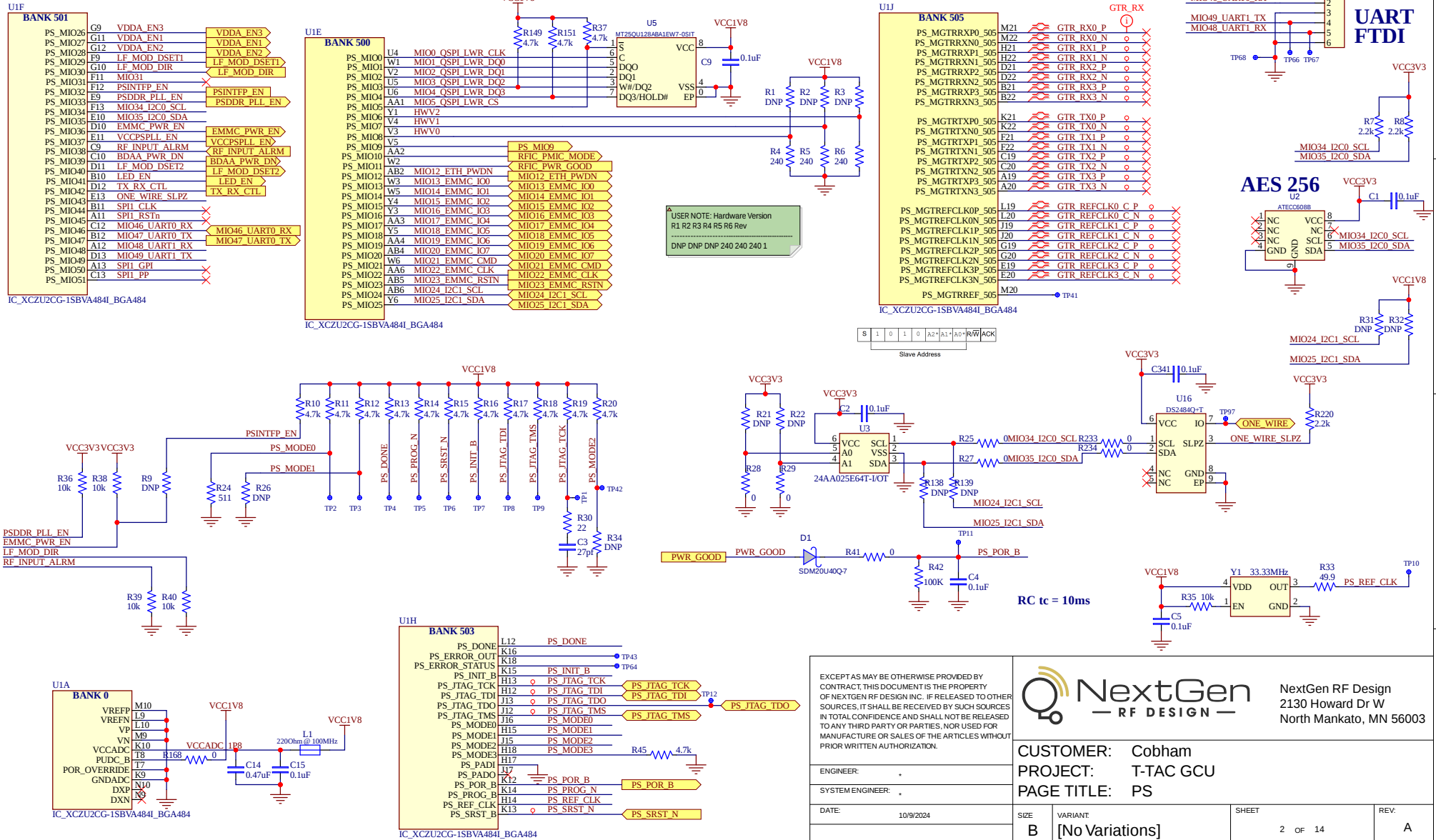




# BASEBAND PROCESSING SYSTEM (PS)



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SYSTEM ENGINEER: \_\_\_\_\_

DATE: 10/9/2024

**NextGen**  
— RF DESIGN —

NextGen RF Design  
2130 Howard Dr W  
North Mankato, MN 56003

CUSTOMER: Cobham  
PROJECT: T-TAC GCU  
PAGE TITLE: PS

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| SIZE | VARIANT         | SHEET   | REV. |
| B    | [No Variations] | 2 OF 14 | A    |

