

**AZ**  
 Mobile Satellite Services  
 18221A Flower Hill Way  
 Gaithersburg, MD 20879  
 JSA

**Title**  
**COM-3506 / MAIN**

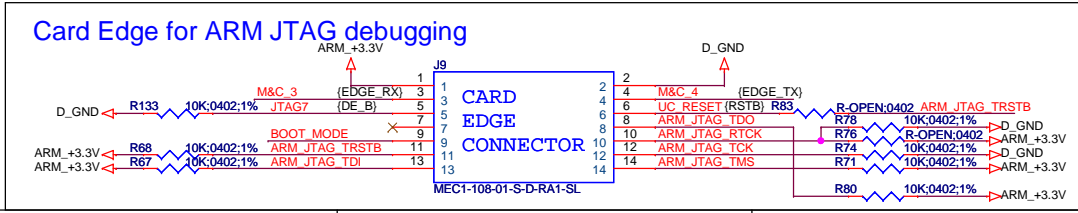
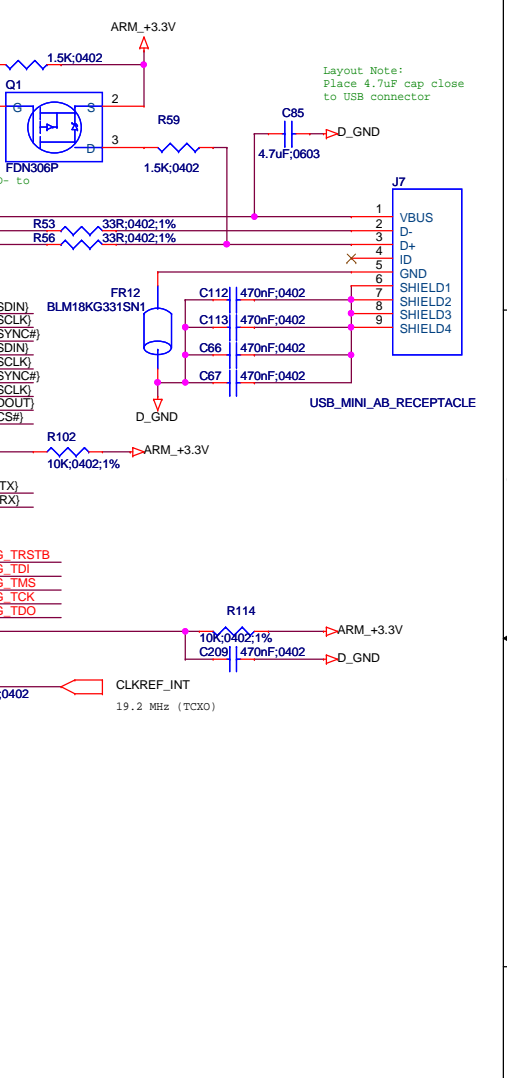
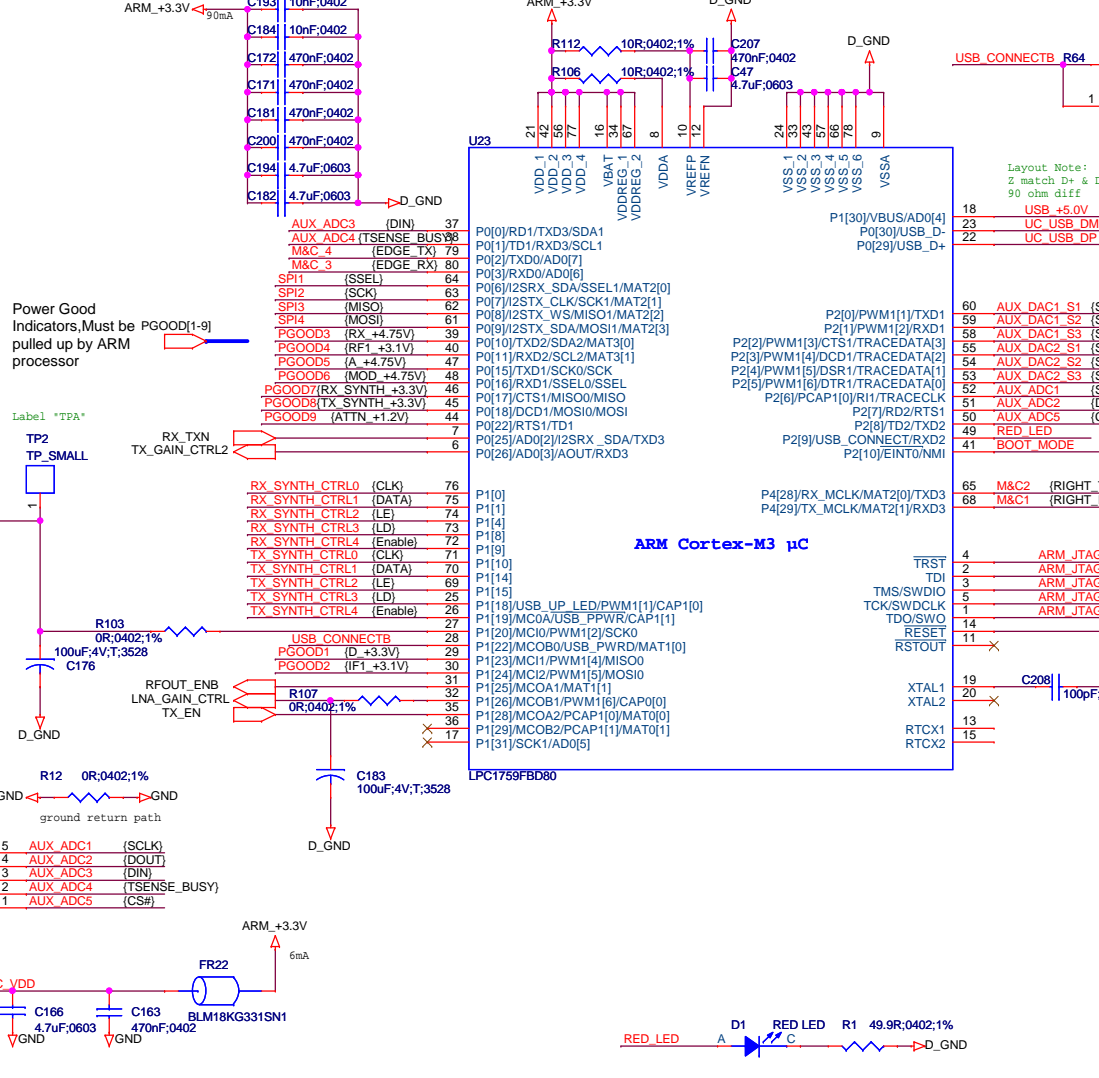
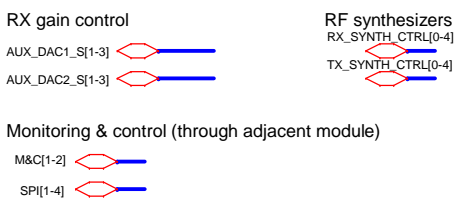
**Size**  
 B

**Document Number**  
**Y13007**

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Title

**COM-3506 / ARM MICRO**

Size B

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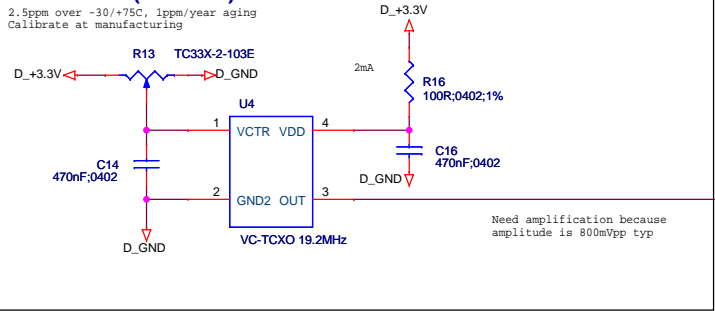
Rev 1

