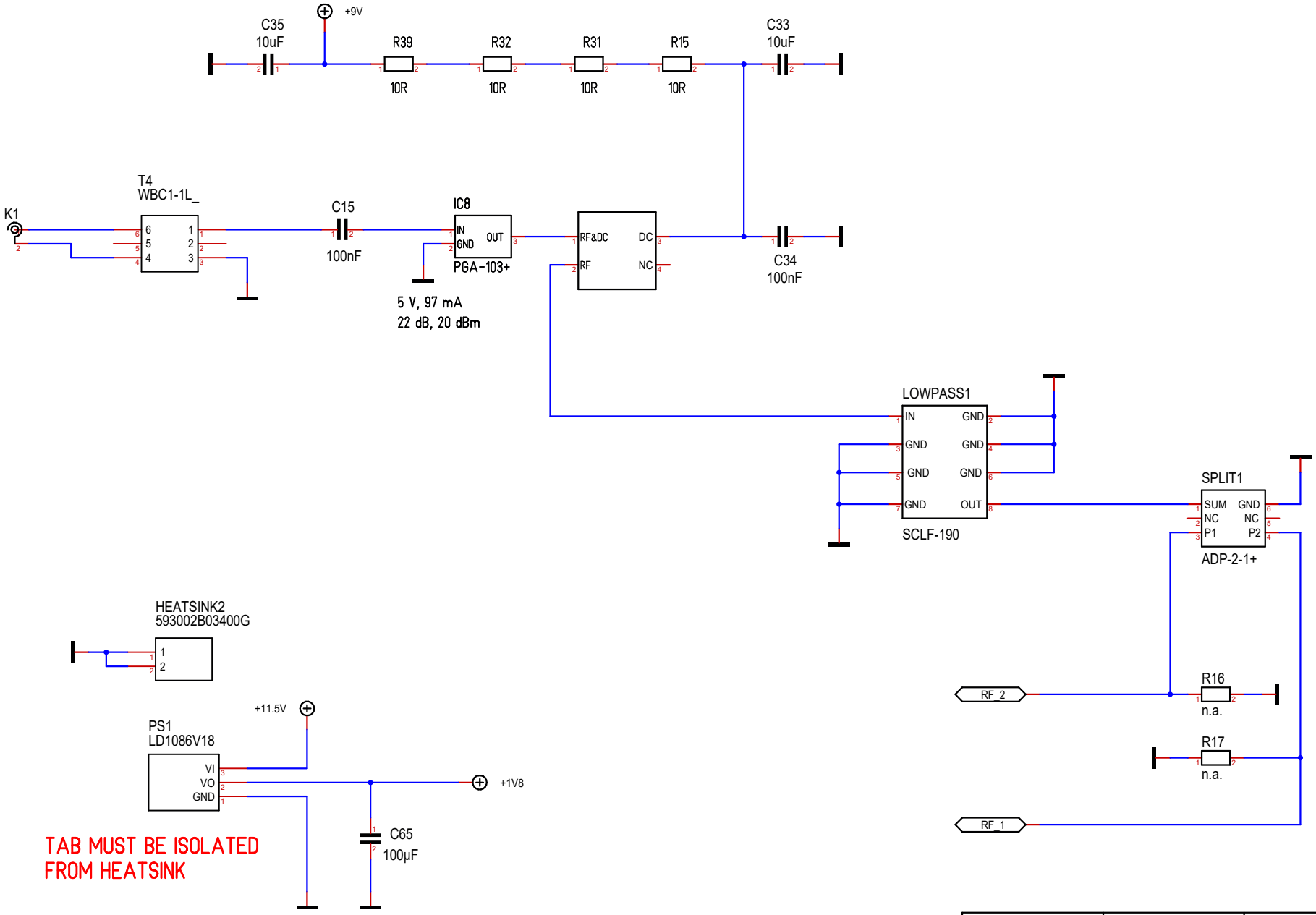
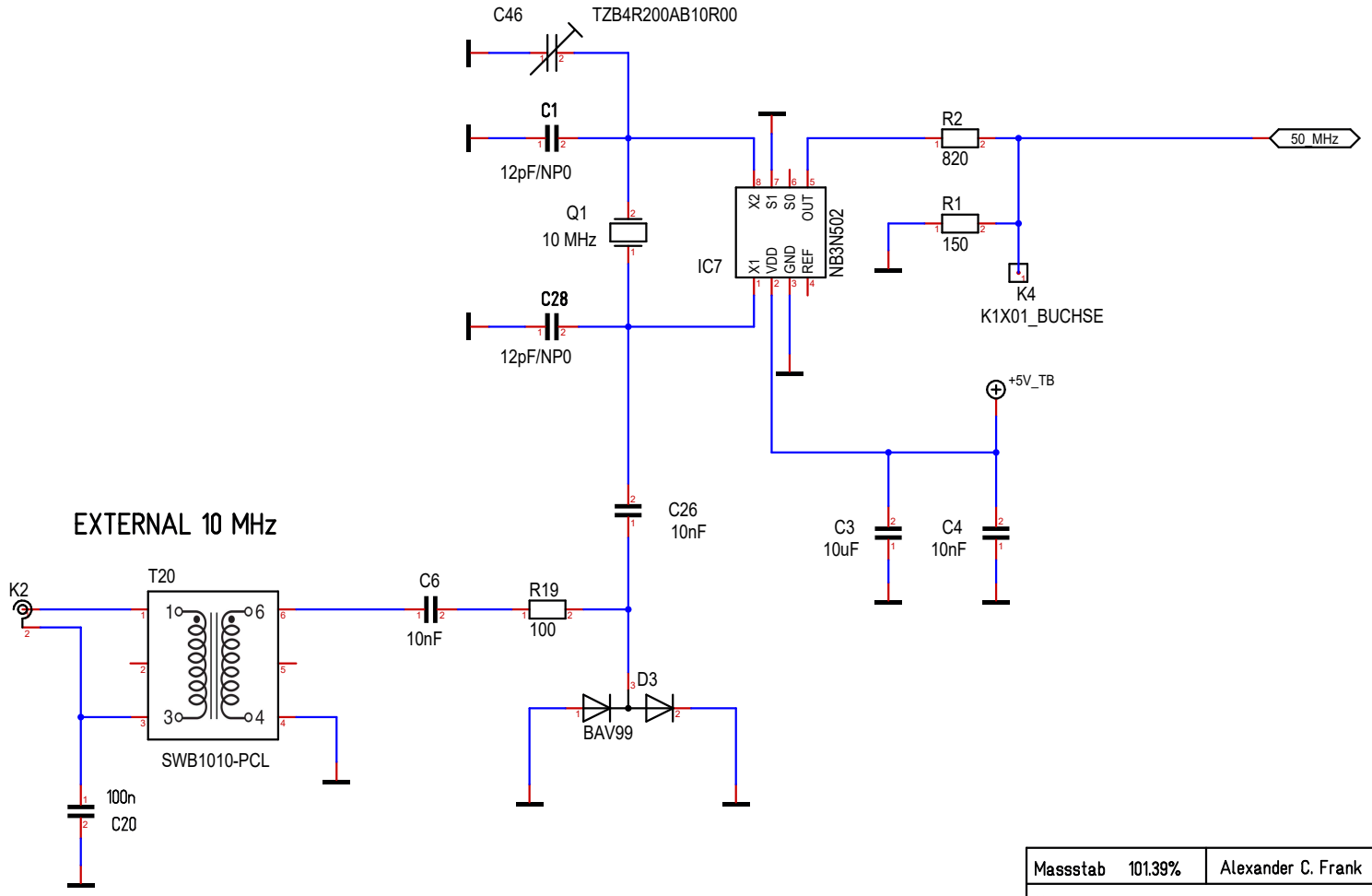


