

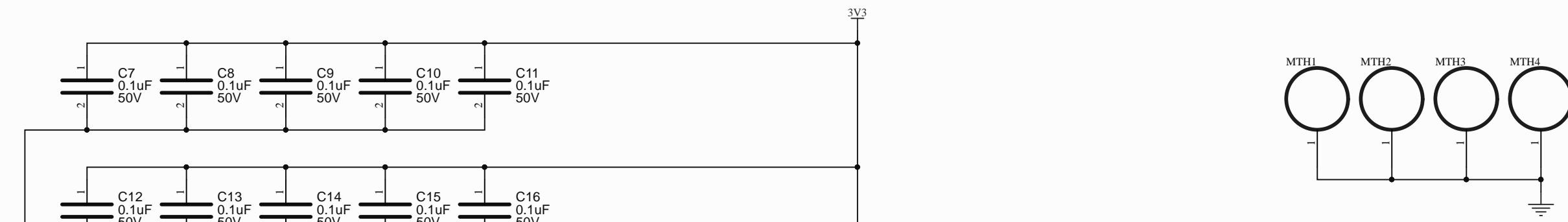
## PROCESSOR NOTES:

INSTALL X1 OR X2  
IF INSTALLING X1 DO NOT INSTALL X2 OSC CIRCUIT  
DO NOT INSTALL R2 OR R3  
DO NOT INSTALL R5

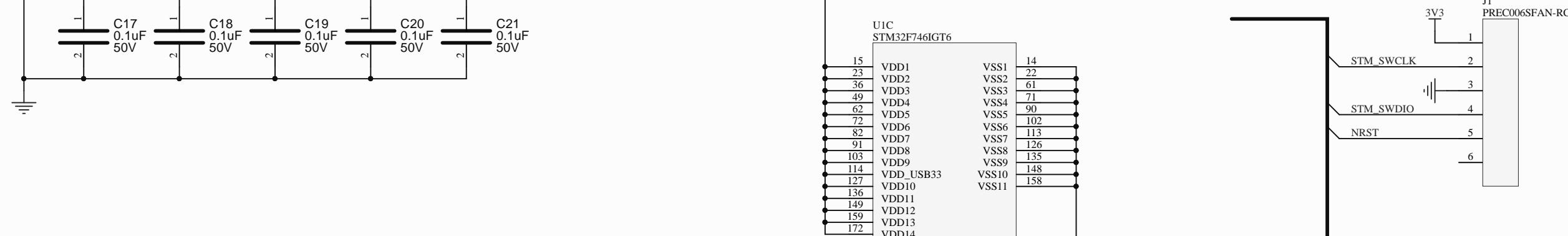
Title: <b>IMR Technology Demonstrator</b>	IMR Engineering
Size: B	Number: IMR_002
Date: *	Revision: 1
File: MainController.SchDoc	Engr: H. Collector

**IMR Engineering**  
Ideas Made Real

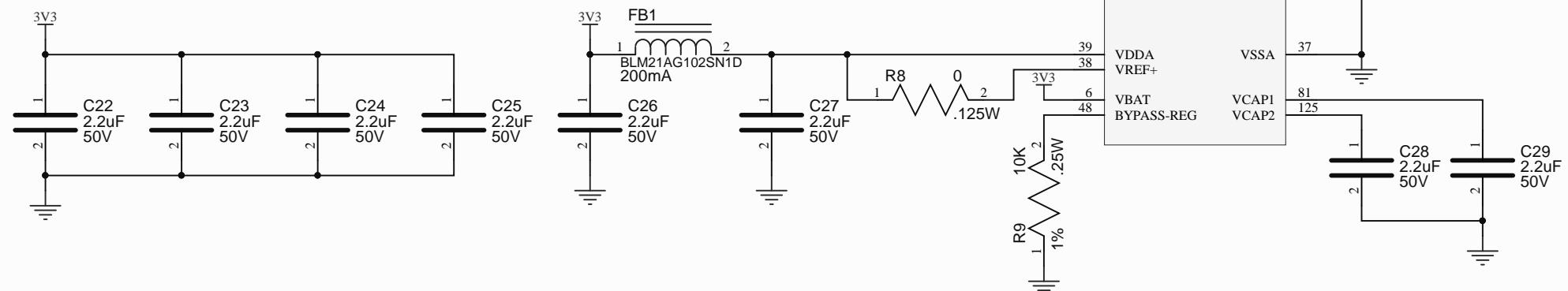
A

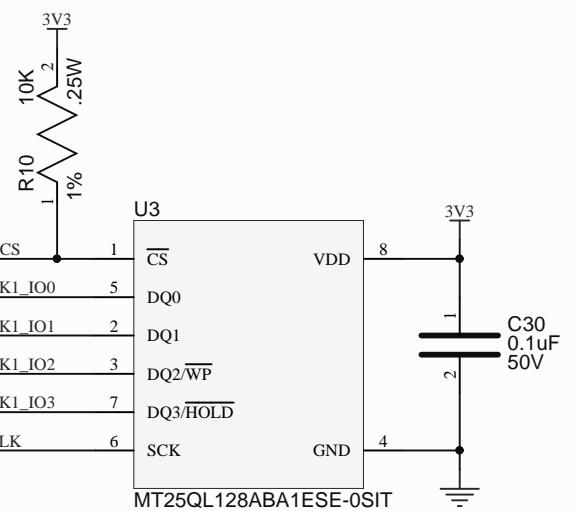


B

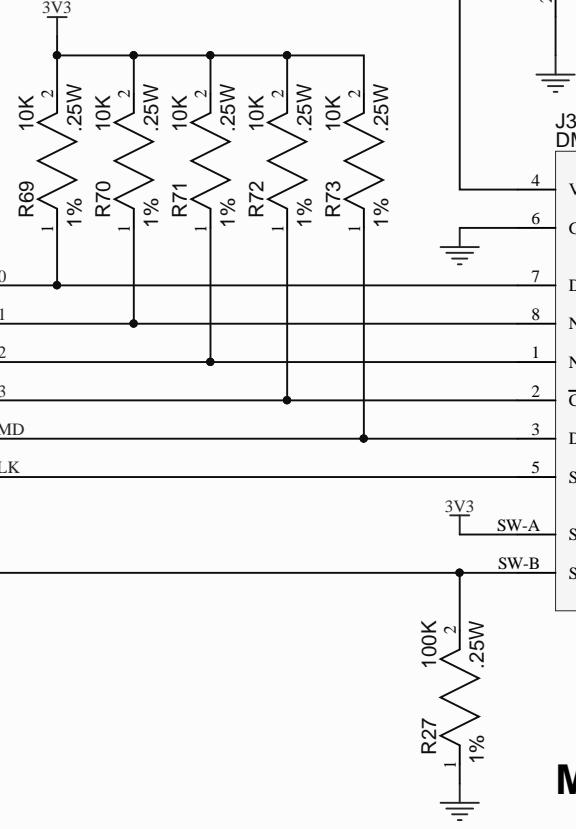


C

**JTAG**



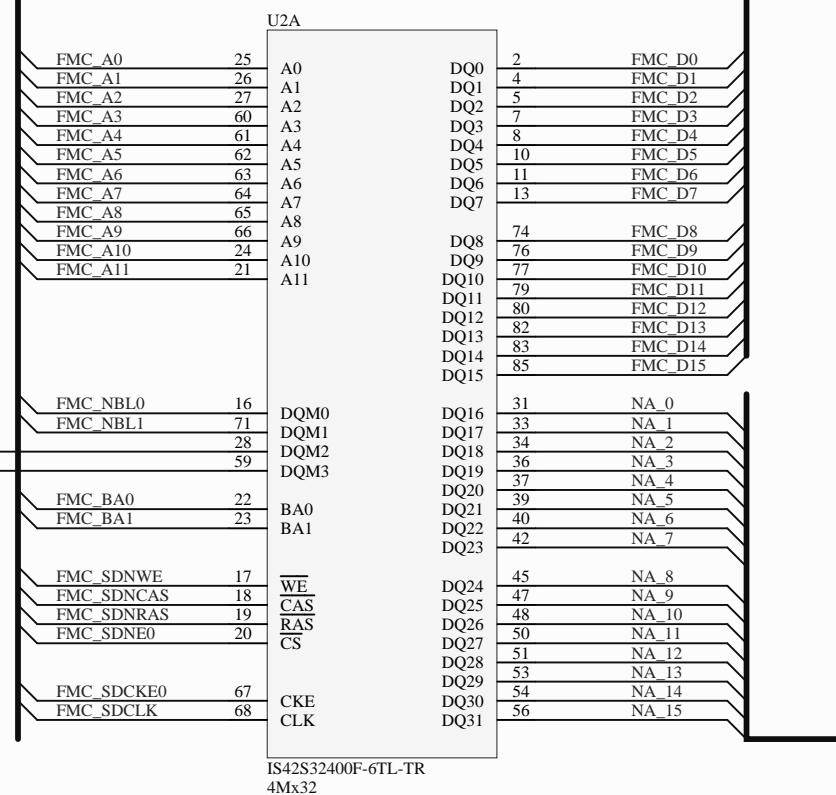
## QUAD SPI FLASH



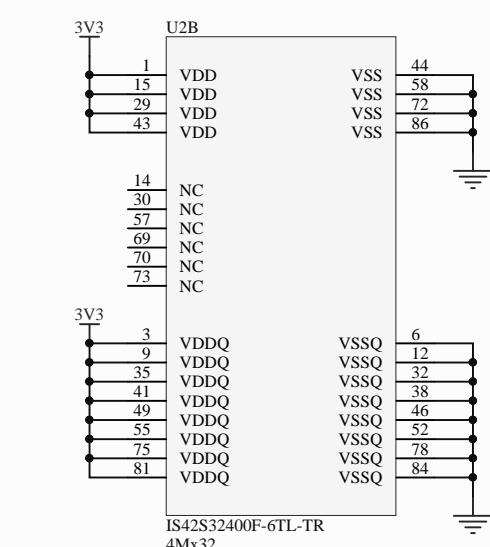
## MICRO SD FLASH

R68 (1% 100K 0.1W) connected between Pin 1 and Pin 2.