Layout: place close to micro

19.2 MHz frequency reference to micro

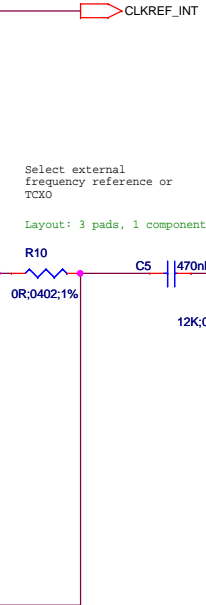
### (19.2MHz) VC-TCXO

2.5ppm over -30/+75C, 1ppm/year aging  
Calibrate at manufacturing



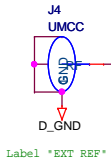
Select external frequency reference or TCXO

Layout: 3 pads, 1 component



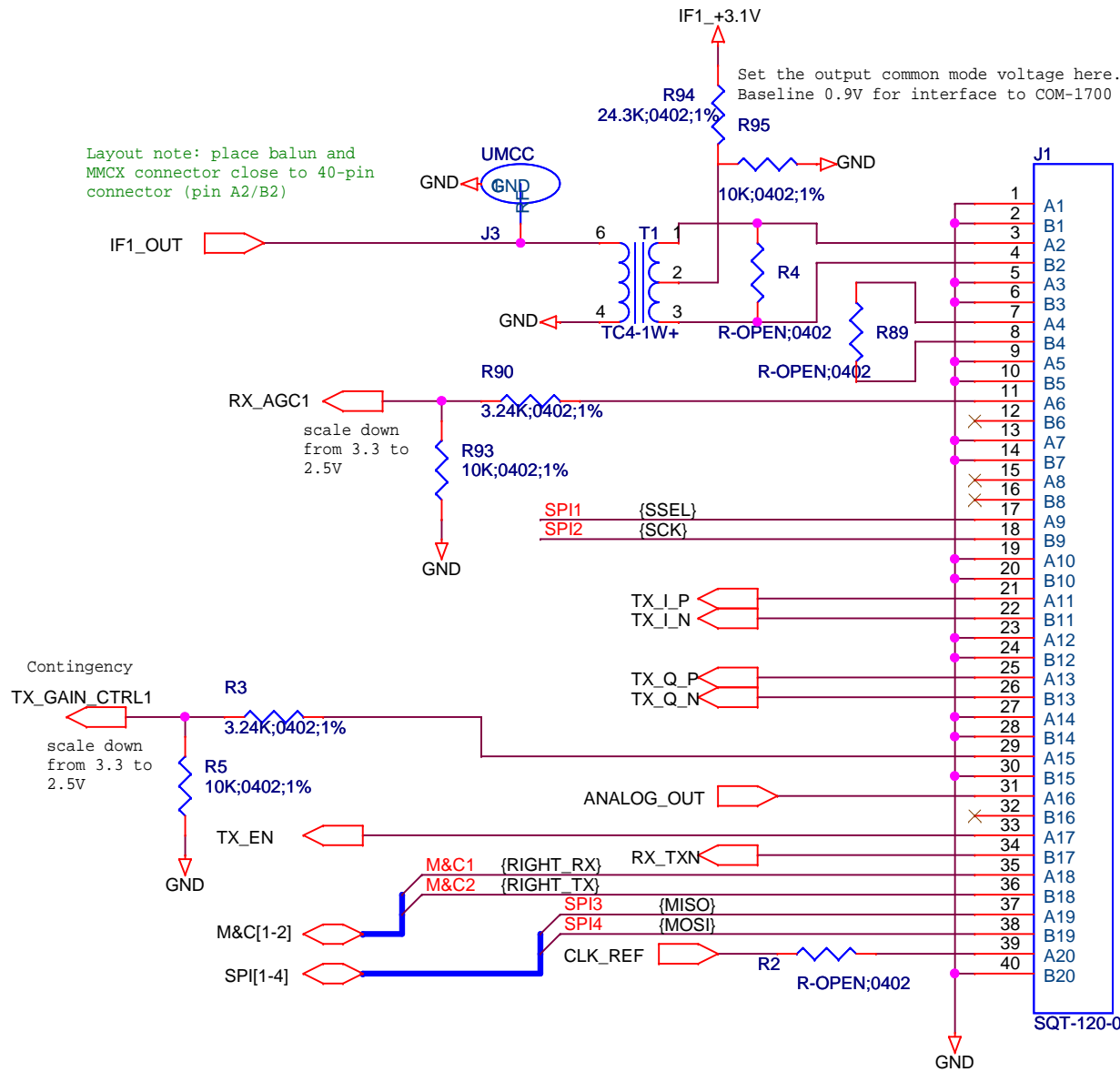
Layout note: place U1 close to the RF frequency synthesizers. The CLKREF signal is fairly noisy (3.3V clock) and thus the trace length should be minimized. CLKREF\_INT is 0.8Vpp sinewave, thus less noisy.

### EXTERNAL FREQUENCY REFERENCE



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Layout note: place balun and MMCX connector close to 40-pin connector (pin A2/B2)



reserved DAC output

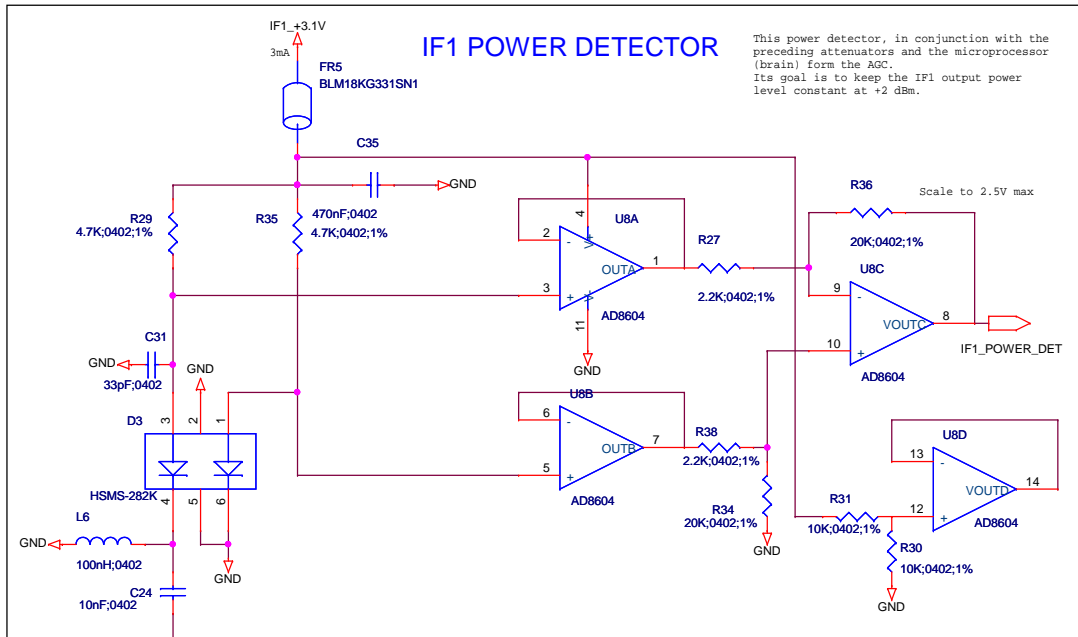
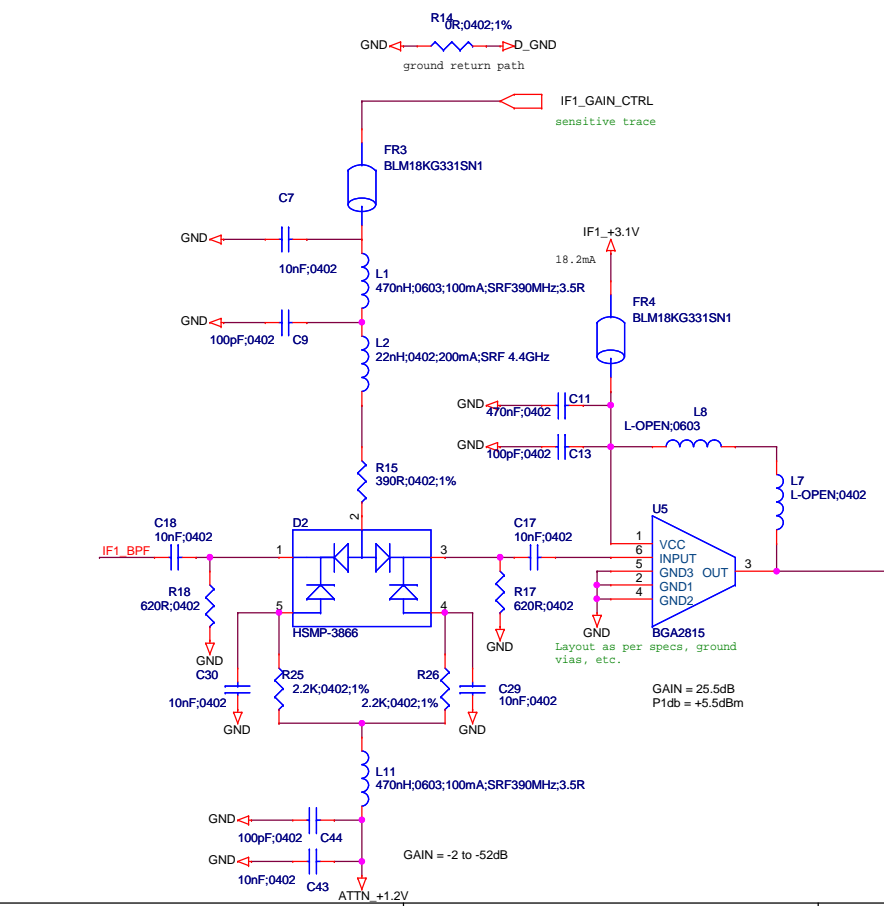
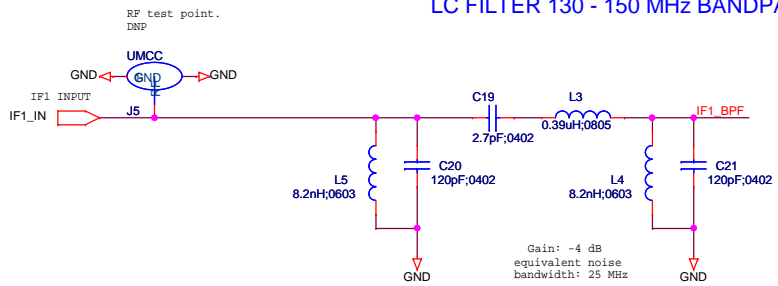
Vin = 1Vpp differential (0.5Vpp on each signal)  
Input common-mode level = 500 mV DC