Massstab	101.39%	Alexander C. Frank	Blatt :INPUT/AMPLIFIER
Änderung	11.12.2020	08:12	ETH QUANTUMOPTICS
Ausgabe	11.12.2020	09:22	
Datei	Polarmod-1.T3001		

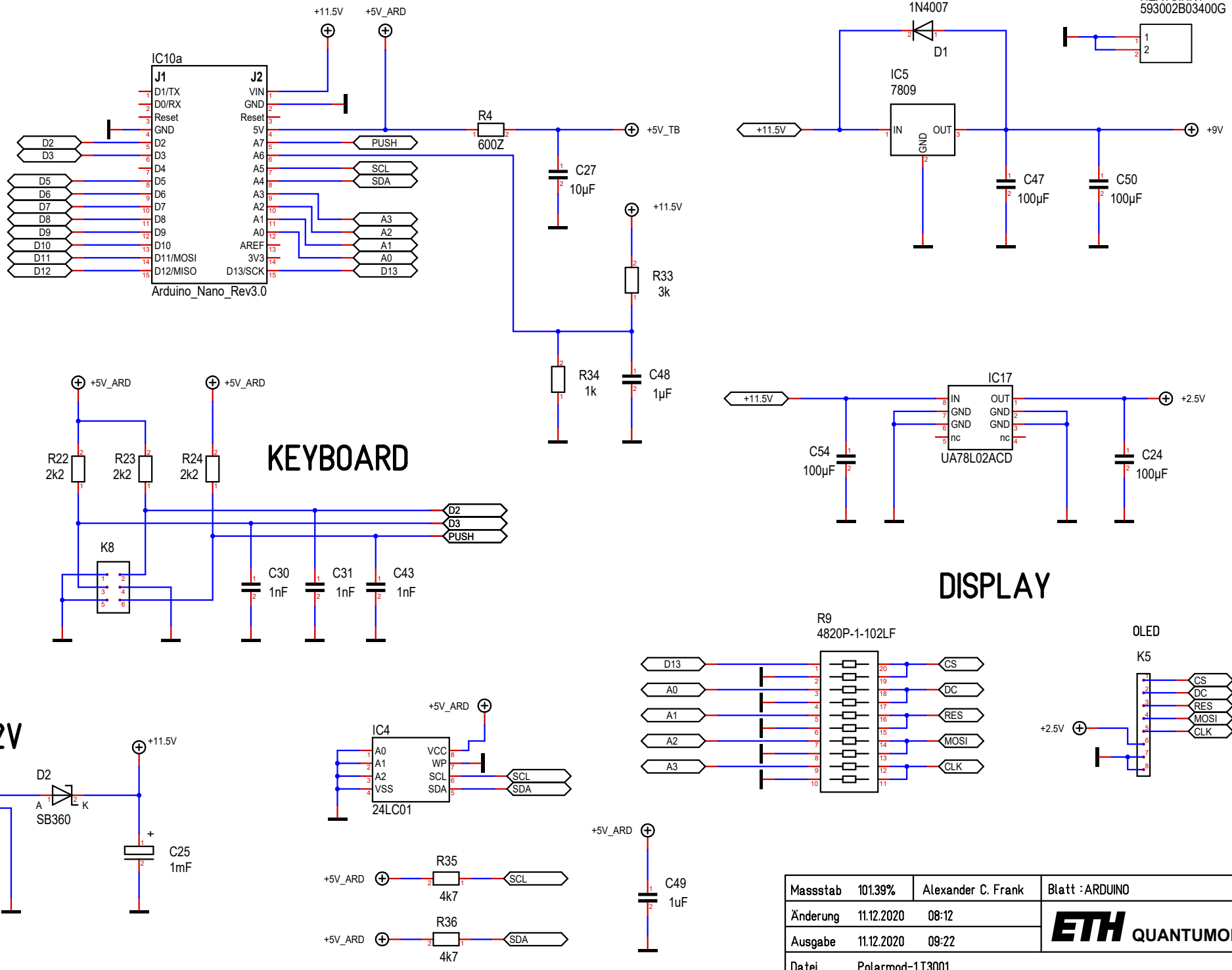
Table 1. CLOCK MULTIPLIER SELECT TABLE

S1*	S0**	Multiplier
L	L	2X
L	H	5X
M	L	3X
M	H	3.33X
H	L	4X
H	H	2.5X

L = GND
H = V_{DD}
M = OPEN (unconnected)
* Pin S1 defaults to M when left open
** Pin S0 defaults to H when left open



Massstab	101.39%	Alexander C. Frank	Blatt : REFCLK_50MHz
Änderung	11.12.2020	08:12	ETH QUANTUMOPTICS
Ausgabe	11.12.2020	09:22	
Datei	Polarmod-1.T3001		


IC10a
J1
J2
D1/TX
D0/RX
Reset
GND
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11/MOSI
D12/MISO
VIN
GND
Reset
5V
A7
A6
A5
A4
A3
A2
A1
A0
AREF
3V3
D13/SCK
Arduino_Nano_Rev3.0
+11.5V
+5V_ARD
PUSH
SCL
SDA
R4
600Z
+5V_TB
C27
10µF
R33
3k
R34
1k
C48
1µF
1N4007
D1
HEATSINK1
593002B03400G
IC5
7809
IN
GND
OUT
+9V
C47
100µF
C50
100µF
KEYBOARD
R22
2k2
R23
2k2
R24