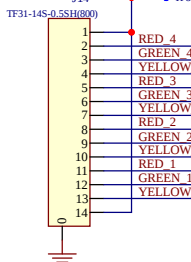
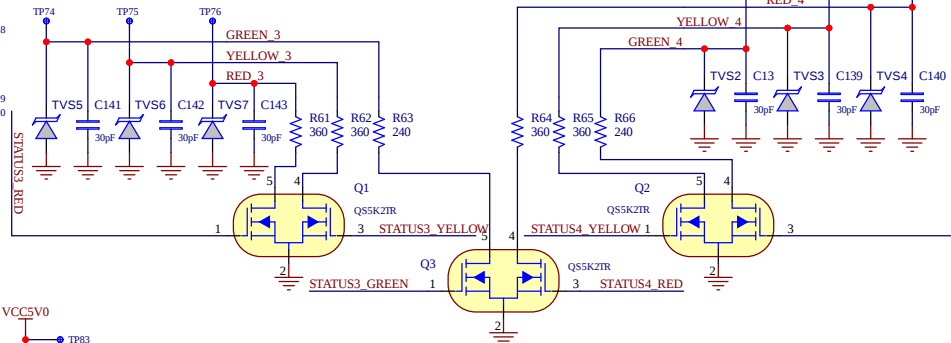
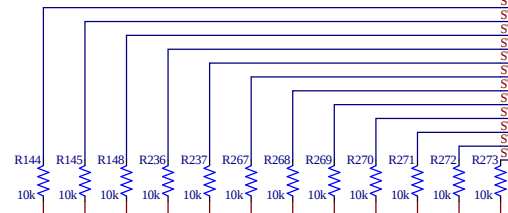
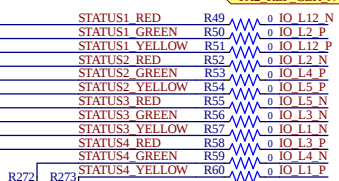
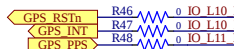
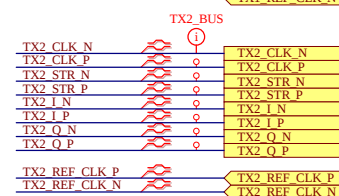
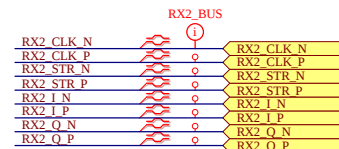
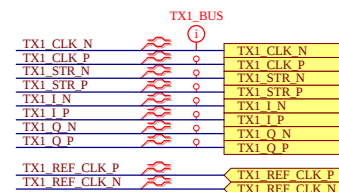
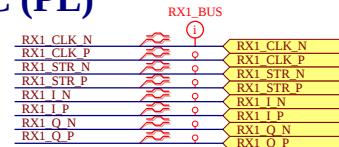
# BASEBAND PROGRAMABLE LOGIC (PL)

Bank 65 and 66 are HP banks supporting <= 1.8V standards with full differential support. Bank 65 supports several MIPI PHY channels when supplied with 1.2V.

Bank 26 is a HD bank supporting <= 3.3V standards. Only differential receive is supported in HD banks. External differential termination is required.

All banks have 4 pair of global clocks.

LAYOUT NOTE:  
DEV\_CLK should be routed with 5x trace space to other signals.