Multi-purpose analog output

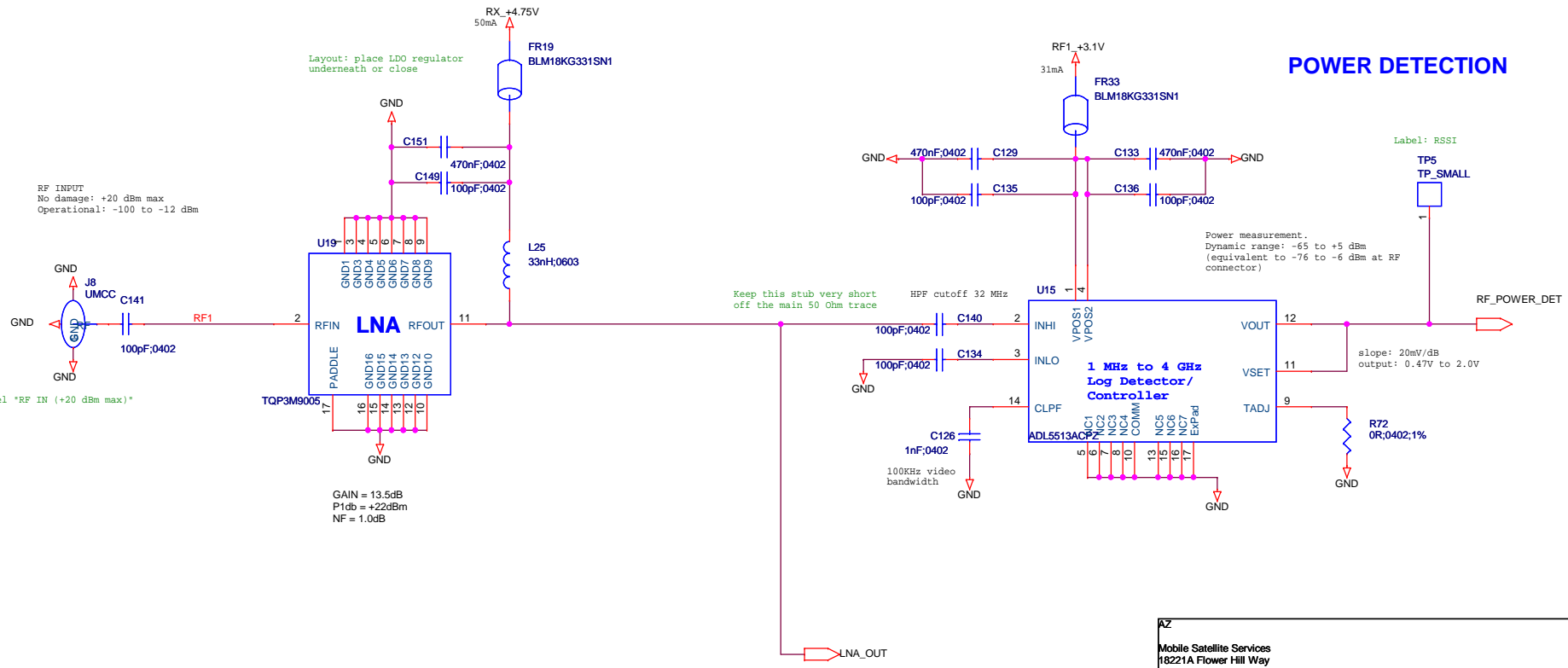
reserved digital I/Os

AK/AZ		
Mobile Satellite Services 18221A Flower Hill Way Gaithersburg, MD 20879 USA		
Title <b>COM-3506 / CONNECTOR</b>		
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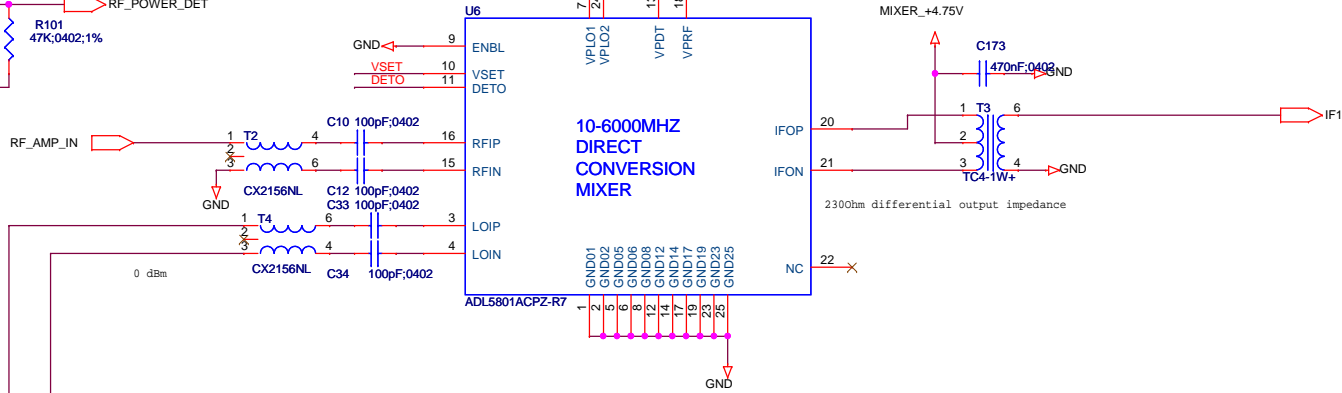
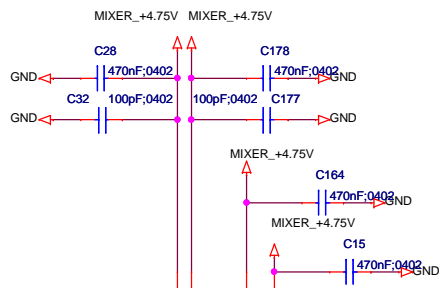
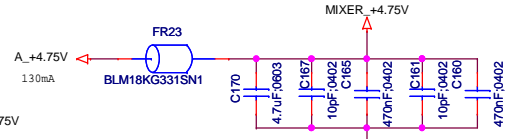
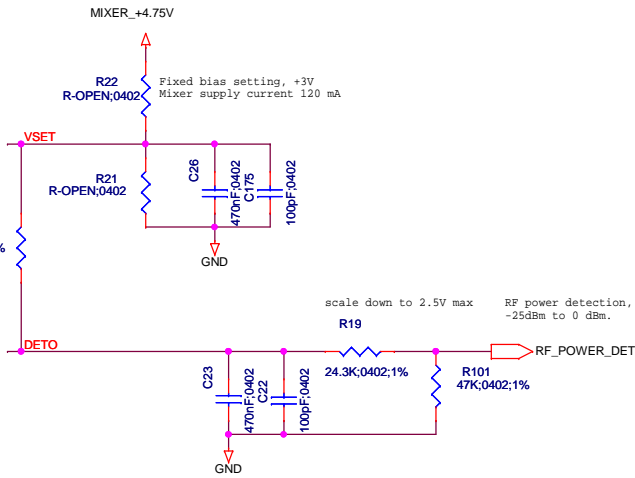
# LC FILTER 130 - 150 MHz BANDPASS



