

Annex acc. to FCC Title 47 CFR Part 95 M
relating to
Hexagon Geosystems Services AG, Zweigniederlassung Hexagon Mining
QR4000

Annex no. 11

Antenna Requirements Details

Title 47 - Telecommunication
Part 95 - Personal Radio Services
Subpart M – The 76 – 81 GHz Band Radar Service
Measurement Procedure:
ANSI C63.26-2015



Deutsche
Akkreditierungsstelle
D-PL-12053-01-03

Version	Applied changes	Date of release
00	Initial release	2024-07-31

Antenna Requirements Details



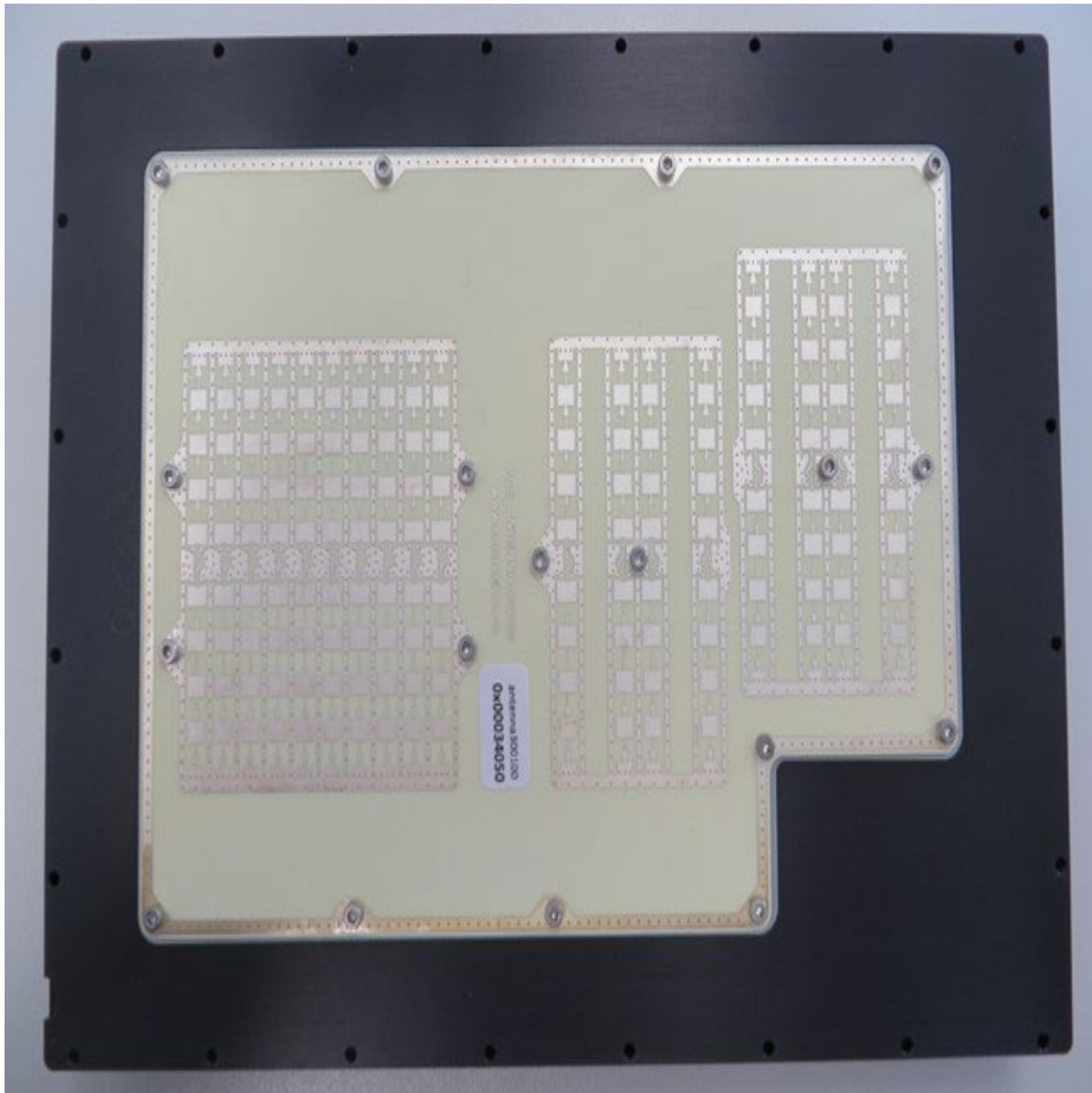
Antenna Requirements QR4000 (DRVEGRD 152)