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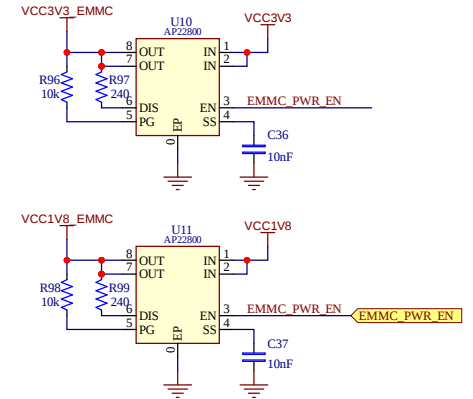
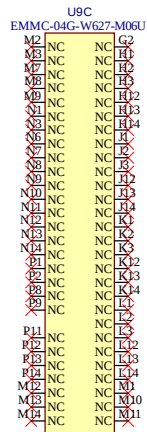
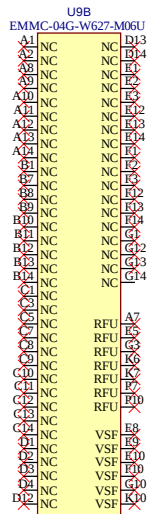
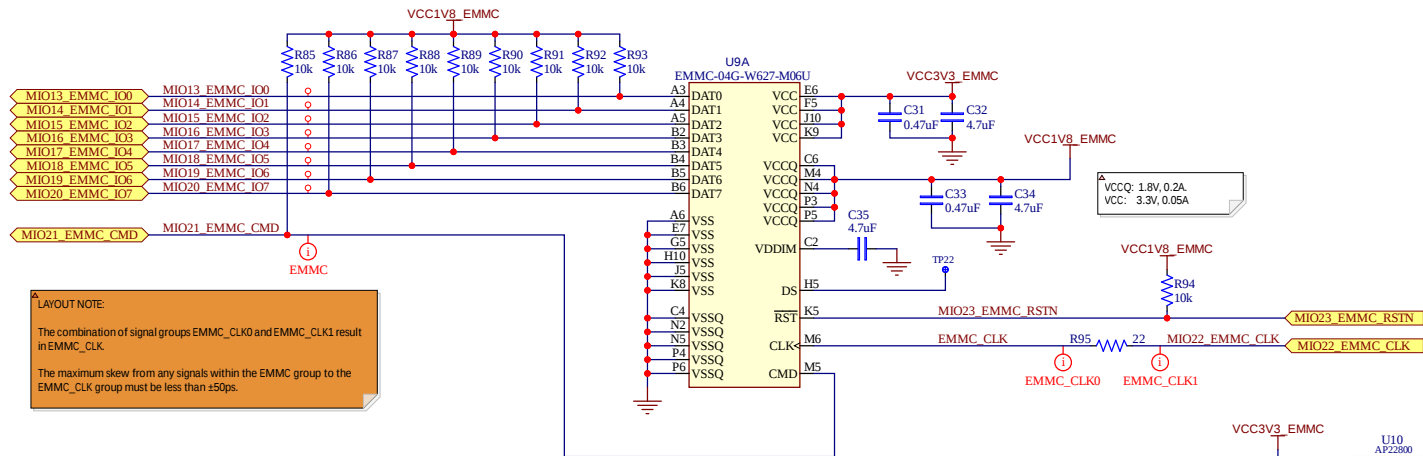
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2130 Howard Dr W  
North Mankato, MN 56003

CUSTOMER: Cobham  
PROJECT: T-TAC GCU  
PAGE TITLE: PL

SIZE: B [No Variations]  
SHEET: 3 OF 14  
REV: A



## 4GB eMMC



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| CUSTOMER:   | Cobham    |
| PROJECT:    | T-TAC GCU |
| PAGE TITLE: | eMMC      |

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| SIZE | VARIANT:        |
| B    | [No Variations] |