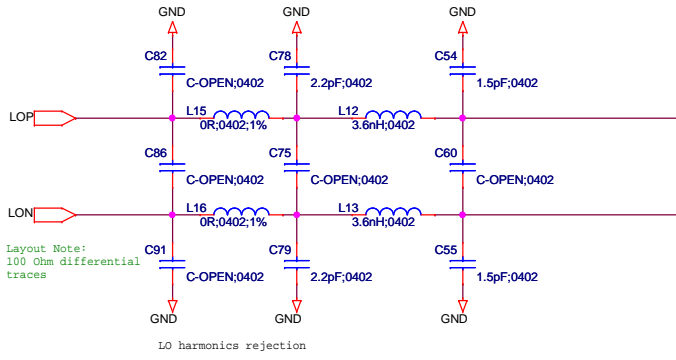
AZ	
Mobile Satellite Services 18221A Flower Hill Way Gaithersburg, MD 20879 JSA	
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Source: ADL5375 table 4 (interfacing with ADF4351)  
 Four different sets of caps/inductors depending on  
 the frequency range. Baseline is 1250-2800 MHz



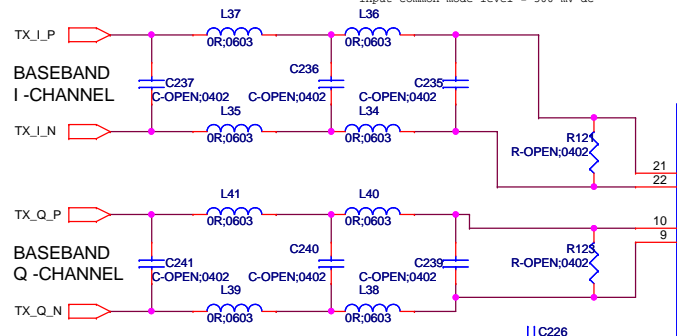
gain: 1dB  
 Input P1dB: 13 dBm  
 NF = 9.5 dB

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Layout note:  
Add SHIELD PAD for SHIELD FENCE for the modulator + follow-on amp.

**Low Pass Filter**

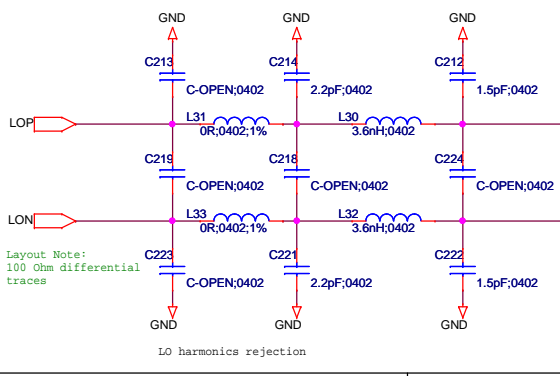
contingency in case the tx DAC does not have any analog filter



Vin = 1Vpp differential (0.5Vpp on each input)  
Input common-mode level = 500 mV dc

Layout note:  
IBBP&IBBN and QBBP&QBBN lines are 100 Ohm differential pairs.

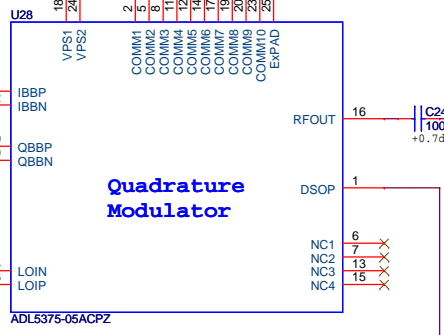
Source: ADL5375 table 4 (interfacing with ADF4351)  
Four different sets of caps/inductors depending on the frequency range. Baseline is 1250-2800 MHz



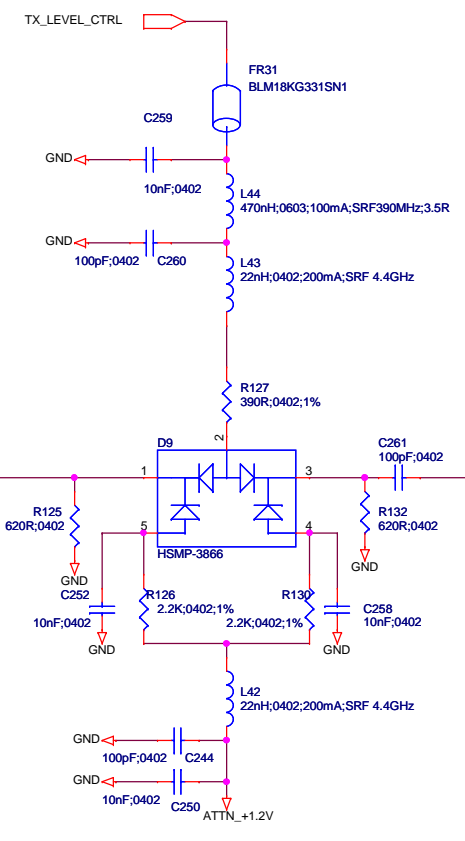
Layout Note:  
100 Ohm differential traces

LO harmonics rejection

**Quadrature Modulator**



RFOUT\_ENB Enable is active low



GAIN = -3 to -28dB

AK + AZ	
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**+5V DC Supply**  
**OPERATIONAL RANGE: 4.9 - 5.5V**