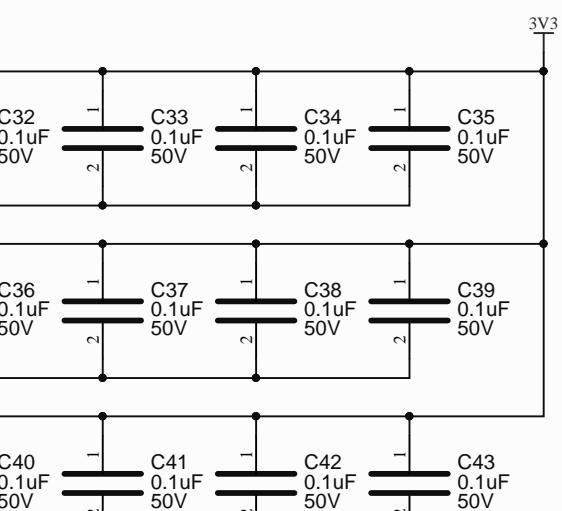
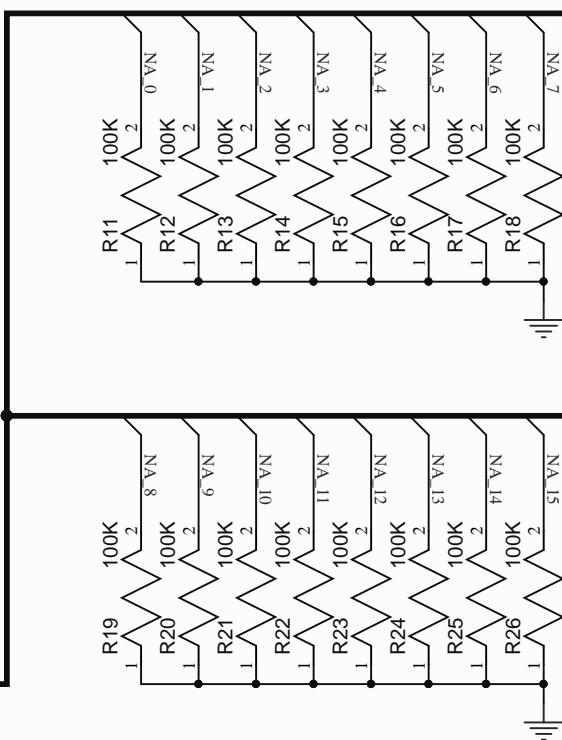
R67 (1% 100K 0.1W) connected between Pin 2 and Pin 3.



## SD RAM



## SD RAM D16:31 UNUSED



Title: IMR Technology Demonstrator

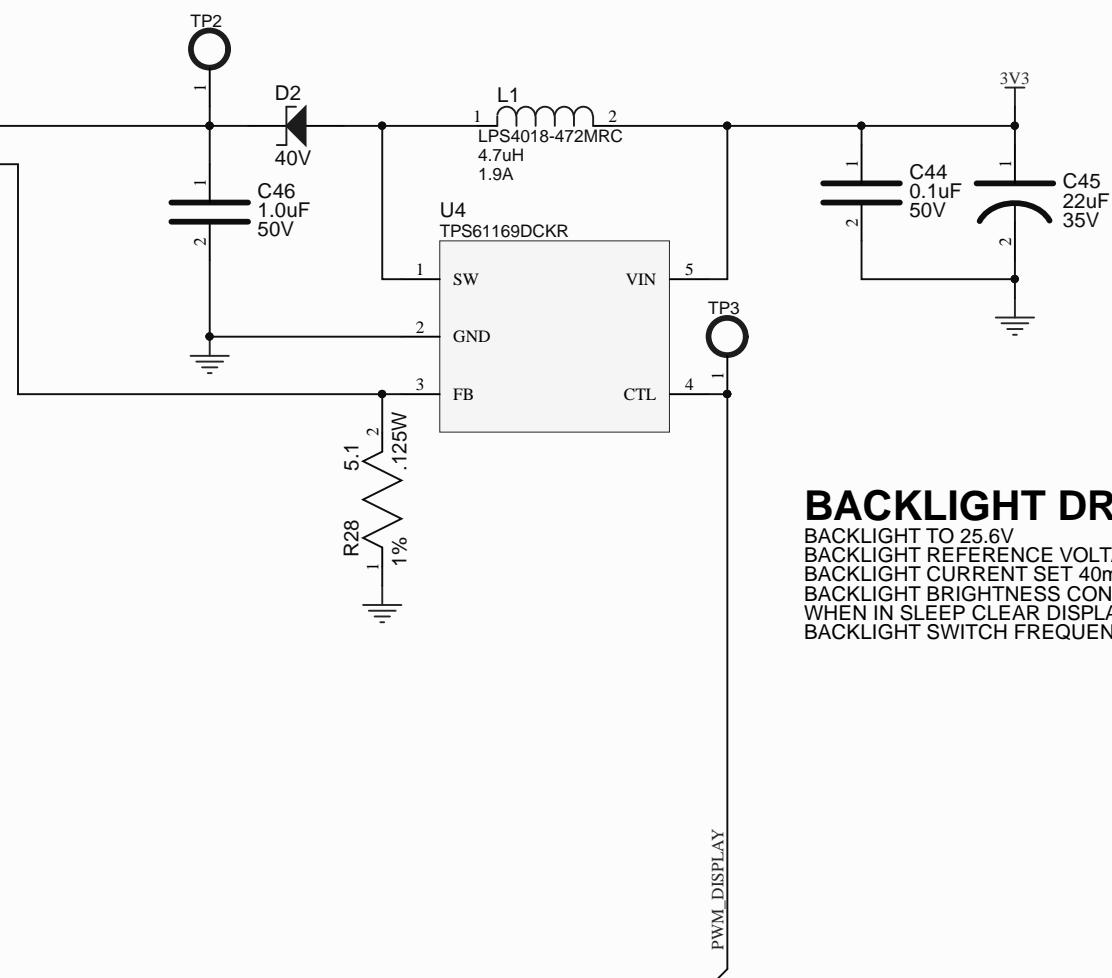
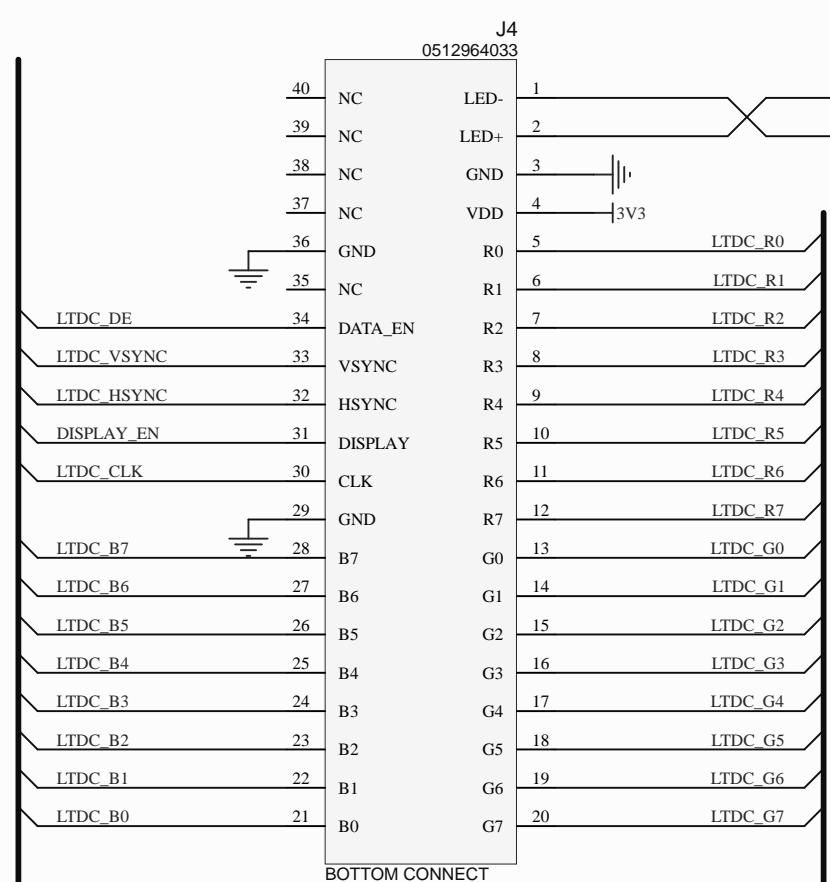
IMR Engineering  
3621 Gin Way  
Snellville, GA 30039  
USA

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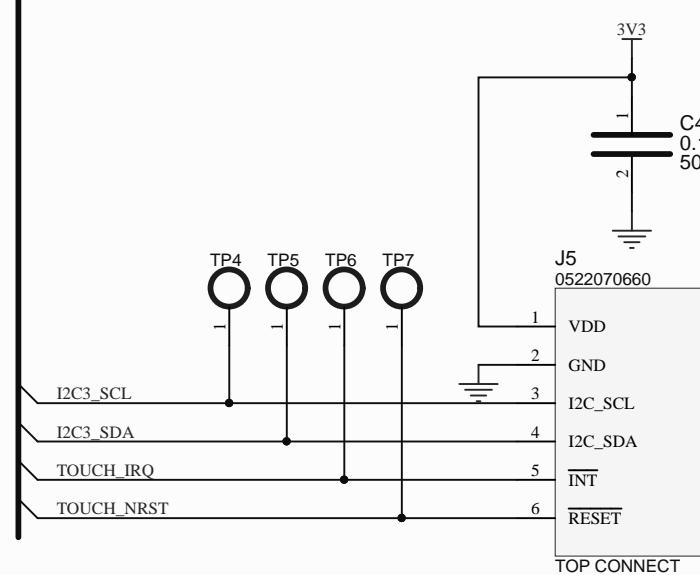
Size: B Number: IMR\_002 Revision: 1