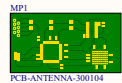
Equipment: *Radar Sensor*

Trademark: *Hexagon*

Manufacturer: *Hexagon Geosystems
Services AG, Zweigniederlassung Hexagon
Mining*

Photo of the Antennas





U ANTENNA-30 Stack
ANTENNA-30 Stack.SchDoc

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ANTENNA-30 Overview

300104

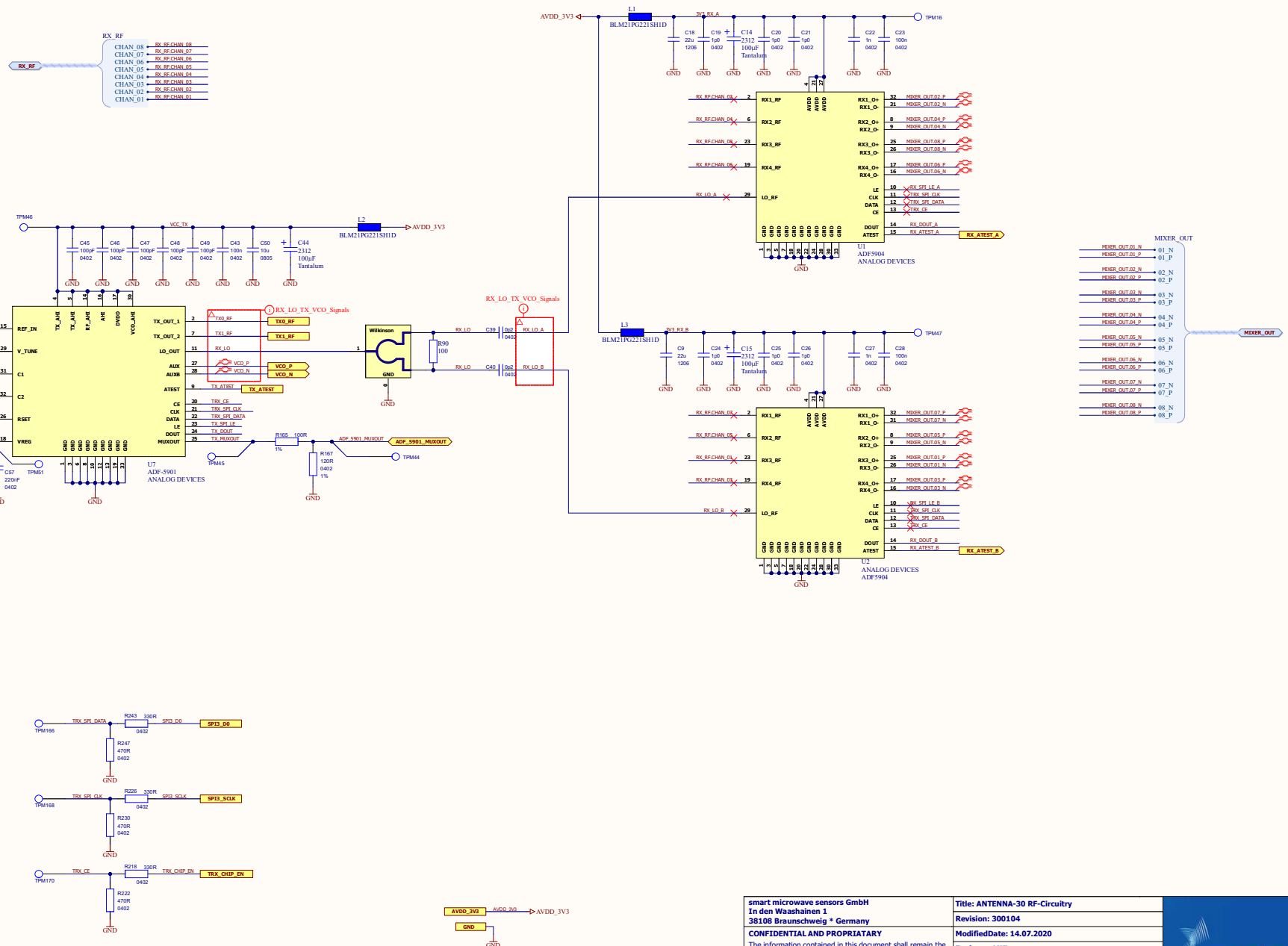
14.07.2020