**Filter**

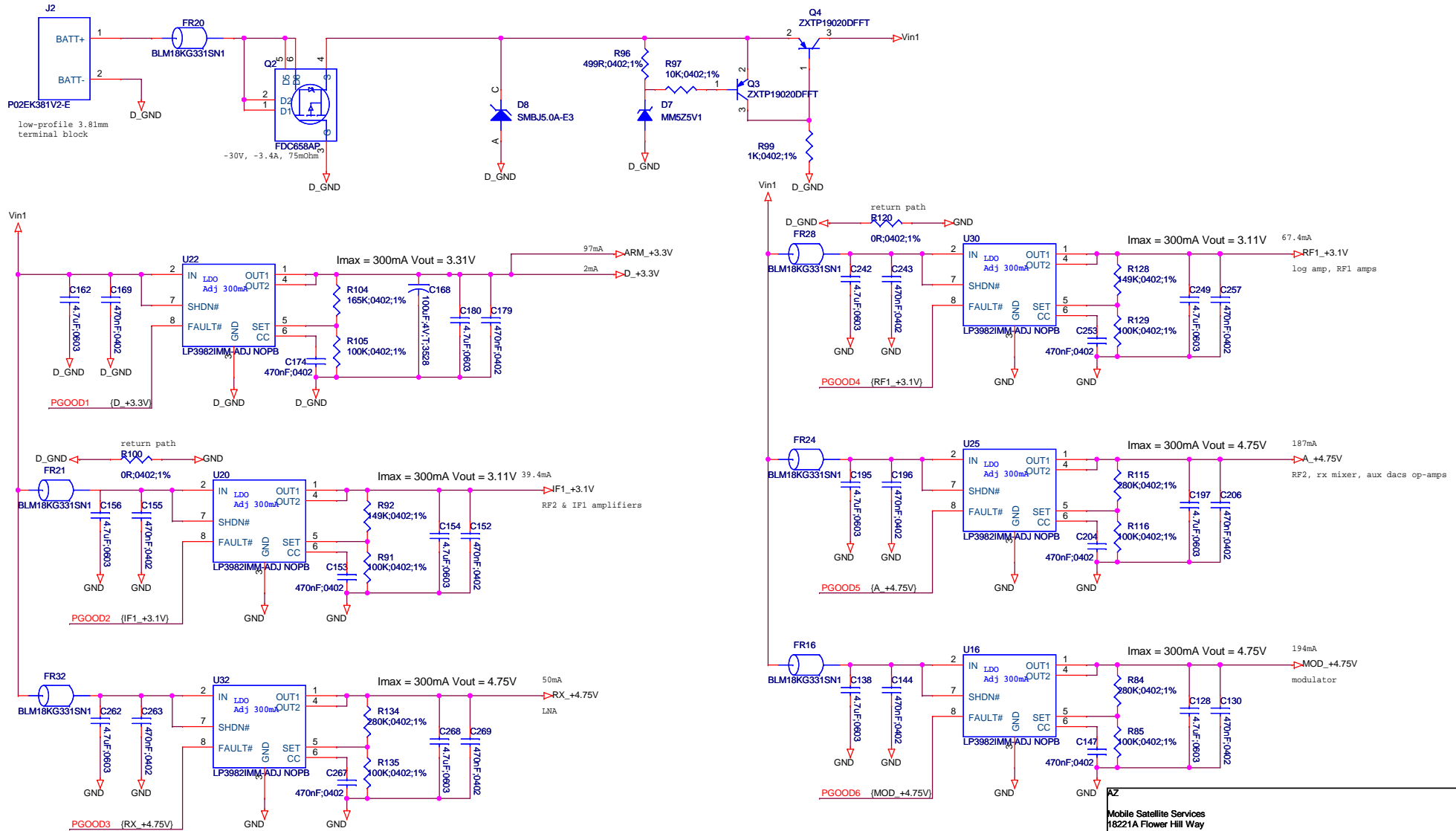
**Reverse Voltage Protection**

**Transient Voltage Suppression**

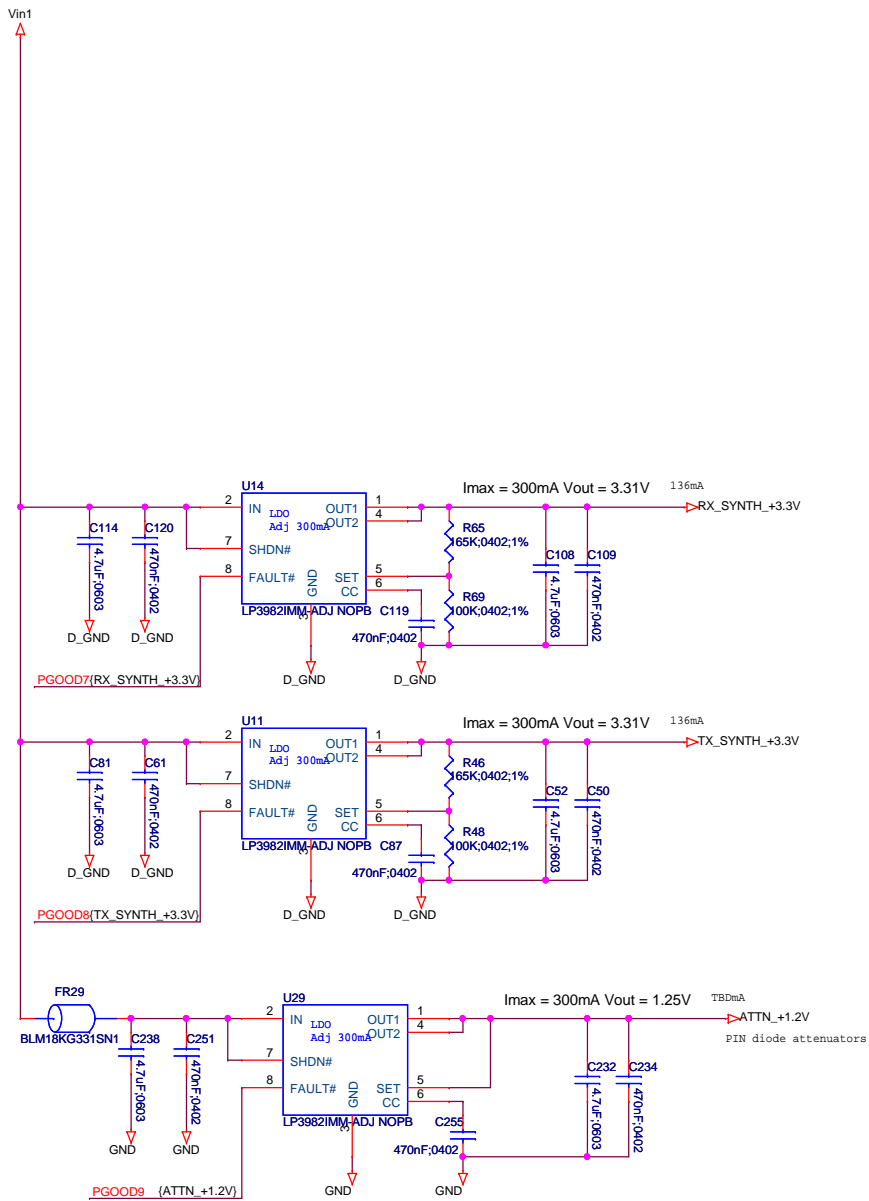
**Over Voltage Protection (5.85V, 1.5A)**

Layout Note:  
 FR4, Q1, Q2 & Q4 must be placed and routed for a high current throughput.

Power Good Indicators  
 PGOOD1-6 Must be pulled up by ARM processor

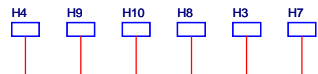


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Title <b>COM-3506 / POWER1</b>	
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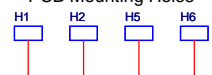