Date: 10/29/2020 Engr: H. Collector Sheet 4 of 10

File: SystemMemory.SchDoc

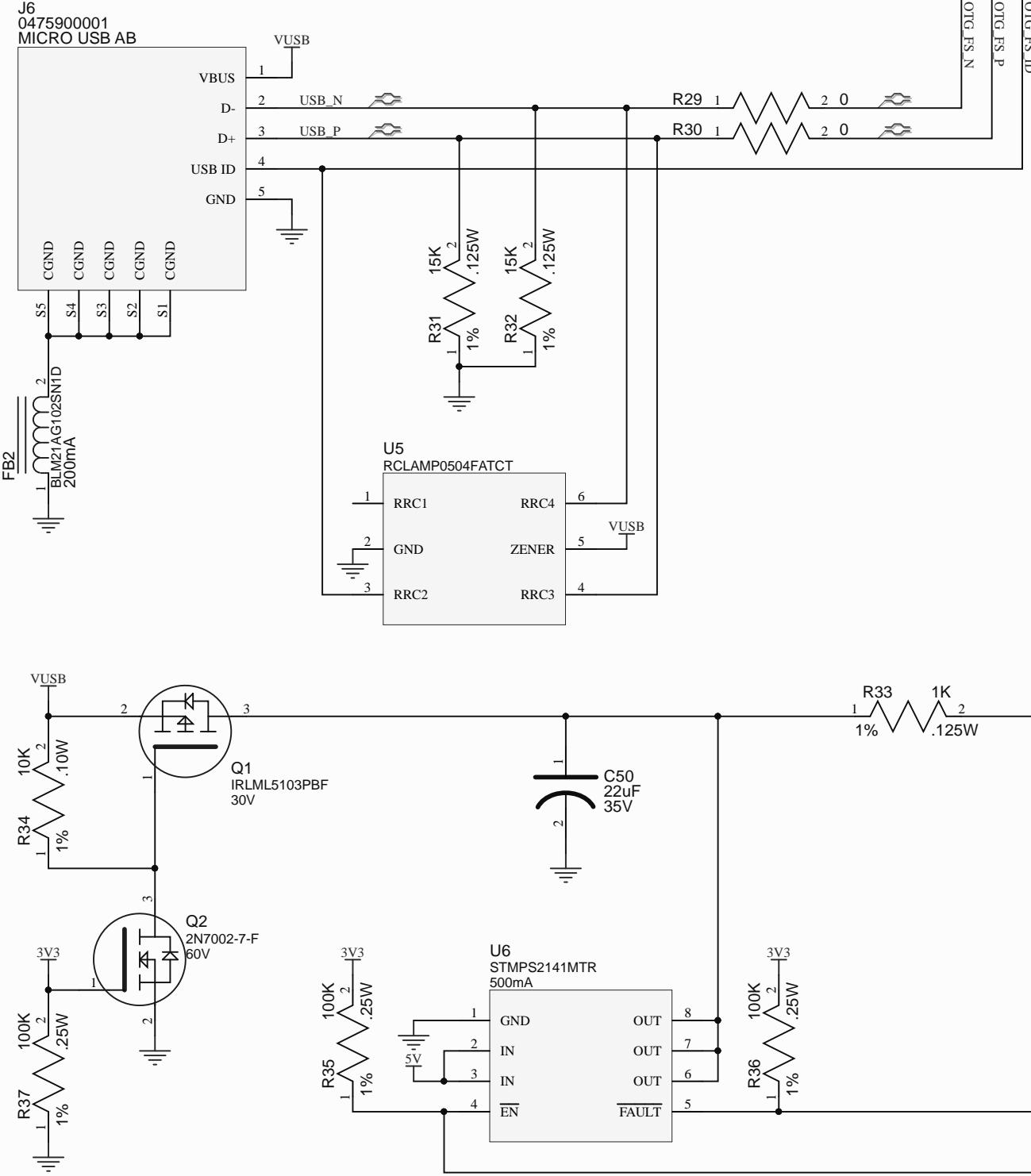


## DISPLAY BYPASS



Title <b>IMR Technology Demonstrator</b>			IMR Engineering
Size: B	Number: IMR_002	Revision: 1	3621 Gin Way Snellville, GA 30039 USA
Date: 10/29/2020	Engr: H. Collector	Sheet 5 of 10	
File: LCD_TouchBacklight.SchDoc			IMR Engineering Ideas Made Real

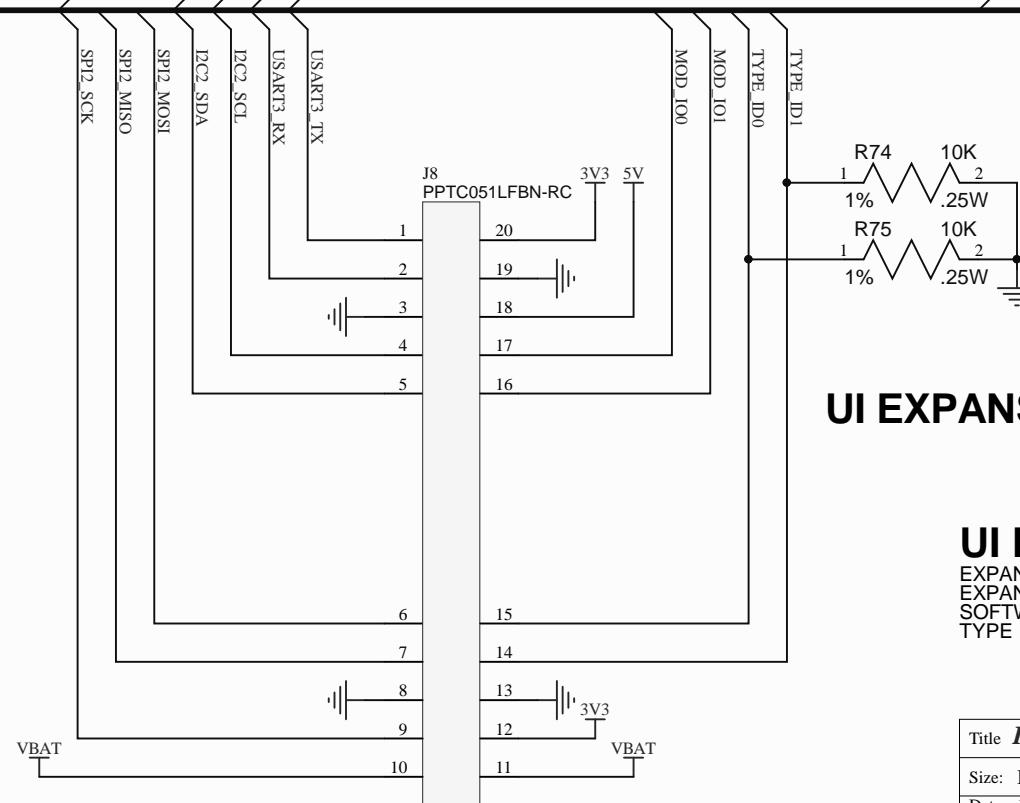
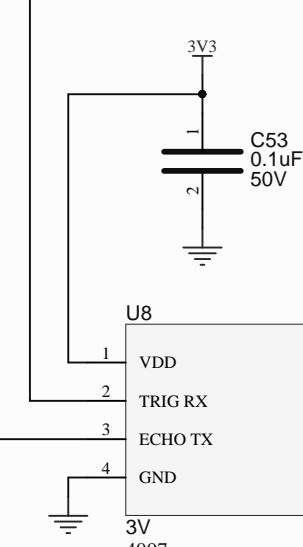
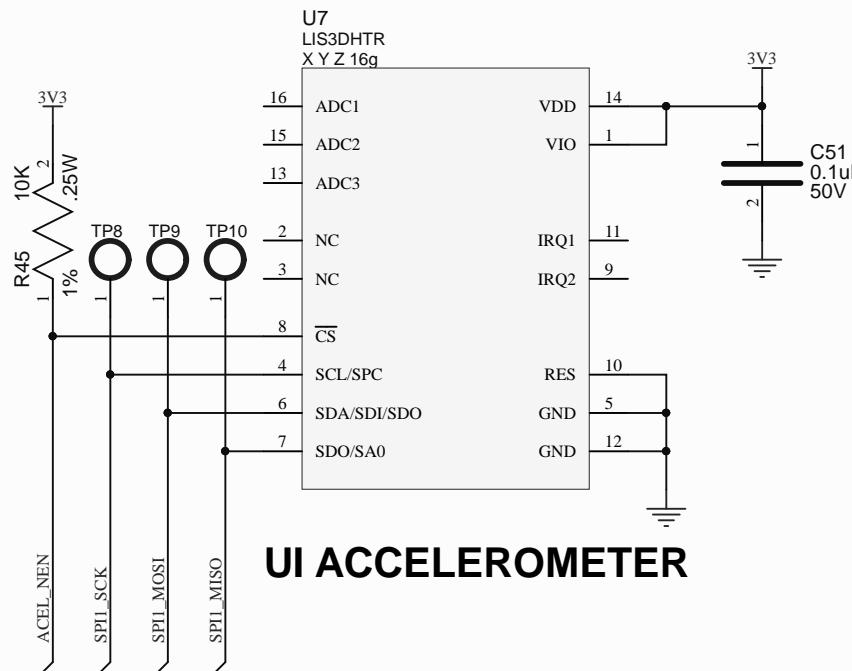
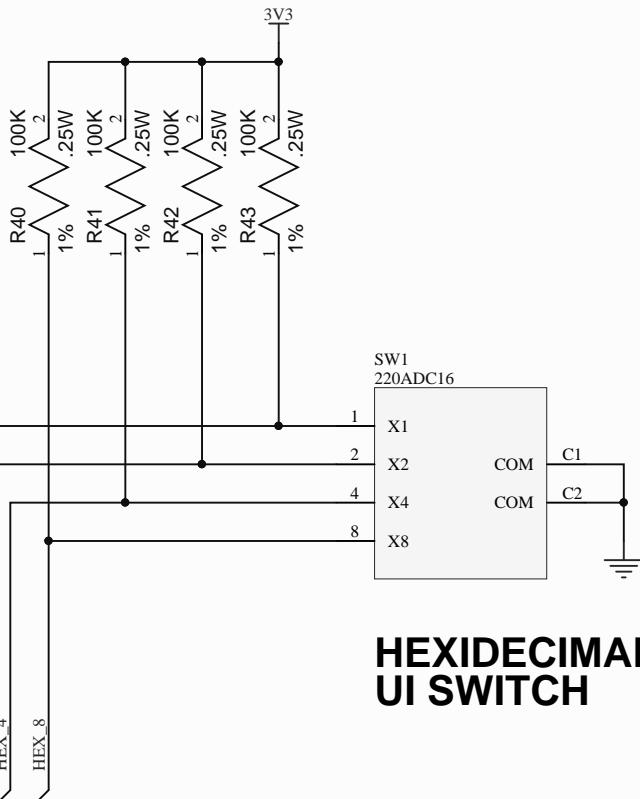
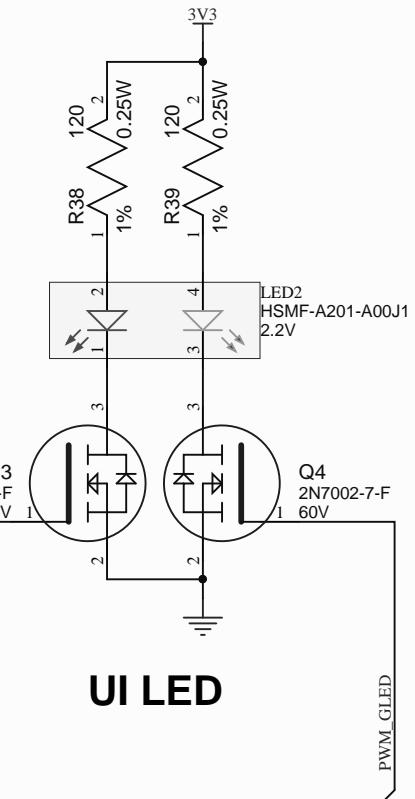
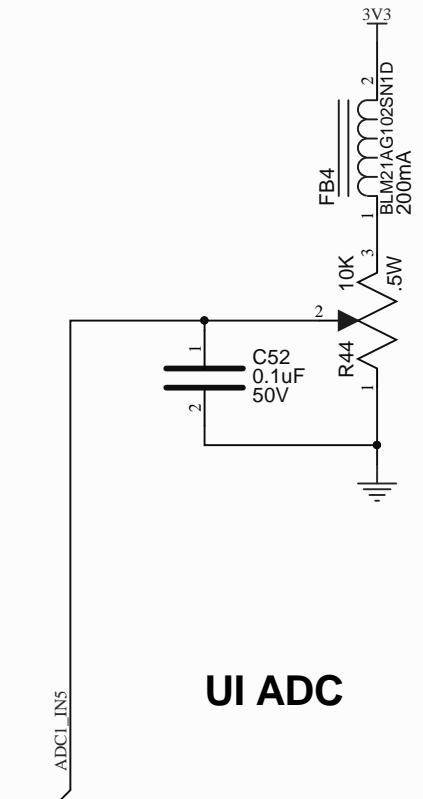
## USB OTG FS