SHEET

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REV: A

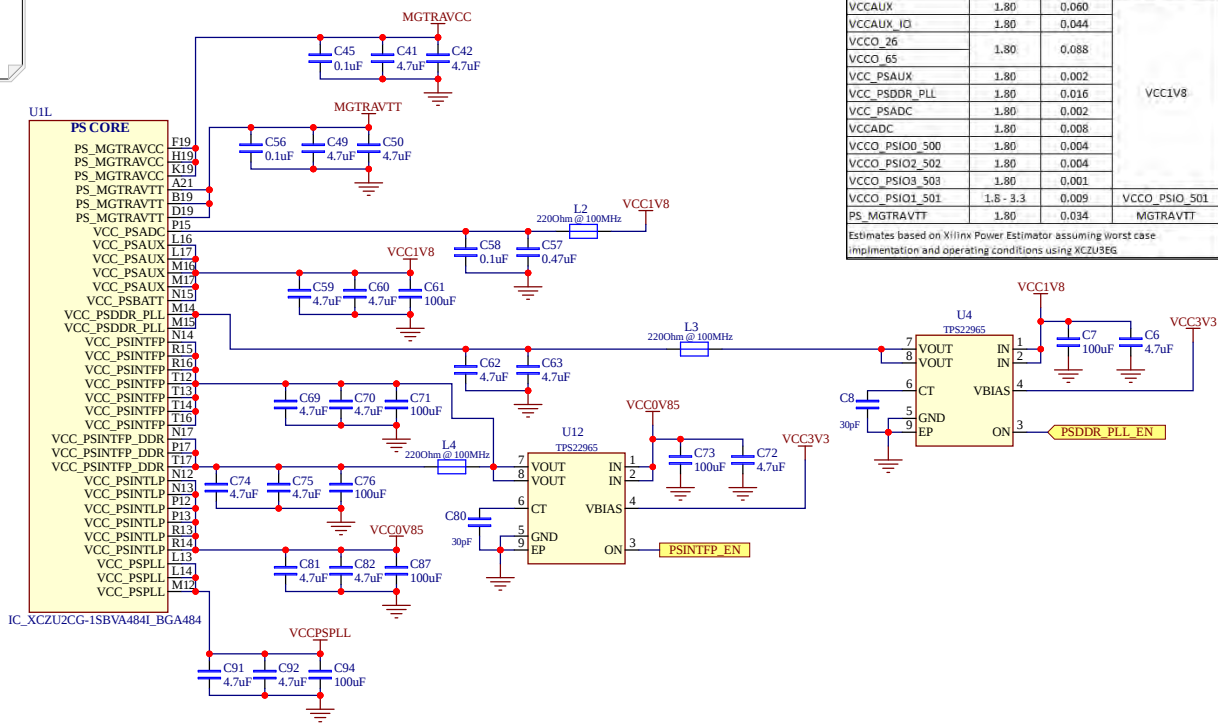
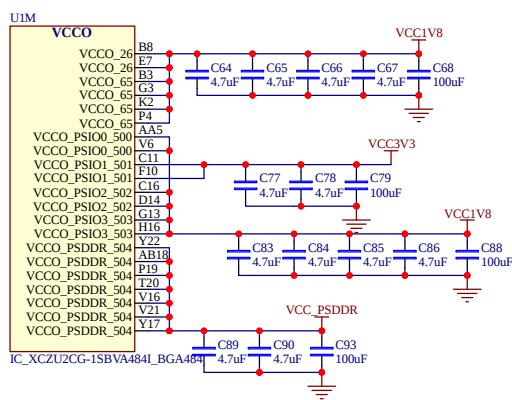
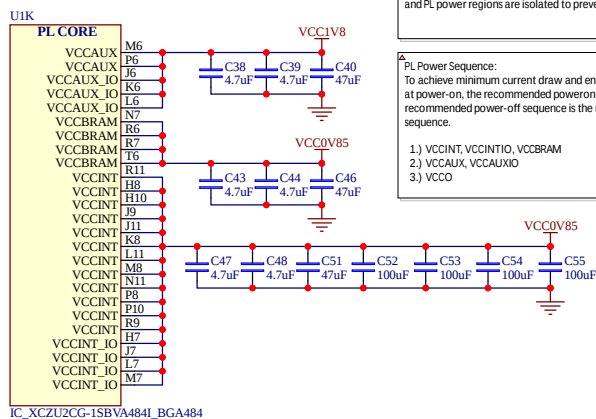
## BASEBAND PROCESSOR POWER

The PS and PL power supplies are fully independent. All PS power supplies can be powered before or after any PL power supplies. The PS and PL power regions are isolated to prevent damage.

**PL Power Sequence:**  
To achieve minimum current draw and ensure that the I/Os are 3-stated at power-on, the recommended power-on sequence is listed. The recommended power-off sequence is the reverse of the power-on sequence.

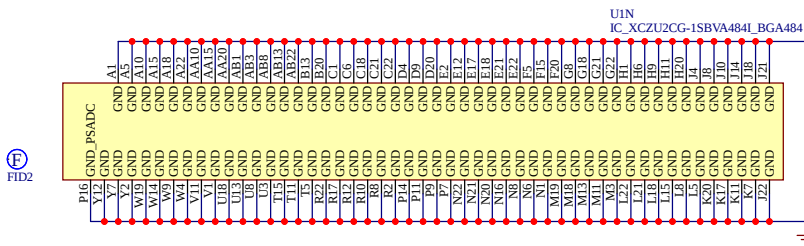
- 1.) VCCINT, VCCINTIO, VCCBRAM
- 2.) VCCAUX, VCCAUXIO
- 3.) VCCO

**LAYOUT NOTE:**  
Larger 100uf capacitors can be placed away from pins.  
Smaller 0201 capacitors should be placed next to  
corresponding pin. Each capacitor should have its own  
ground and power vias.