MKL

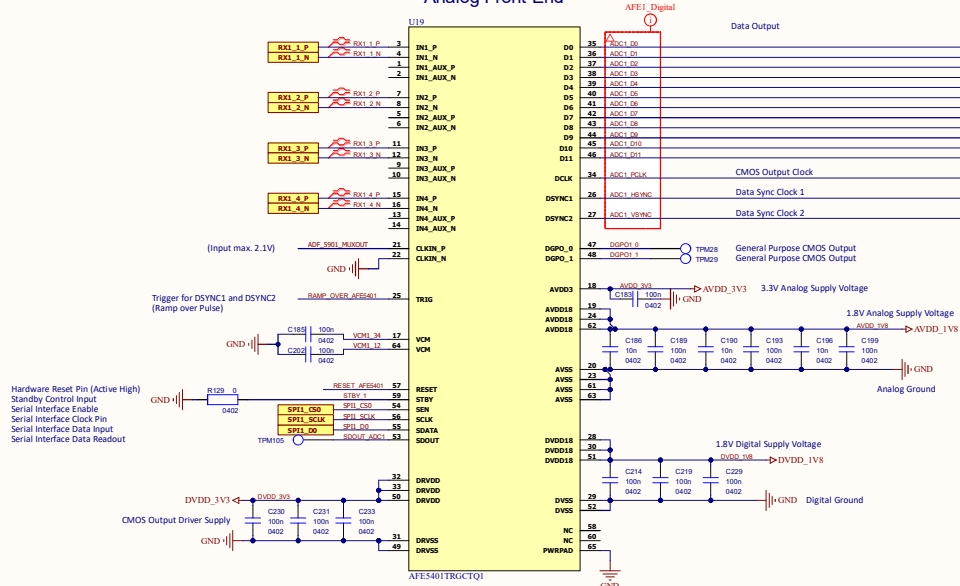
MKL

ANTENNA-30_TOP.SchDoc

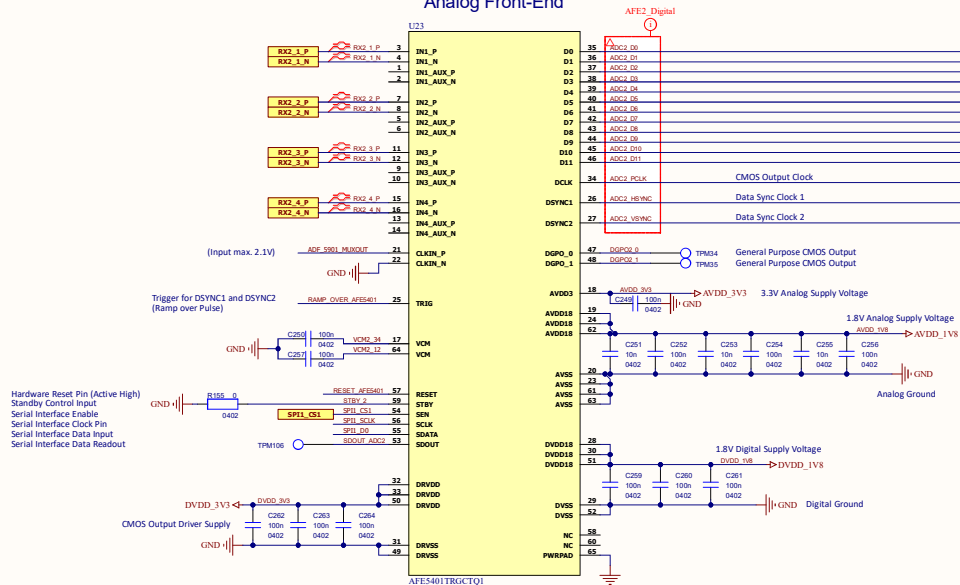




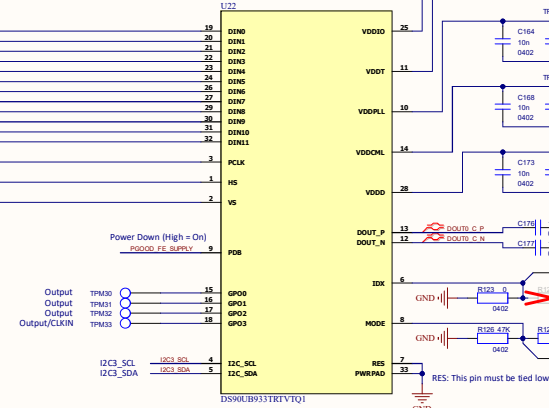
Quad Channel Analog Front-End



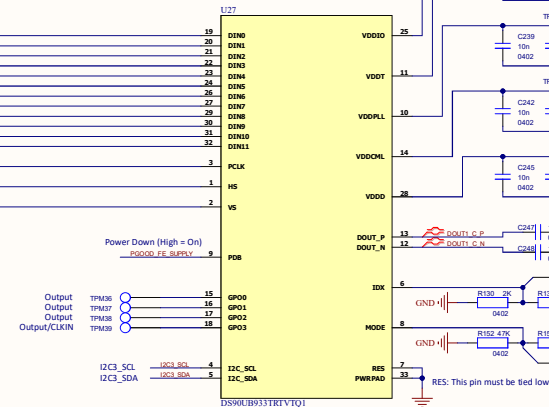
Quad Channel Analog Front-End



FPD-Link III Serializer



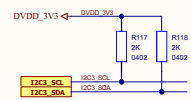
FPD-Link III Serializer