2k2
K8
C30
1nF
C31
1nF
C43
1nF
IC17
UA78L02ACD
nc
+2.5V
C54
100µF
C24
100µF
DISPLAY
R9
4820P-1-102LF
D13
A0
A1
A2
A3
CS
DC
RES
MOSI
CLK
OLED
K5
+12V
K6
D2
SB360
C25
1mF
IC4
24LC01
VCC
WP
VSS
R35
4k7
R36
4k7
C49
1uF
Massstab 101.39%
Alexander C. Frank
Blatt : ARDUINO
Änderung 11.12.2020 08:12
Ausgabe 11.12.2020 09:22
Datei Polarmod-1.T3001
ETH QUANTUMOPTICS

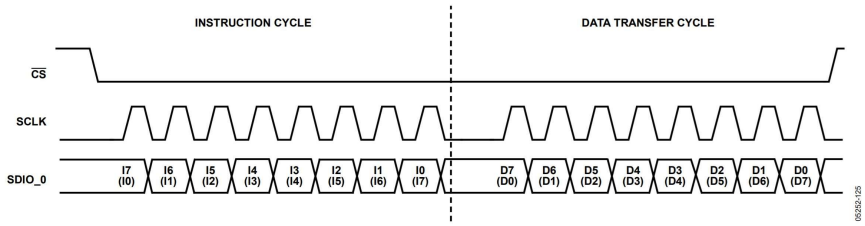


Figure 43. Single-Bit Serial Mode Write Timing—Clock Stall Low

Single-bit serial 2-wire mode

IC6
TXB0108PWR

D5, D6, D7, D8, D9, D10, D11, D12
+5V_ARD
B1 VCCB B2 B3 B4 B5 B6 B7 B8 GND
A1 VCCA A2 A3 A4 A5 A6 A7 A8 OE
RESET, +3V3
SYNC_I/O, SDIO_2, SDIO_1, SDAT, SCLK, DDS_CS, I/O_UPDATE
+3V3

DDS1
AD9958

RESET
I/O_UPDATE
DDS_CS
SCLK
SDAT
SDIO_1
SDIO_2
SYNC_I/O

MASTER_RESET, PWR_DWN, I/O_UPDATE, /CS, SCLK, SDIO_0, SDIO_1, SDIO_2, SDIO_3, SYNC_CLK, P0, P1, P2, P3, DVDD_I/O, DVDD, DVDD, DGND, DGND, CLK_MODE, REFCLK, /REFCLK, AGND, SYNC_IN