## OTG USB FS:

OTG\_FS\_VUSB CANNOT BE DRIVE BY 5V IF CONTROLLER OFF - CIRCUIT PROTECTS  
PULL DOWN ON USB D+, D- LIKELY UNNECESSARY  
IF TECH DEMO SELF-POWERED VBUS SENSING MANDATORY  
IF TECH DEMO BUS POWERED VBUS SENSING NOT MANDATORY

Title <b>IMR Technology Demonstrator</b>			IMR Engineering 3621 Gin Way Snellville, GA 30039 USA	IMR Engineering
Size: B	Number: IMR_002	Revision: 1		
Date: 10/29/2020	Engr: H. Collector	Sheet 6 of 10		
File: SerialInterface.SchDoc				



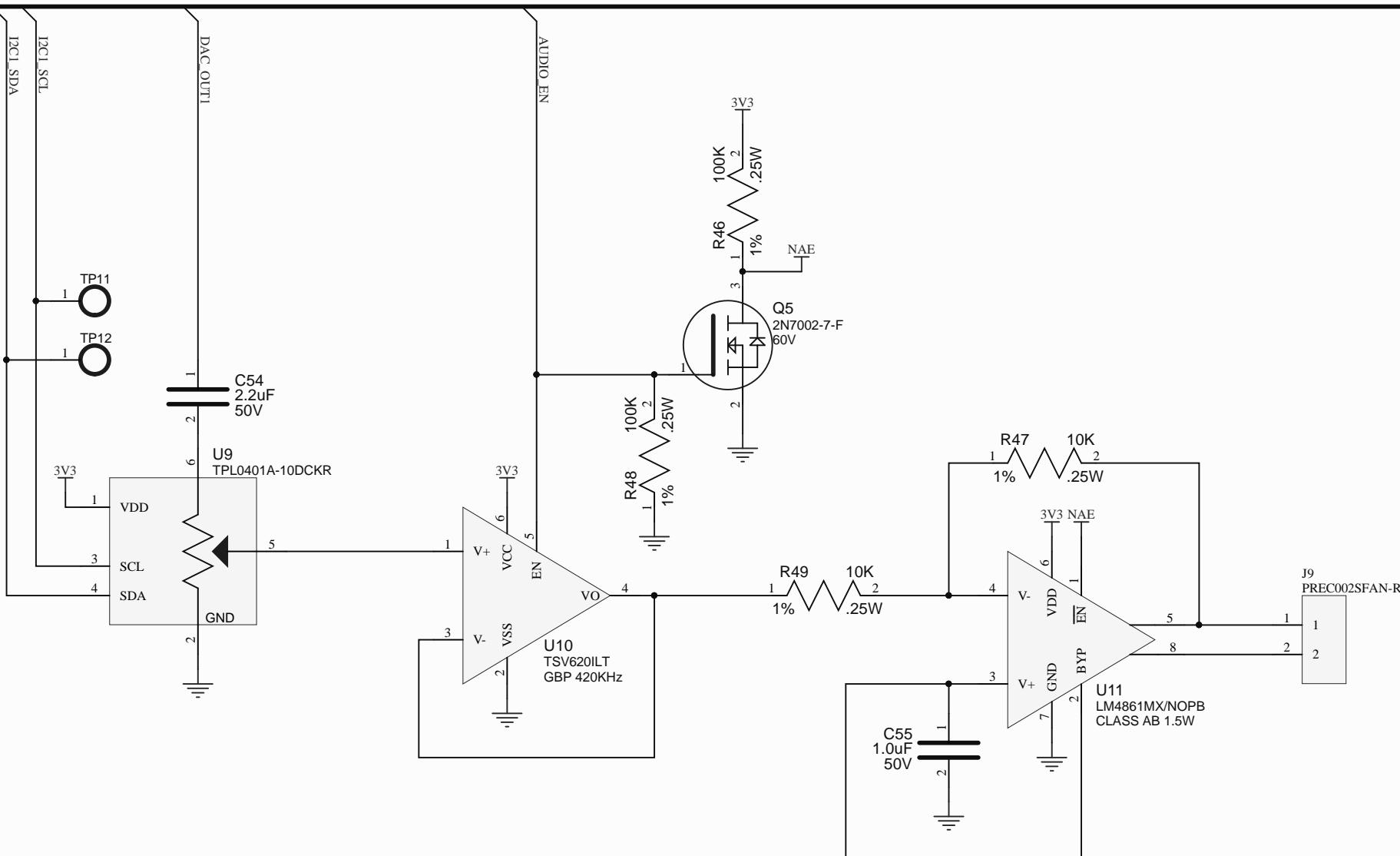
### UI NOTES:

EXPANSION MODULE MUST PULL UP I2C OR ENABLE PULL-UP  
EXPANSION MODULE USE TYPE\_ID0 AND TYPE\_ID1 TO SET MODULE TYPE  
SOFTWARE TO READ TYPE ID ON POR AND CONFIGURE ACCORDINGLY  
TYPE ID 00 = NO MODULE

Title <b>IMR Technology Demonstrator</b>		
Size: B	Number: IMR_002	Revision: 1
Date: 10/29/2020	Engr: H. Collector	Sheet 7 of 10
File: UserInteractive.SchDoc		

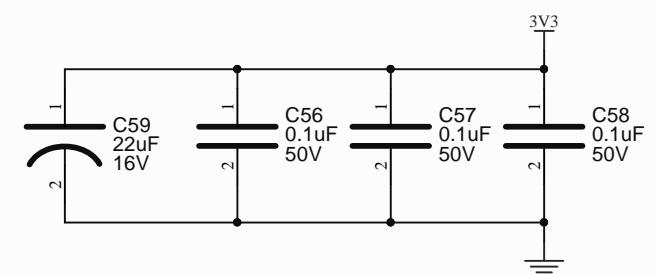
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USA