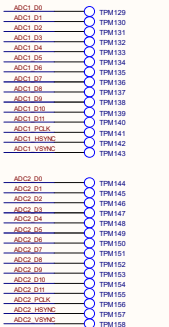
IC Addresses:

Serializer 1: 0x58
Serializer 2: 0x59
Deserializer: 0x30
ADS1015: 0x48

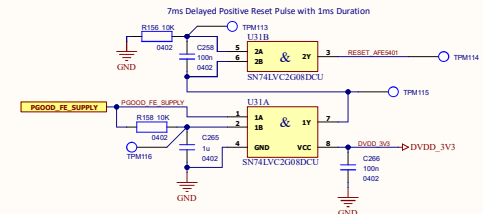
IC Pull-up Resistors



Testpoints



ADC Reset Generator



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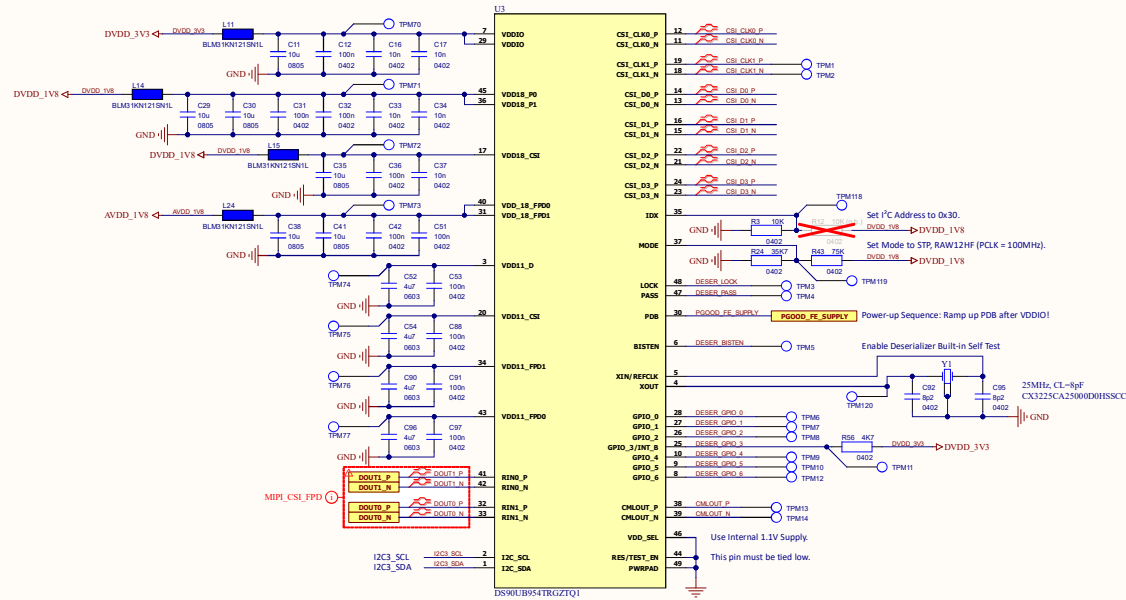
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25.10.2018