| Power Supply Estimates |           |             | Supply        |            |
|------------------------|-----------|-------------|---------------|------------|
|                        | Voltage   | Current (A) |               |            |
| VCCINT                 | 0.85      | 4.090       | VCC0V85       |            |
| VCCINT_IQ              | 0.85      | 0.105       |               |            |
| VCCBRAM                | 0.85      | 0.070       |               |            |
| VCC_PSINTLP            | 0.85      | 0.207       |               |            |
| VCC_PSINTFP            | 0.85      | 1.148       |               |            |
| VCC_PSINTFP_DDR        | 0.85      | 0.399       |               |            |
| PS_MGTTRAVCC           | 0.85      | 0.251       |               | MGTTRAVCC  |
| VCC0_PSDDR_504         | 1.10      | 0.147       |               | VCC0_PSDDR |
| VCC_PSPLL              | 1.20      | 0.063       | VCC_PSPLL     |            |
| VCCAUX                 | 1.80      | 0.060       | VCC1V8        |            |
| VCCAUX_IQ              | 1.80      | 0.044       |               |            |
| VCC0_26                | 1.80      | 0.088       |               |            |
| VCC0_65                |           |             |               |            |
| VCC_PSAUX              | 1.80      | 0.002       |               |            |
| VCC_PSDDR_PLL          | 1.80      | 0.016       |               |            |
| VCC_PSDAC              | 1.80      | 0.002       |               |            |
| VCCADC                 | 1.80      | 0.008       |               |            |
| VCC0_PSI00_500         | 1.80      | 0.004       |               |            |
| VCC0_PSI02_502         | 1.80      | 0.004       |               |            |
| VCC0_PSI03_503         | 1.80      | 0.001       | VCC0_PSI0_501 |            |
| VCC0_PSI01_501         | 1.8 - 3.3 | 0.009       |               |            |
| PS_MGTTRAVTT           | 1.80      | 0.034       |               | MGTTRAVTT  |

Estimates based on Xilinx Power Estimator assuming worst case implementation and operating conditions using XCZU3EG



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| PAGE TITLE: | BBP Power |

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| B    | [No Variations] |

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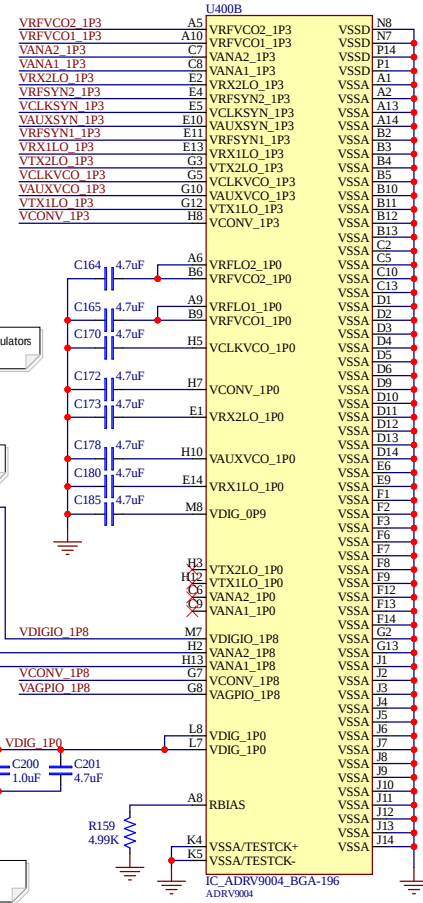
RFIC POWER

VDDA\_1P3  
1.3V @ 1.3A max

VDDA\_1P8  
1.8V @ 0.4A max

Internal LDO Regulators

VDDA\_1P0  
1.0V @ 0.6A max



ROUTING NOTE:  
Ferrite bead and 47uF cap can be placed further from ADRV9002. All 0201 capacitors should be placed close to corresponding ADRV9002 power pin. Bottom side routing between the 0603/47uF capacitor and 0201 capacitor is permitted for short traces. Longer traces should be striplines. Each capacitor should have its own ground via. Each power pin should have its own power via and not be connected to adjacent pins directly.