IMR Engineering  
Ideas Made Real



## AUDIO NOTES:

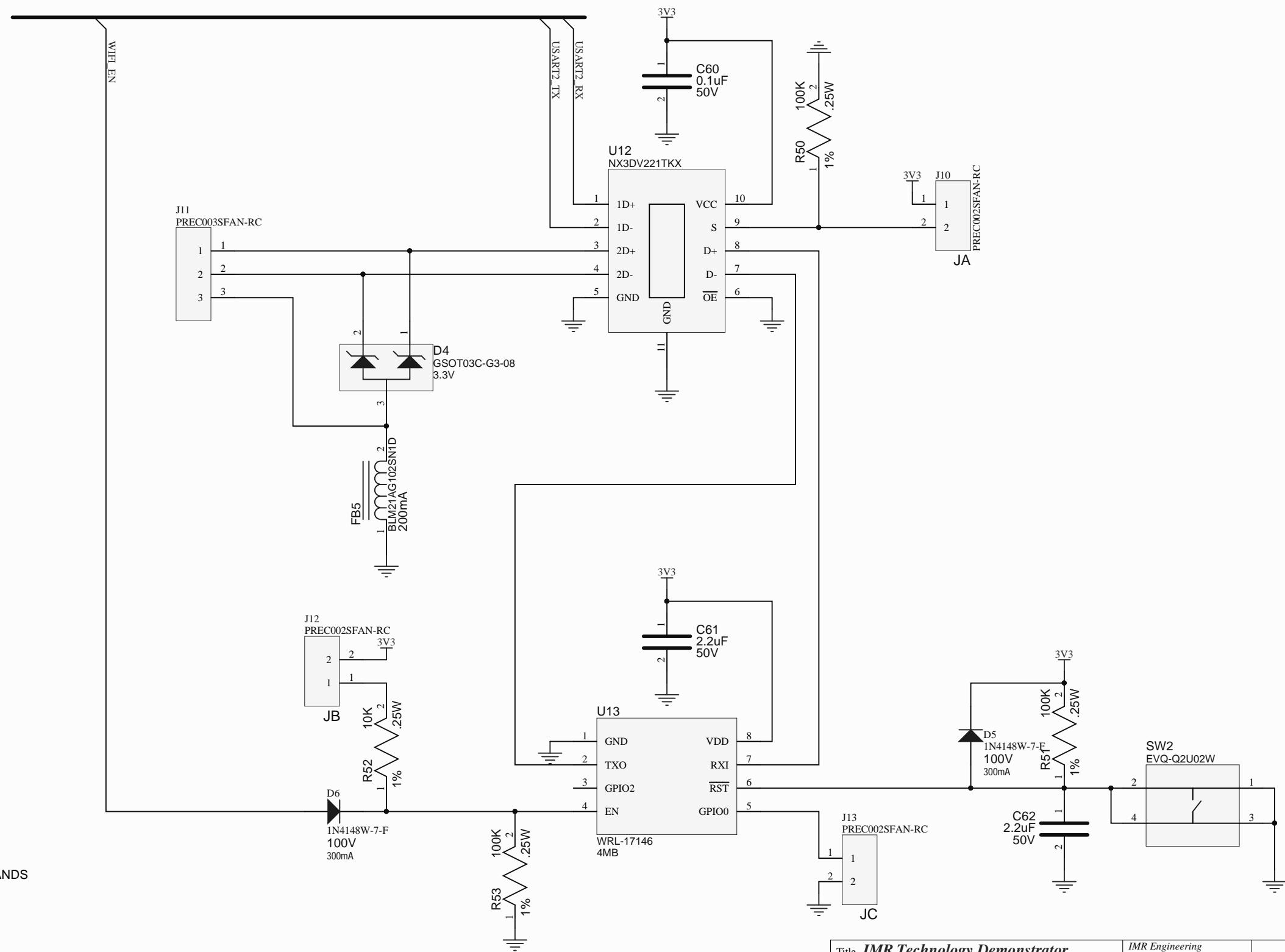
AUDIO BYPASS CAPS  
 AUDIO OUTPUT AT 1.5W INTO 8 OHM  
 INTENDED SPEAKER: PUI AUDIO, ASE02808MR-LW150-R  
 AUDIO POT IS LINEAR FIRMWARE MUST CONVERT TO LOG VOLUME  
 AUDIO POT I2C PULL-UP BY FIRMWARE



## WIFI ACCESS NOTES:

SYSTEM ACCESS:  
DO NOT INSTALL JUMPER JA, JB, JC  
DO NOT RESET VIA SW#

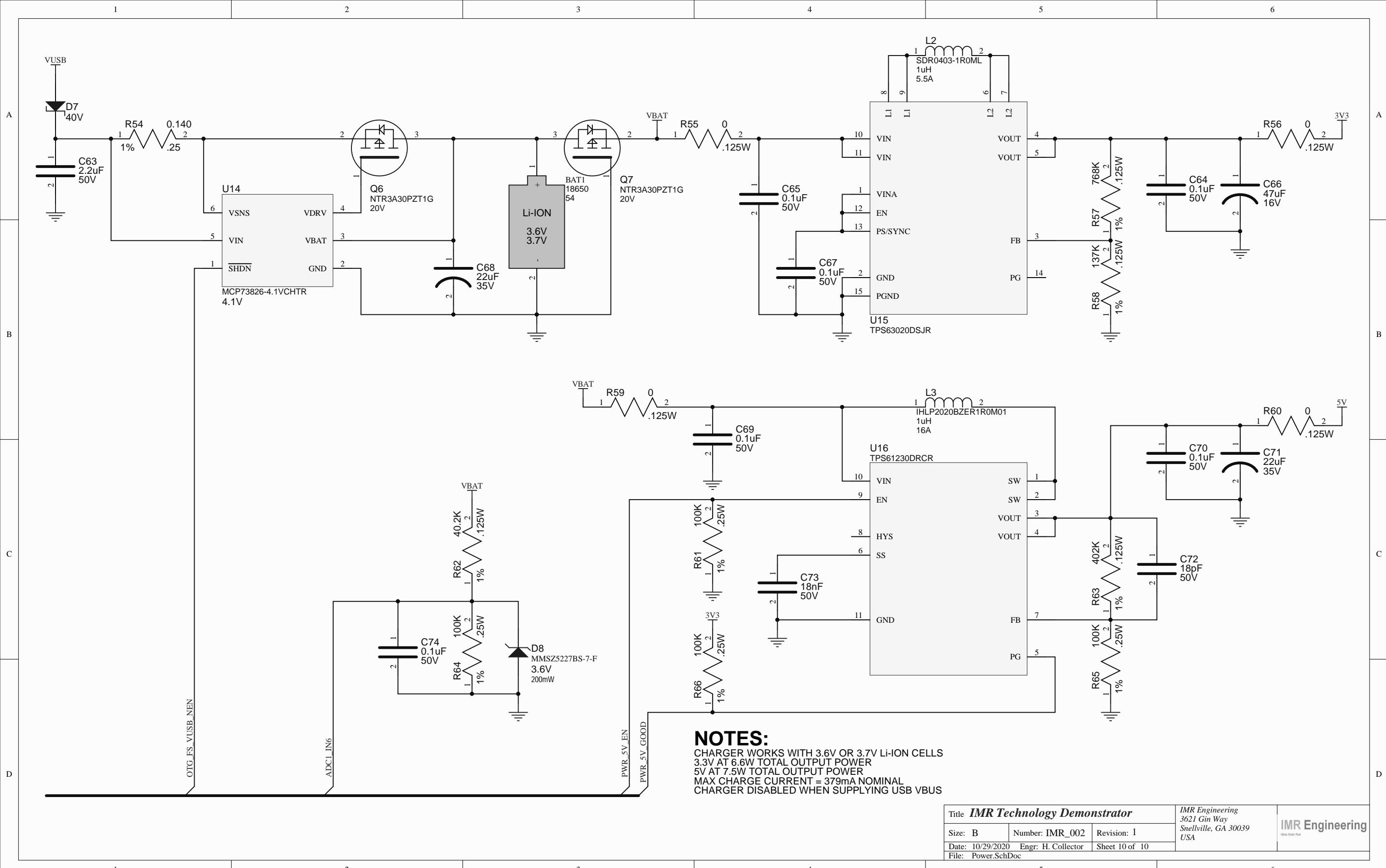
EXTERNAL UART ACCESS:  
RESET VIA SW#  
INSTALL JUMPER JA AND JB FOR AT COMMANDS  
INSTALL JUMPER JC TO PROGRAM

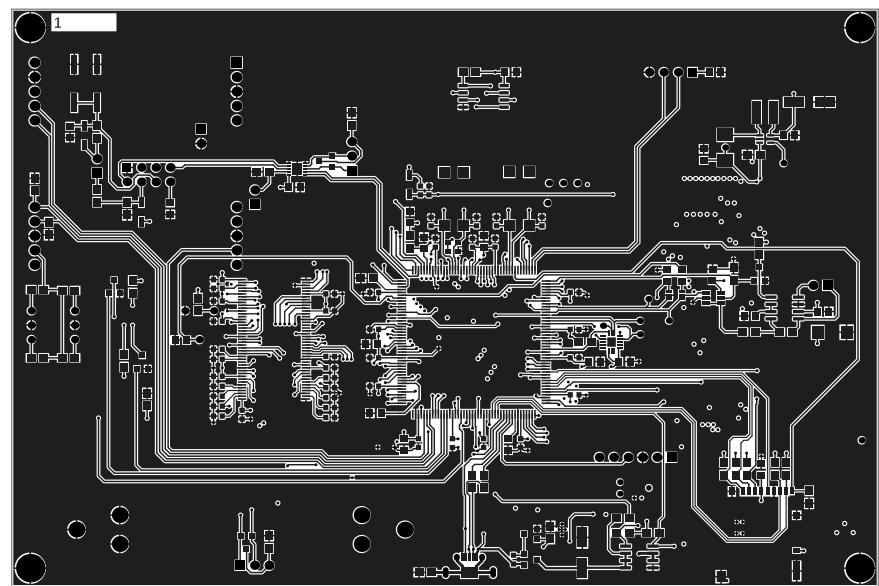


Title <b>IMR Technology Demonstrator</b>		
Size: B	Number: IMR_002	Revision: 1
Date: 10/29/2020	Engr: H. Collector	Sheet 9 of 10
File: Wifi.SchDoc		