AVDD, AVDD, AVDD, AVDD, AVDD, AVDD, AVDD, AVDD — +1V8
/CH0_IOUT, CH0_IOUT
AVDD, AVDD, AVDD, AVDD, AVDD, AVDD, AVDD — +1V8
/CH1_IOUT, CH1_IOUT
LOOPFILTER, DAC_R
NC, NC, NC, NC
AGND, AGND, AGND, AGND, AGND, AGND, PADDLE, SYNC_OUT

+1V8
51 R26
T5 TC1-1T-+
SECONDARY, SECONDARY_CT, SEC_DOT, PRIMARY, PRIM_DOT
LO-I
R25 51
+1V8
51 R28
T6 TC1-1T-+
LO-Q
R27 51
+1V8

R29 1 k
C42 680 pF
+1V8
R18 ERA-3ARB1911V

+5V_ARD
C53 100nF
+3V3
C52 100nF
R30 10k
C45 1nF
+3V3

T3 TC1-1T-+
SECONDARY, SECONDARY_CT, SECONDARY_DOT, PRIMARY_DOT, PRIMARY
50_MHz
C39 1nF
R20 tbd
C40 1nF
C41 1nF

R21 10k
C44 1nF

IC3
OUT, GND, GND, nc; IN, GND, GND, nc
78L03
+3V3
C51 1uF
+11.5V

FR1[22:18]PLL Divider Ratio ∴ M = 10

+1V8
C55 100nF, C56 100nF, C57 100nF, C58 100nF, C59 100nF, C60 100nF, C61 100nF, C62 100nF, C63 100nF, C64 100nF