ANTENNA-30_TDA2P_ADC.SchDoc

smartmicro
SMART MICROWAVE SENSORS GMBH

Dual FPD-Link III
Deserializer Hub
with MIPI CSI-2 Outputs

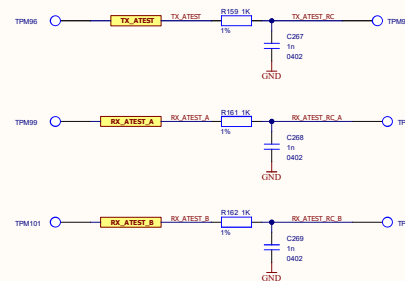
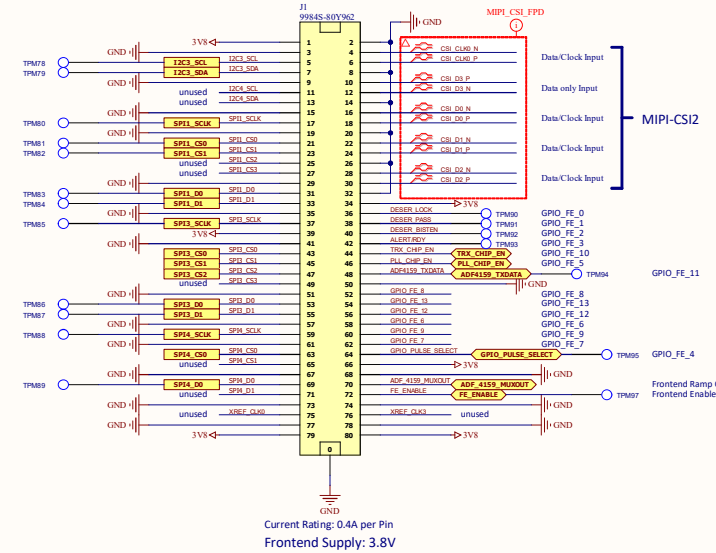


SPI1: CS0 - ADC0
SPI1: CS1 - ADC1
SPI1: CS2 - unused
SPI1: CS3 - unused

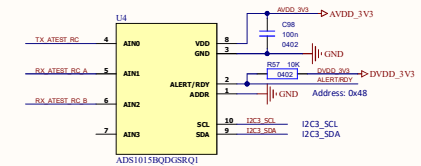
SPI3: CS0 - ADF5901 (TX)
SPI3: CS1 - ADF5904 (RX)
SPI3: CS2 - ADF5904 (RX)
SPI3: CS3 - unused

SPI4: CS0 - ADF4159 (PLL)
SPI4: CS1 - unused

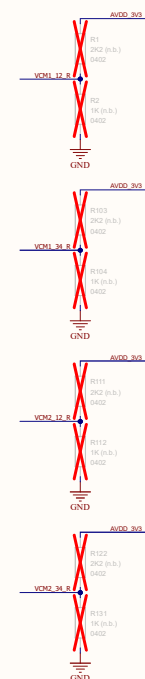
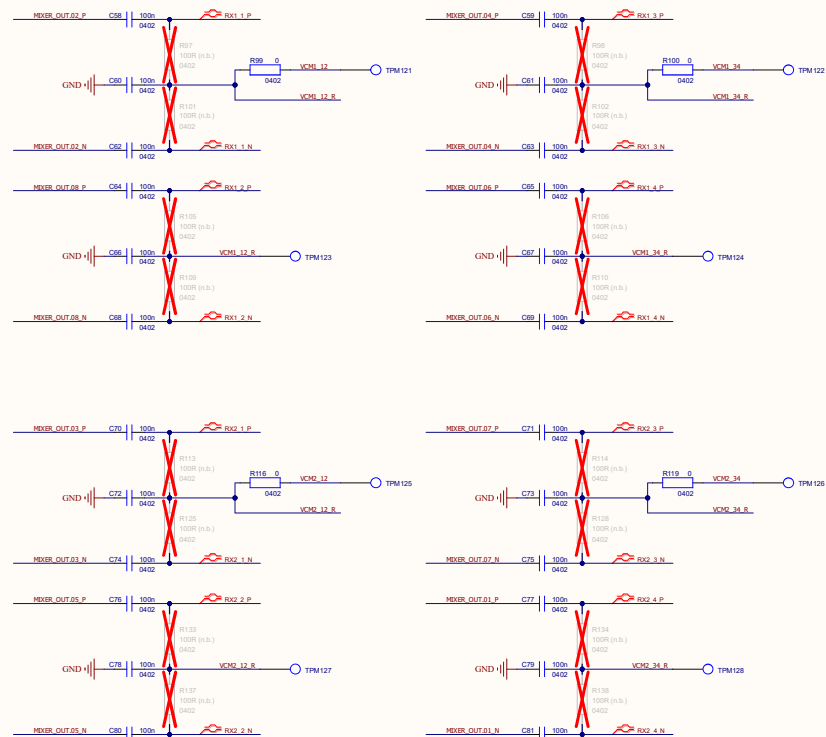
I2C3: 2 x DS90UB933, 1 x DS90UB954, 1 x ADS1015
I2C4: unused