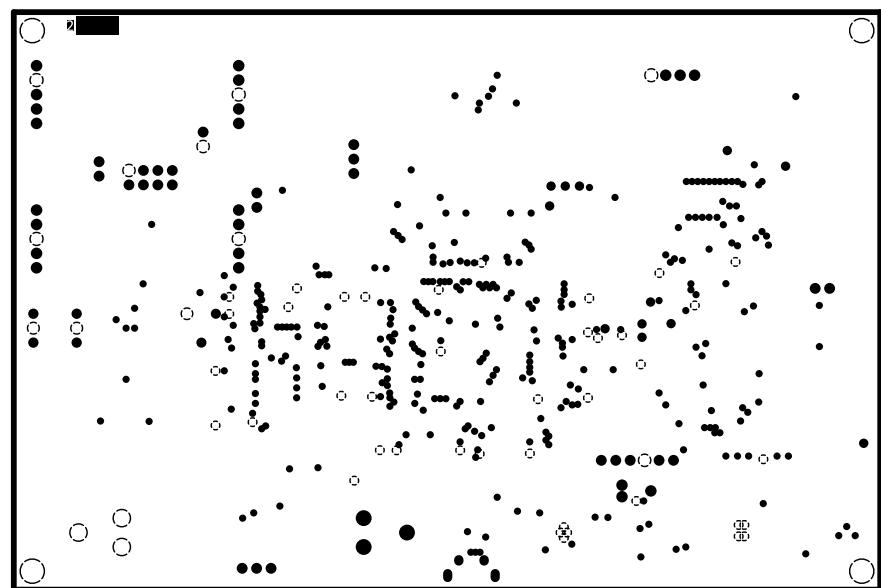
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USA