Power Good Indicators  
 PGOOD[7-9] ◀ Must be pulled up by ARM processor

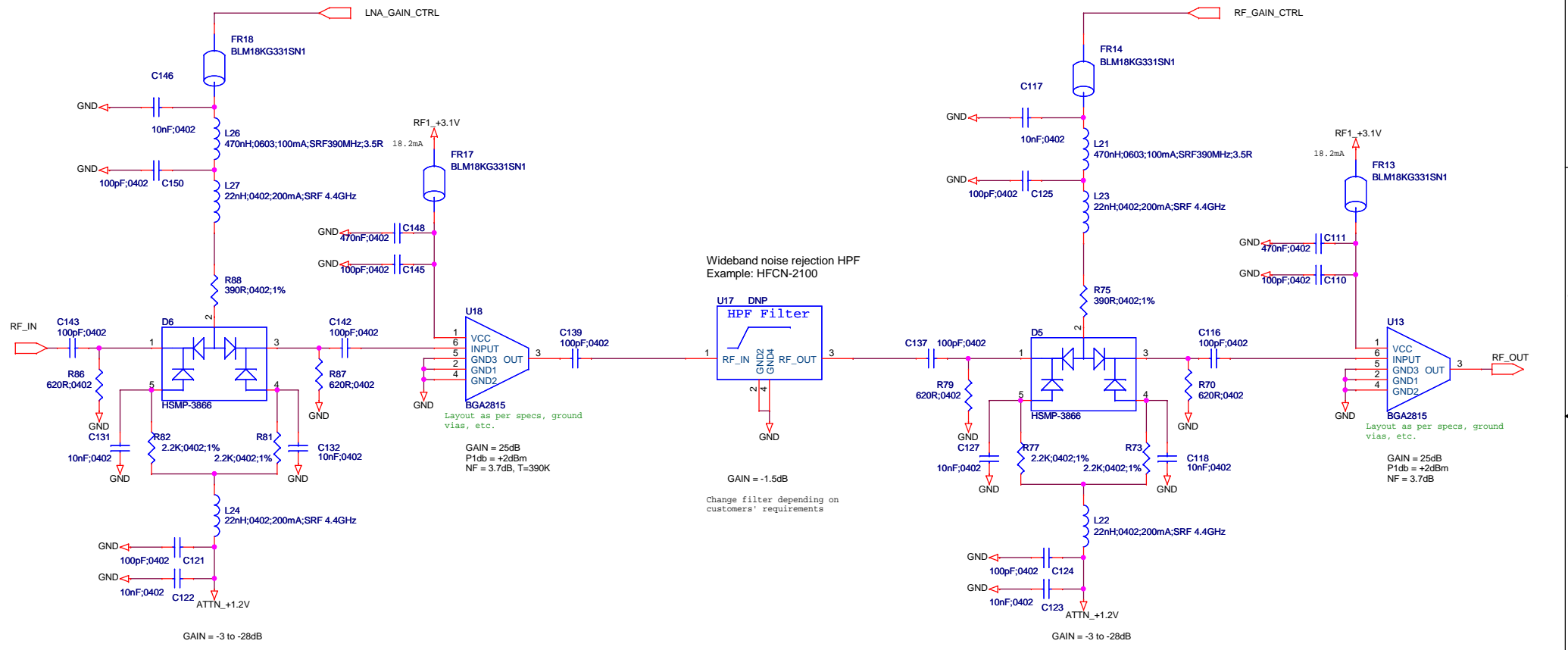
Fiducials



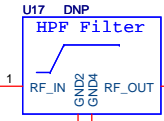
PCB Mounting Holes



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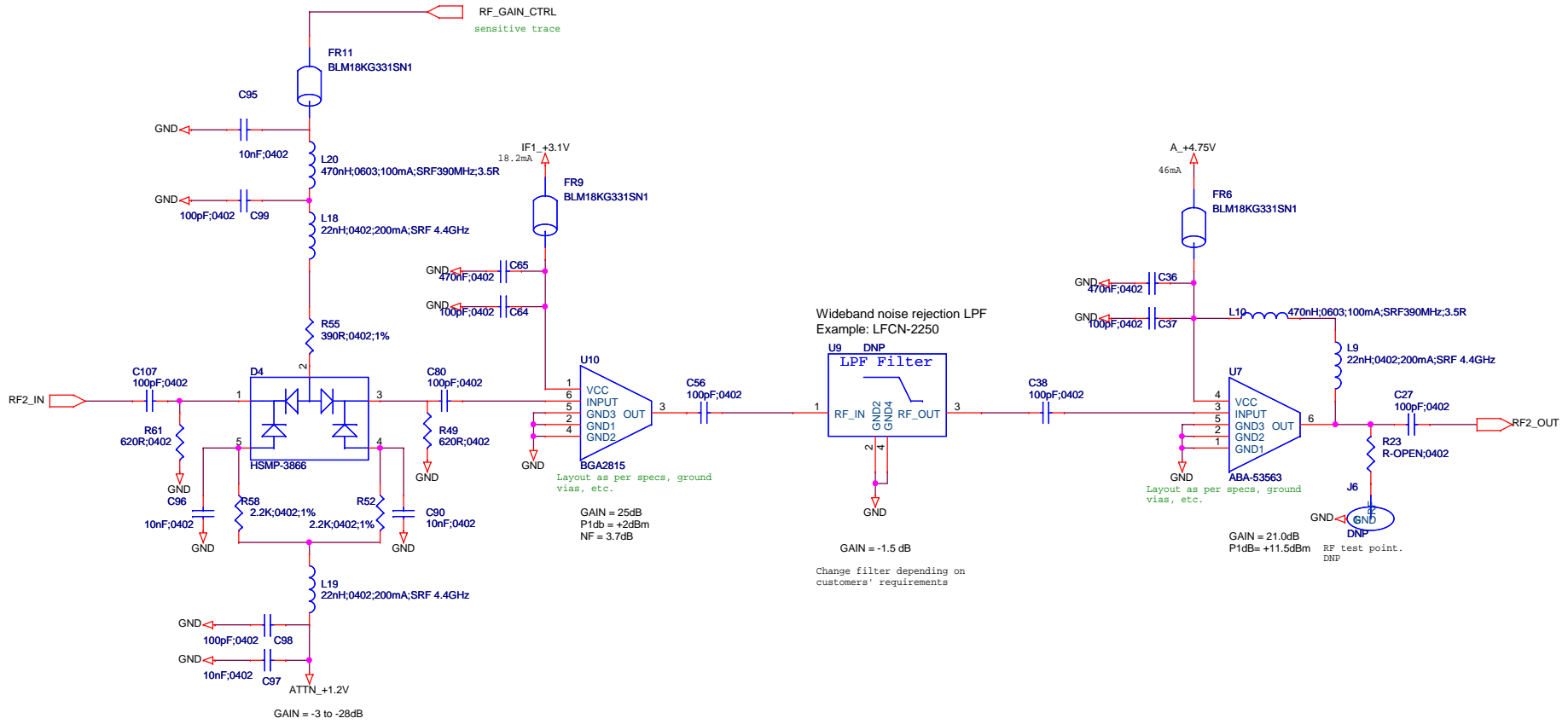
Wideband noise rejection HPF  
Example: HFCN-2100



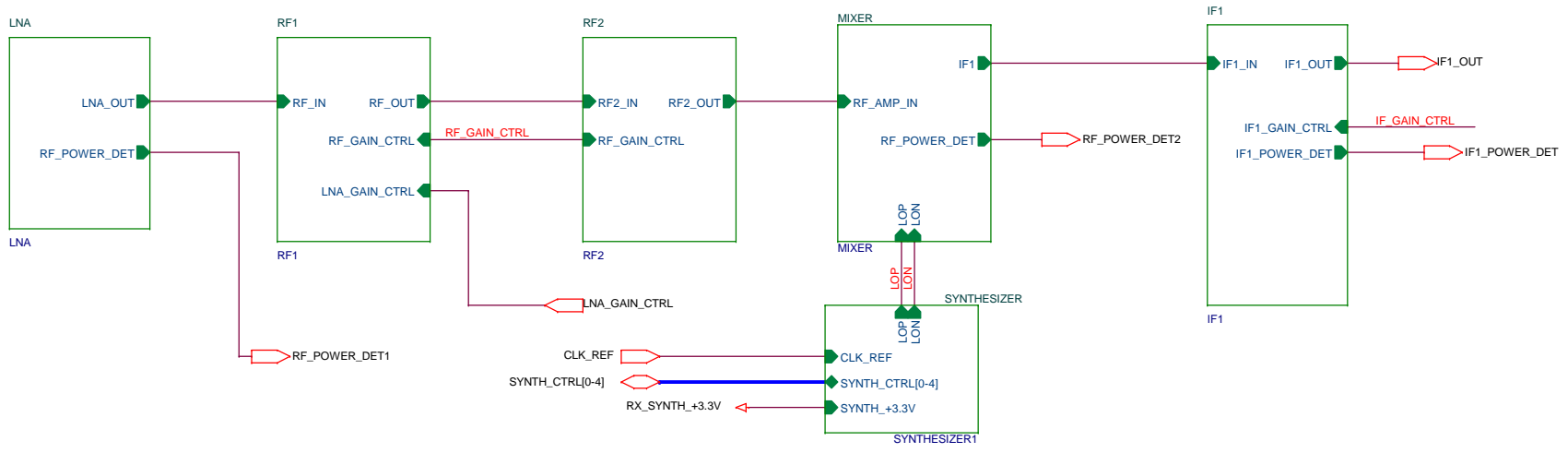
GAIN = -1.5dB  
Change filter depending on customers' requirements