i2C ADC for Frontend Temperature Sensors

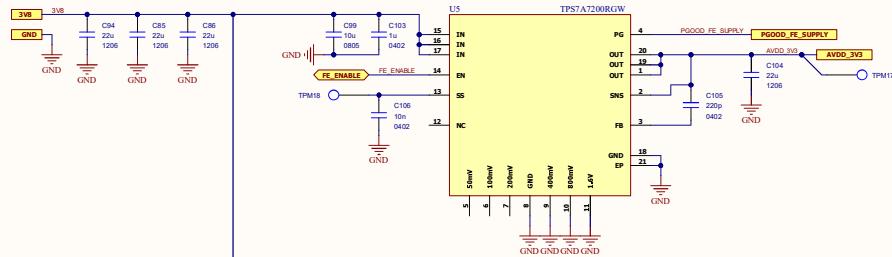


ADF5901 Analog Test Output
ADF5904 Analog Test Output 1
ADF5904 Analog Test Output 2



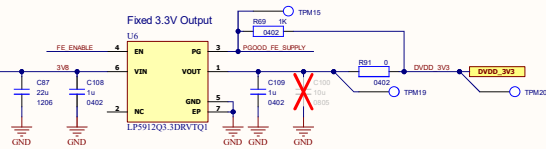
Frontend Power Supply

AVDD_3V3 / 3.3V , 2.0A Linear Regulator

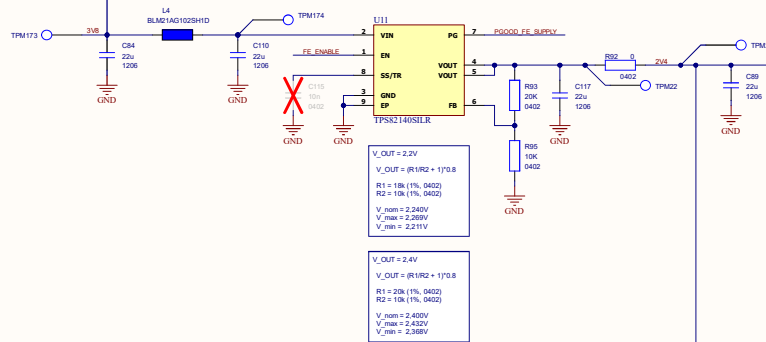


Set Output to 3.30V (0.5V + 1.6V + 800mV + 400mV)
max. Dropout Voltage = 200mV

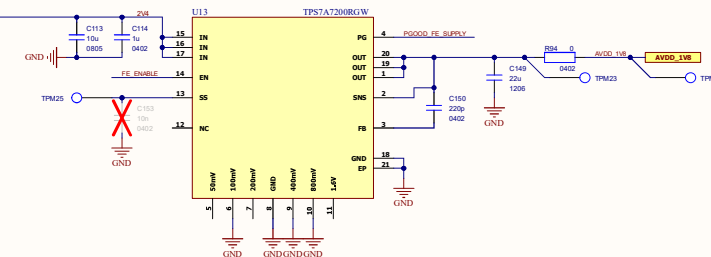
DVDD_3V3 / 3.3V , max. 0.5A



Intermediate 2.4V , max. 2A (thermal derating)

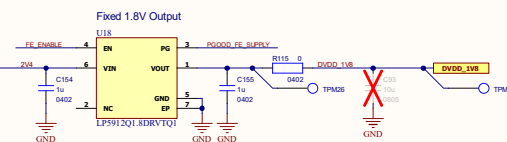


AVDD_1V8 / 1.8V , 2.0A Linear Regulator



Set Output to 1.8V (0.5V + 800mV + 400mV + 100mV)
max. Dropout Voltage = 180mV

DVDD_1V8 / 1.8V , max. 0.5A



All Power Good Outputs are connected to a wired AND logic.
PGOOD_FE_SUPPLY is high only if all supplies are stable.

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*	13.07.2020
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*	ANTENNA-30_TDA2P_Frontend_Power_Supply.SchDoc