IMR Engineering  
Ideas Made Real

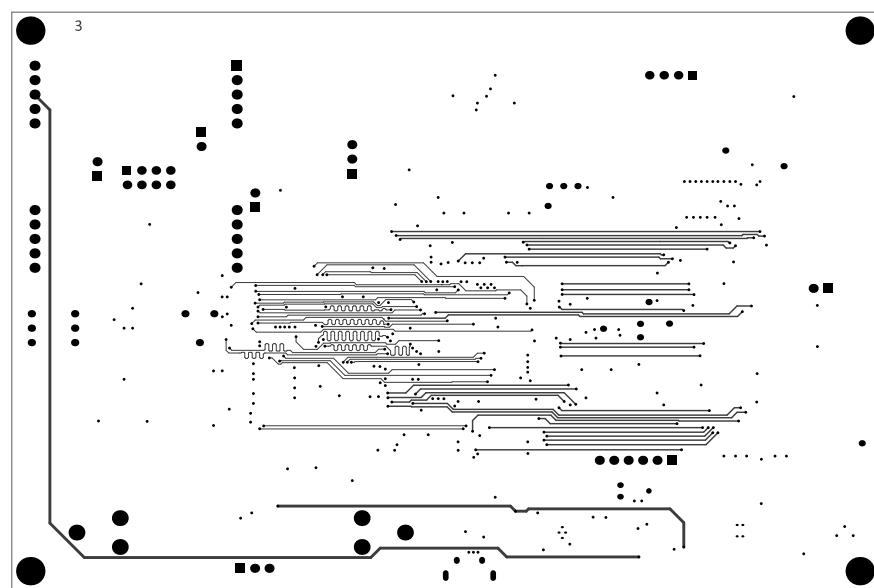




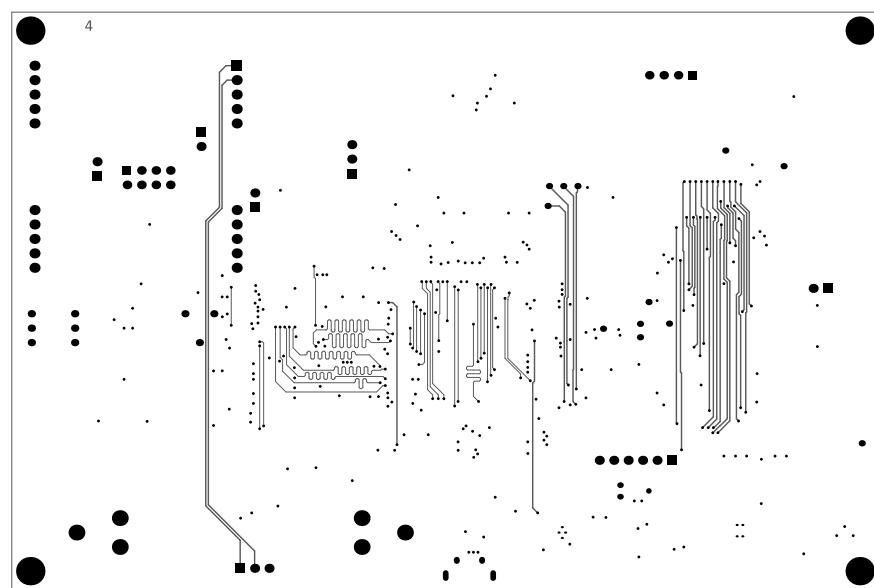
TOP



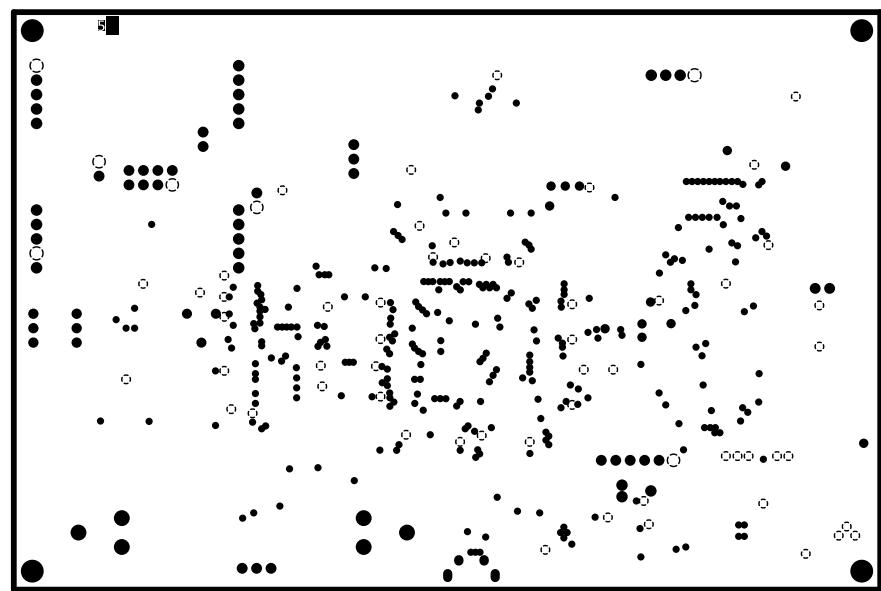
GND PLANE



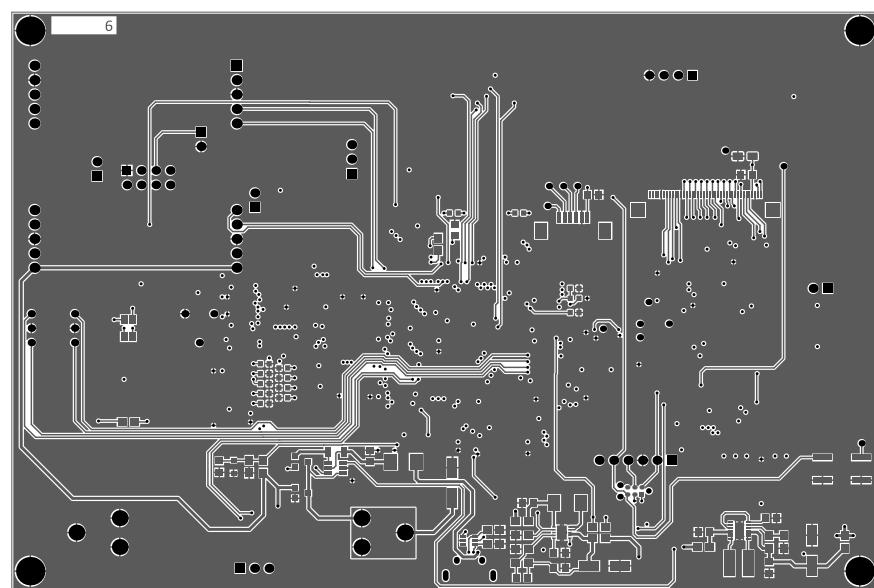
INNER SIGNAL 2



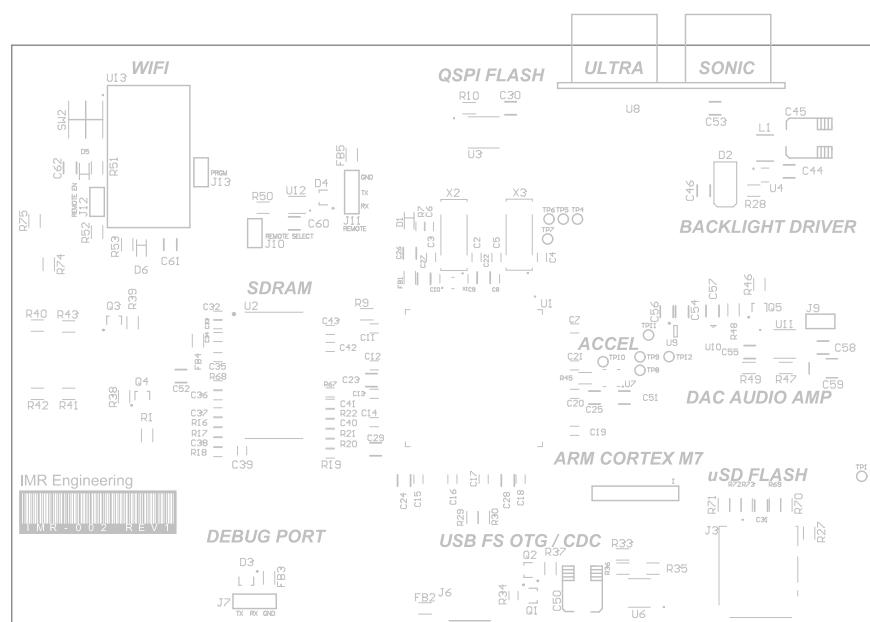
INNER SIGNAL 3

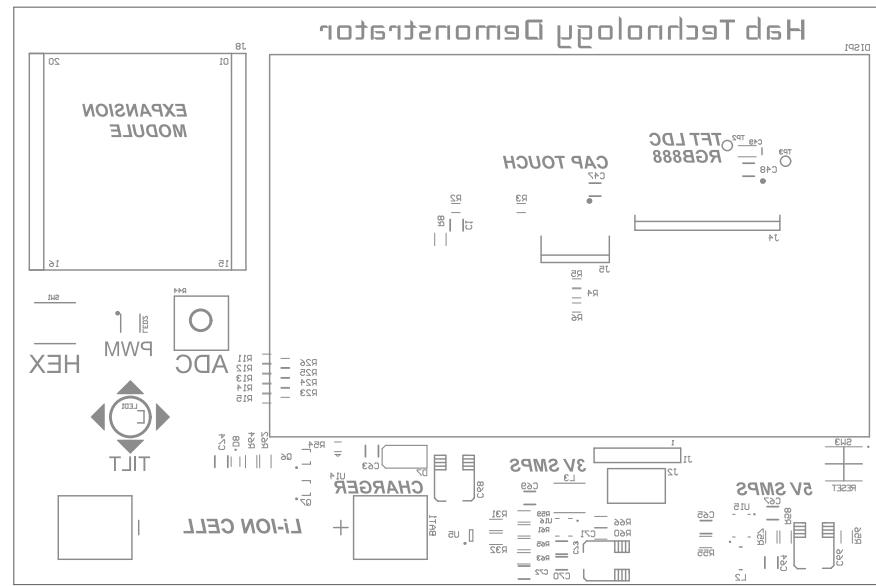


PWR PLANE

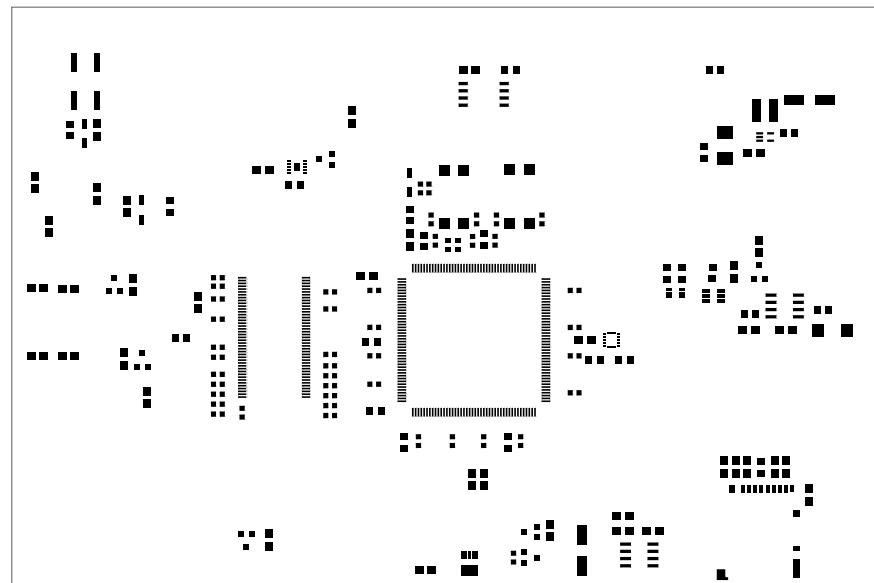


BOTTOM SIGNAL

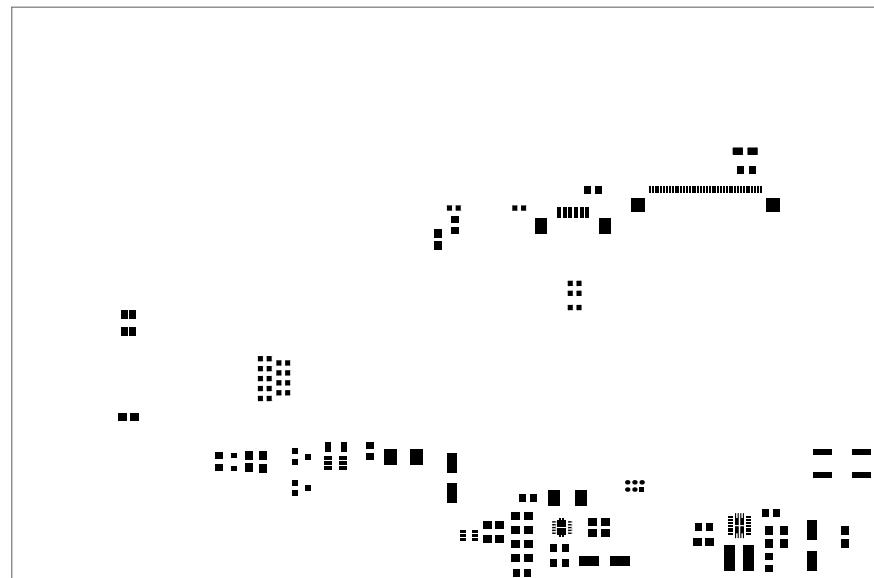




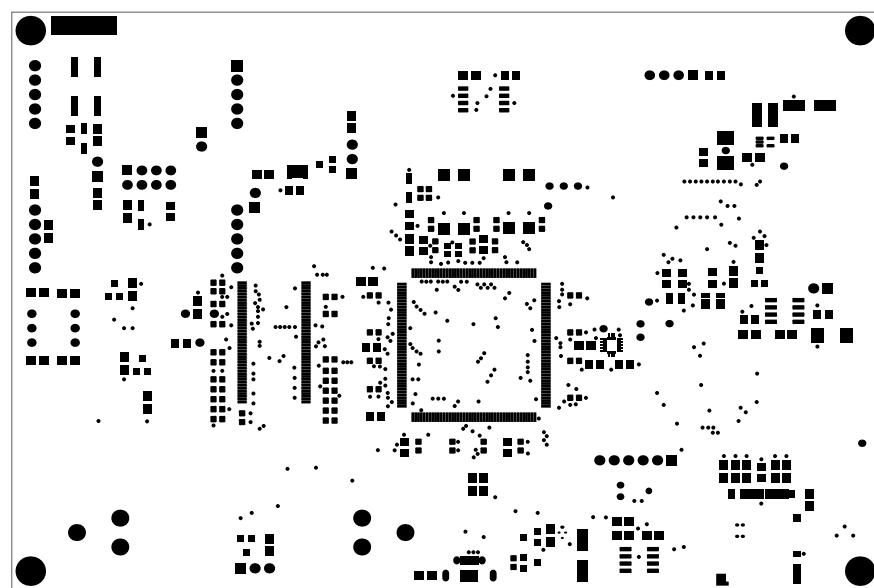
BOTTOM OVERLAY



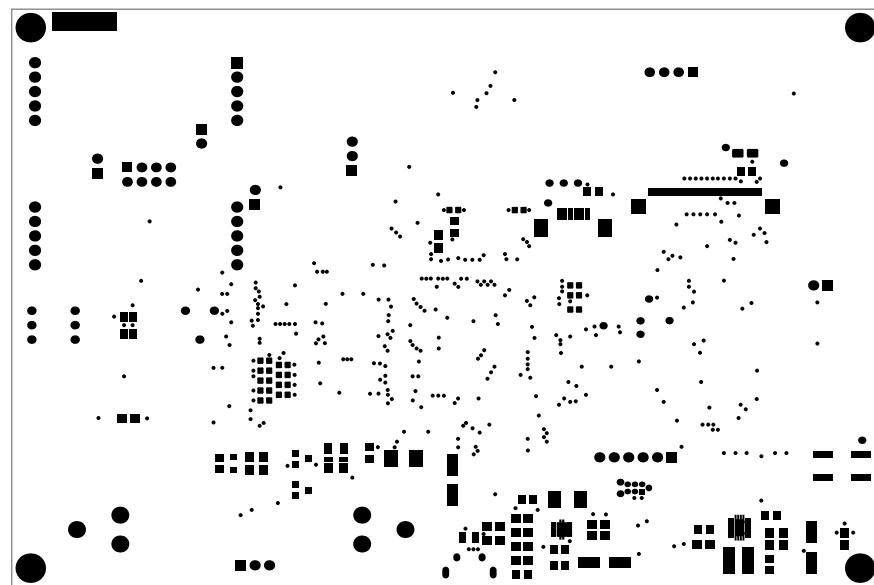
TOP PM



BOTTOM PM



TOP SM

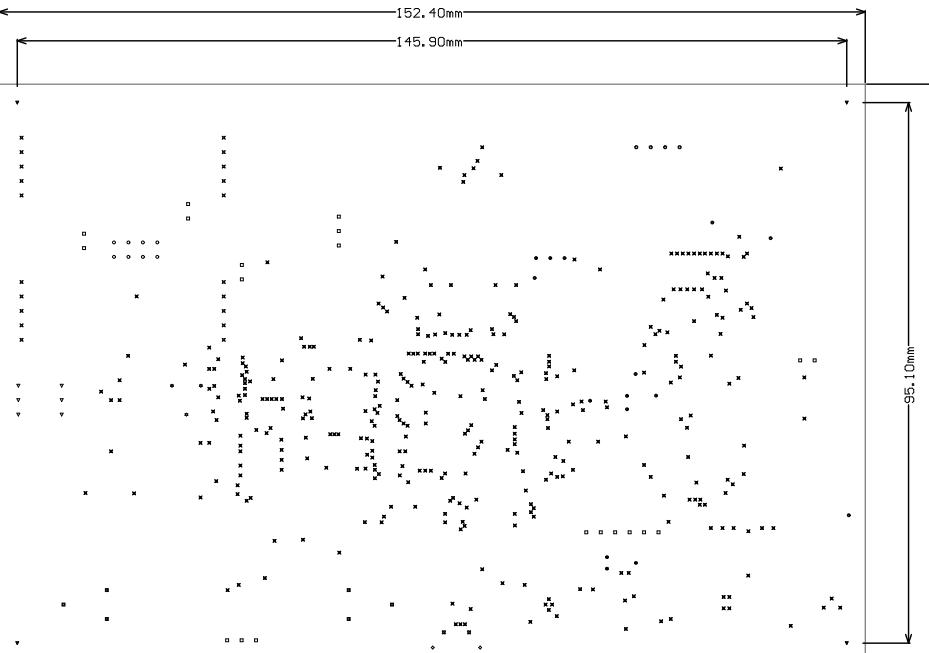


BOTTOM SM

Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Via/Pad	Pad Shape	Template	Hole Tolerance (+)	Hole Tolerance (-)
x	370	10.00mil (0.254mm)	PTH	Round	Top Layer - Bottom Layer	(Mixed)	Rounded	(Mixed)		
◊	2	23.62mil (0.600mm)	PTH	Slot	Top Layer - Bottom Layer	Pad	Rounded	r100_190h60_130r100		
○	12	25.00mil (0.635mm)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c110h64		
☒	2	25.59mil (0.650mm)	PTH	Slot	Top Layer - Bottom Layer	Pad	Rounded	r105_125h65_85r100		
✧	3	30.00mil (0.762mm)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c127h76		
▽	6	31.50mil (0.800mm)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c130h80		
○	8	35.00mil (0.889mm)	PTH	Round	Top Layer - Bottom Layer	Pad	(Mixed)	(Mixed)		
□	20	35.43mil (0.900mm)	PTH	Round	Top Layer - Bottom Layer	Pad	(Mixed)	(Mixed)		
✿	3	39.37mil (1.000mm)	NPTH	Round	Top Layer - Bottom Layer	Pad	Rounded	(Mixed)		
○	4	39.37mil (1.000mm)	PTH	Round	Top Layer - Bottom Layer	Pad	(Mixed)	(Mixed)		
☒	20	40.00mil (1.016mm)	PTH	Round	Top Layer - Bottom Layer	Pad	(Mixed)	(Mixed)		
▣	6	70.00mil (1.778mm)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c279h178		