1 shield. Standard size: 2"x1"x0.25"

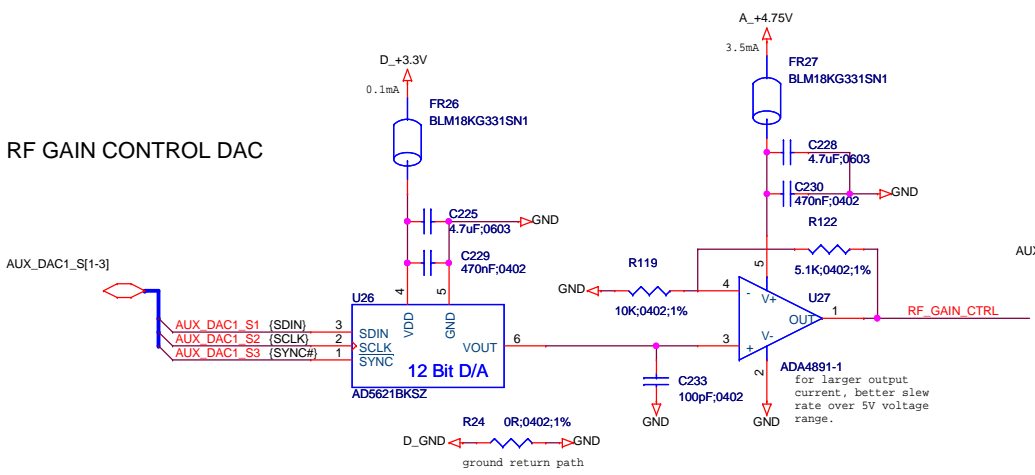
AZ	
Mobile Satellite Services 18221A Flower Hill Way Gaithersburg, MD 20879 JSA	
Title <b>COM-3506 / RF1</b>	
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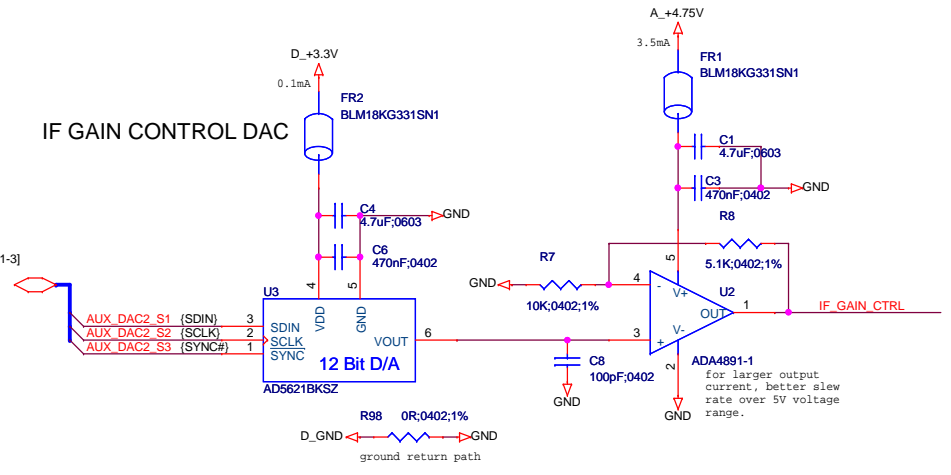
AZ	
Mobile Satellite Services 18221A Flower Hill Way Gaithersburg, MD 20879 JSA	
Title <b>COM-3506 / RF2</b>	
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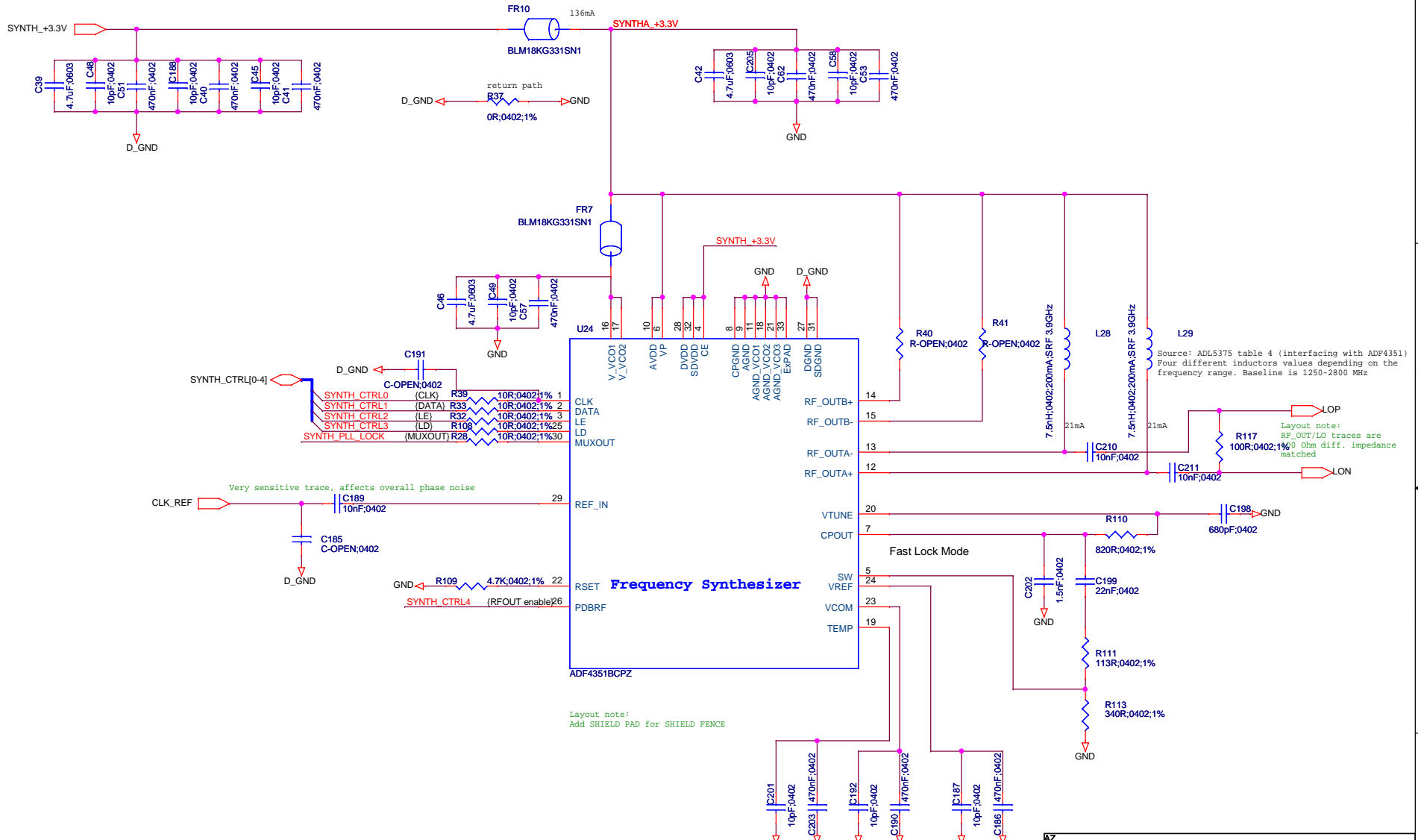
**RF GAIN CONTROL DAC**



**IF GAIN CONTROL DAC**



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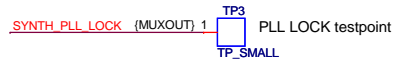


Source: ADL5375 table 4 (interfacing with ADF4351)  
 Four different inductors values depending on the frequency range. Baseline is 1250-2800 MHz