See UG-1828 for recommended PCB routing of ADRV9002

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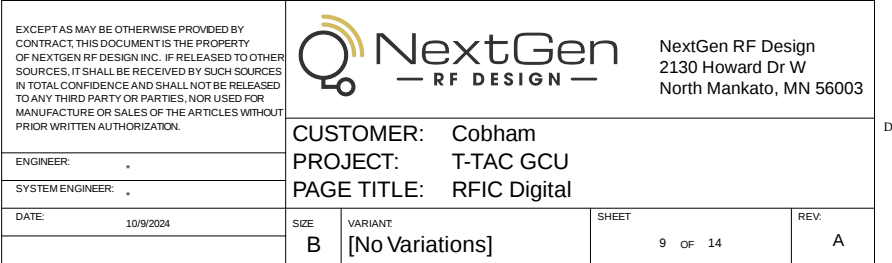
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CUSTOMER: Cobham

PROJECT: T-TAC GCU

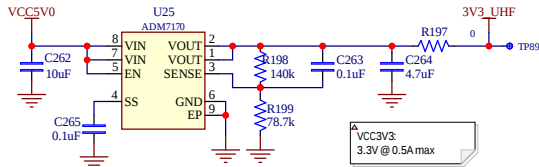
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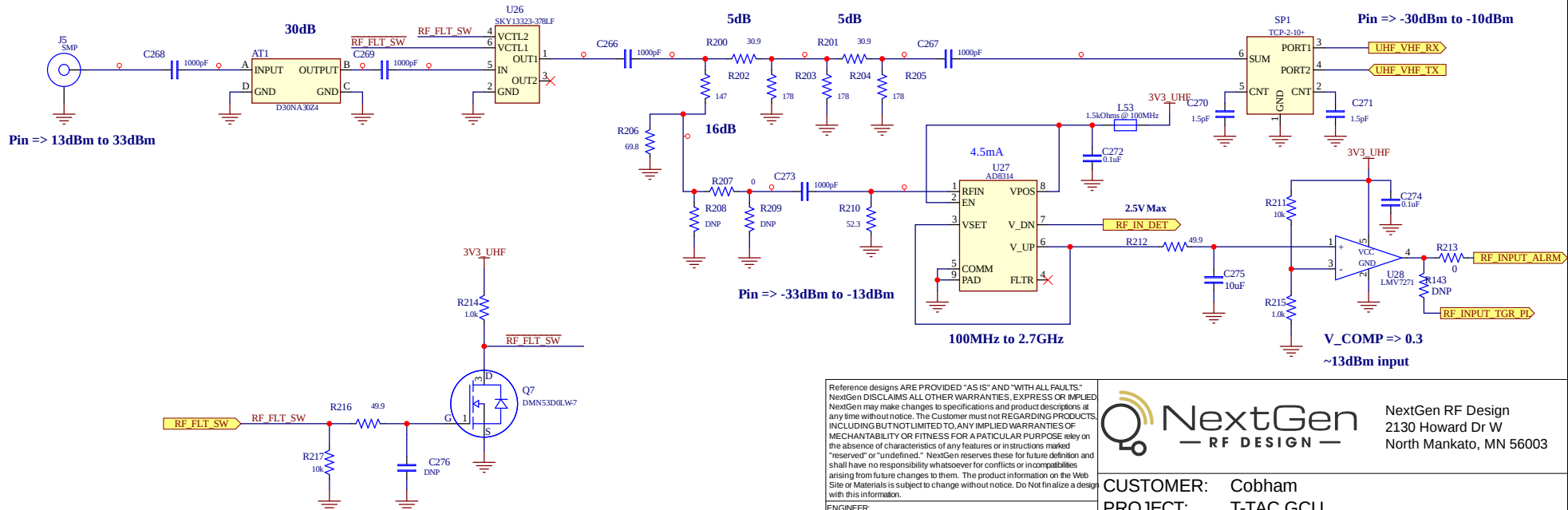






## UHF/VHF IO (MCX to BNC)

**RX FAULT SWITCH**  
 VCTL1 =>1 ; VCTL2 =>0 ; IN to OUT1 (Default)  
 VCTL1 =>0 ; VCTL2 =>1 ; IN to OUT2



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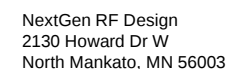
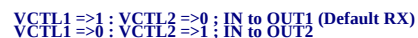


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PROJECT: T-TAC GCU  
PAGE TITLE: UHF/VHF

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| SIZE<br>B | VARIANT<br>[No Variations] | SHEET<br>12 OF 14 | REV.<br>A |
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| PROJECT:    | T-TAC GCU          |
| PAGE TITLE: | L-Band RF LF Modem |

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