Massstab	101.39%	Alexander C. Frank	Blatt : AD9958
Änderung	11.12.2020	08:12	ETH QUANTUMOPTICS
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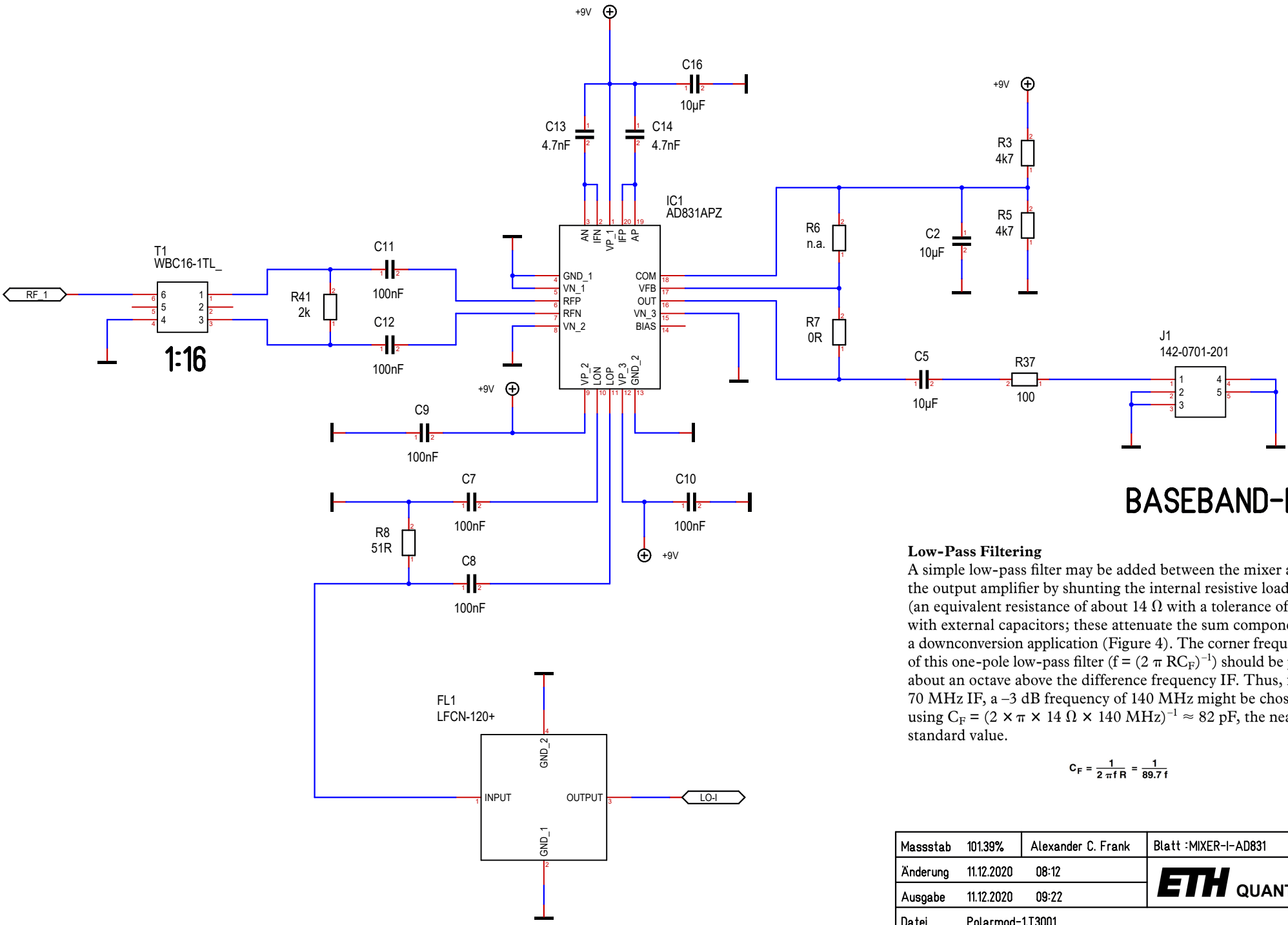
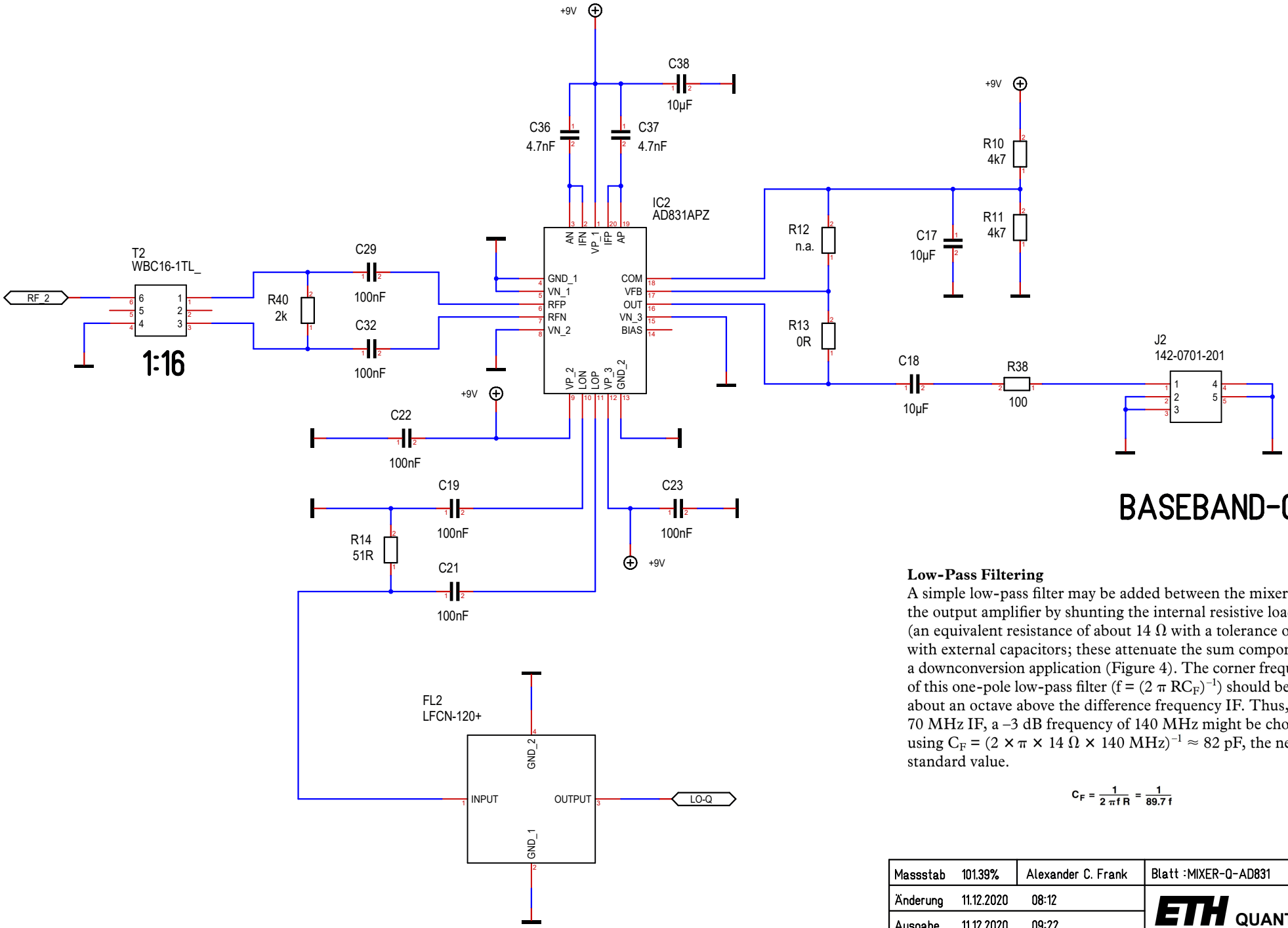