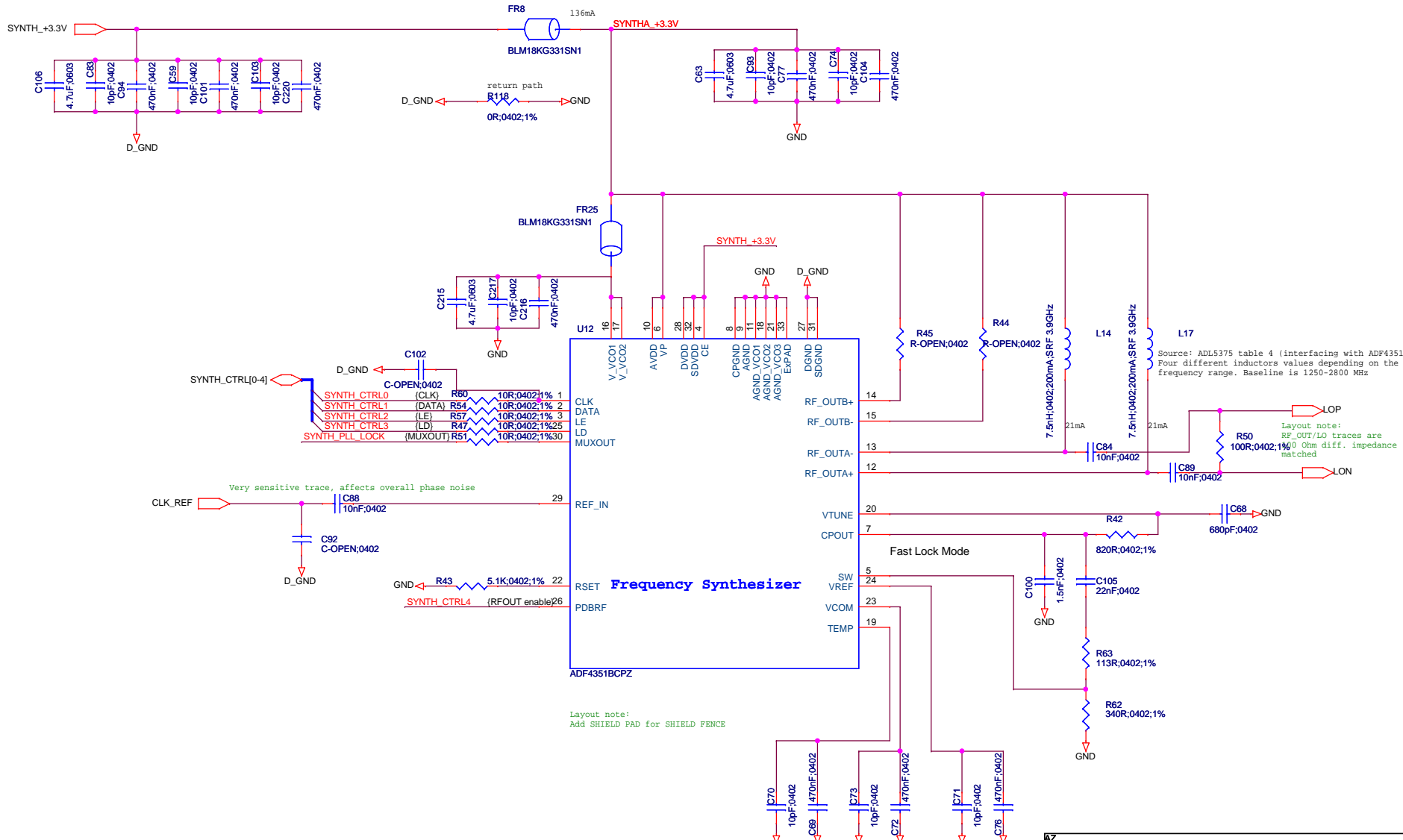
Layout note:  
 RF\_OUT/LO traces are 50 Ohm diff. impedance matched

Layout note:  
 Add SHIELD PAD for SHIELD FENCE

Layout note:  
 Label Testpoints



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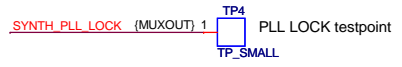


Source: ADL5375 table 4 (interfacing with ADF4351)  
 Four different inductors values depending on the frequency range. Baseline is 1250-2800 MHz

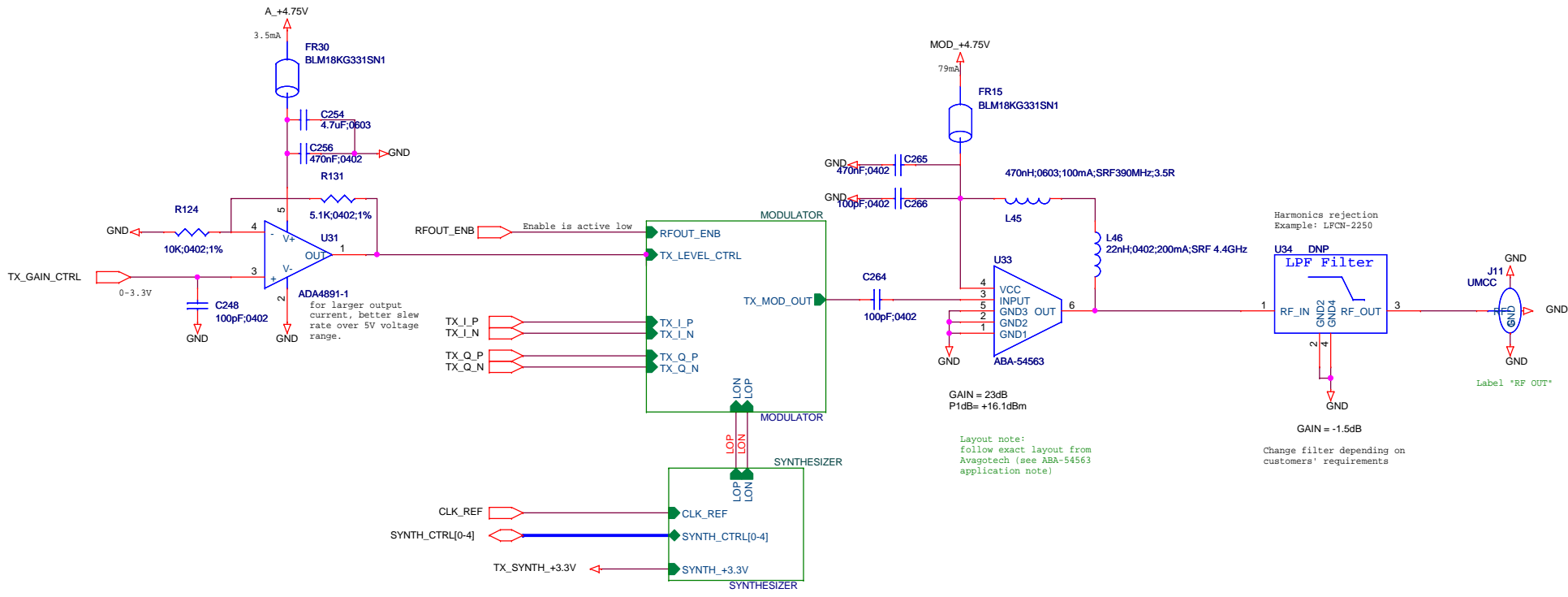
Layout note:  
 RF\_OUT/L0 traces are 60 Ohm diff. impedance matched

Layout note:  
 Add SHIELD PAD for SHIELD FENCE

Layout note:  
 Label Testpoints



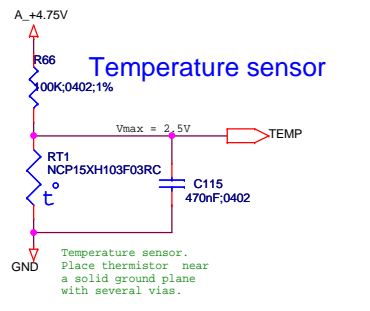
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Layout note:  
follow exact layout from  
Avagotech (see ABA-54563  
application note)

Harmonics rejection  
Example: LFCN-2250

Change filter depending on  
customers' requirements



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