▽	4	118.11mil (3.000mm)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c500h300		
	460 Total									

Slot definitions : Routed Path Length = Calculated from tool start centre position to tool end centre position.  
Hole Length = Routed Path Length + Tool Size = Slot length as defined in the PCB layout

Layer	Name	Material	Thickness	Constant	Board Layer Stack	Board Layer Stack
1	Top Overlay					
2	Top Solder	SM-001	1.00mil	4		
3	Top Layer	Copper	1.38mil			
4	Dielectric 1	PP-006	2.80mil	4.1		
5	Dielectric 2	PP-006	2.80mil	4.1		
6	GND_Plane	Copper	1.38mil			
7	Dielectric 3	Core-035	18.00mil	4.7		
8	Int2 (Sign)	Copper	1.38mil			
9	Dielectric 4	PP-006	2.80mil	4.1		
10	Dielectric 5	PP-006	2.80mil	4.1		
11	Int3 (Sign)	Copper	1.38mil			
12	Dielectric 6	Core-035	18.00mil	4.7		
13	PWR_Plane	Copper	1.38mil			
14	Dielectric 7	PP-006	2.80mil	4.1		
15	Dielectric 8	PP-006	2.80mil	4.1		
16	Bottom Layer	Copper	1.38mil			
17	Bottom Solder	SM-001	1.00mil	4		
18	Bottom Overlay					



## PCB FABRICATION NOTES:

### MATERIAL:

FR4 (GF per MIL-P-13949) MIN UL 94V0

### Cu WEIGHT:

OUTER LAYER: 1oz

INNER LAYER: STANDARD (SEE LAYER STACK)

### SOLDER MASK:

TYPE: LPI (LIQUID PHOTO-IMAGE)

COVER: SMOBC (SOLDER MASK OVER BARE Cu)

COLOR: RED

### OVERALL PCB THICKNESS:

PCB: 63MIL (SEE LAYER STACK)

TOLERANCE: 7MIL

### PCB ELECTRICAL TEST

TESTED TO GERBER DATA

PURCHASE ORDER TO OVERRIDE

### HOLE DIAMETER TOLERANCE:

PLATED HOLE TOLERANCE: 3MIL

NON PLATED HOLE TOLERANCE: 3MIL

### SILK SCREEN

SIDES: TOP AND BOTTOM

COLOR: WHITE

### ACCEPTABILITY:

STANDARD: IPC-A-600 (LATEST REV)

MFG TO ADD: DATE CODE, UL FLAME CODE

### SURFACE FINISH:

PROTOTYPE: HASL OR EING

PRODUCTION: ENIG (PER PO)

IMR Engineering, LLC

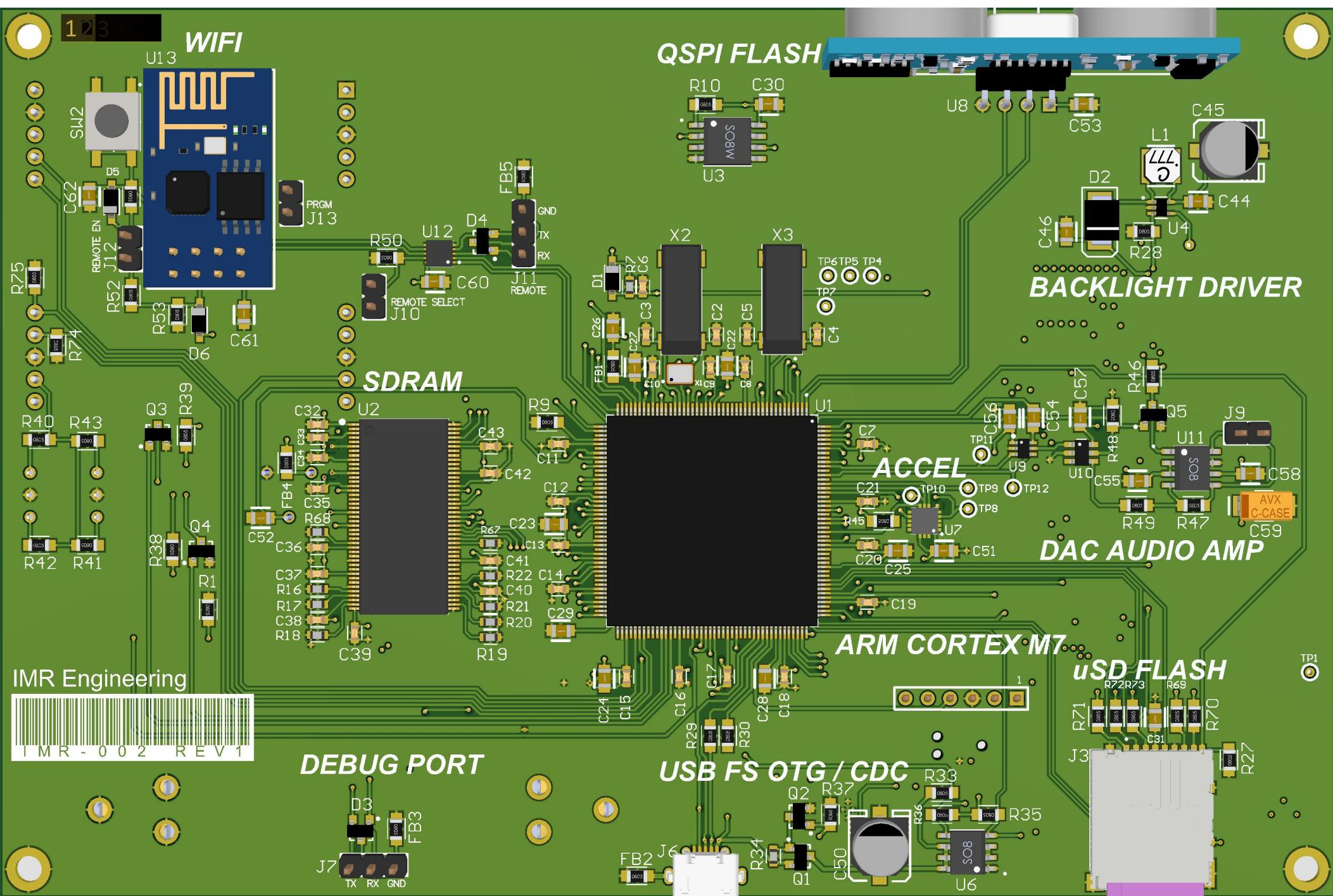
REV 1

ENGG:

IMR-002

12/23/2020

Hab Collector





# Hab Technology Demonstrator