Low-Pass Filtering

A simple low-pass filter may be added between the mixer and the output amplifier by shunting the internal resistive loads (an equivalent resistance of about 14 Ω with a tolerance of 20%) with external capacitors; these attenuate the sum component in a downconversion application (Figure 4). The corner frequency of this one-pole low-pass filter ($f = (2\,\pi\,RC_F)^{-1}$) should be placed about an octave above the difference frequency IF. Thus, for a 70 MHz IF, a –3 dB frequency of 140 MHz might be chosen, using $C_F = (2 \times \pi \times 14\ \Omega \times 140\ \text{MHz})^{-1} \approx 82$ pF, the nearest standard value.

$$C_F = \frac{1}{2\,\pi f R} = \frac{1}{89.7\,f}$$

Massstab	101.39%	Alexander C. Frank	Blatt :MIXER-I-AD831
Änderung	11.12.2020	08:12	ETH QUANTUMOPTICS
Ausgabe	11.12.2020	09:22	
Datei	Polarmod-1.T3001		



Low-Pass Filtering

A simple low-pass filter may be added between the mixer and the output amplifier by shunting the internal resistive loads (an equivalent resistance of about 14 Ω with a tolerance of 20%) with external capacitors; these attenuate the sum component in a downconversion application (Figure 4). The corner frequency of this one-pole low-pass filter ($f = (2\,\pi\,RC_F)^{-1}$) should be placed about an octave above the difference frequency IF. Thus, for a 70 MHz IF, a –3 dB frequency of 140 MHz might be chosen, using $C_F = (2 \times \pi \times 14\ \Omega \times 140\ \text{MHz})^{-1} \approx 82$ pF, the nearest standard value.

$$C_F = \frac{1}{2\,\pi f\,R} = \frac{1}{89.7\,f}$$

Massstab	101.39%	Alexander C. Frank	Blatt :MIXER-Q-AD831
Änderung	11.12.2020	08:12	ETH QUANTUMOPTICS
Ausgabe	11.12.2020	09:22	
Datei	Polarmod-1.T3001		