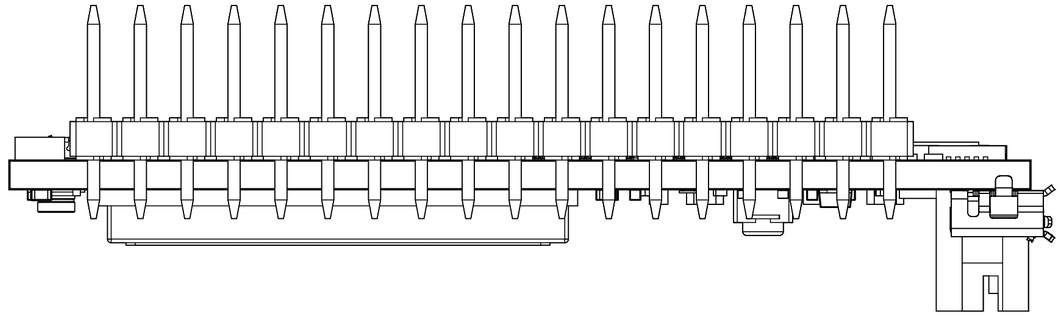

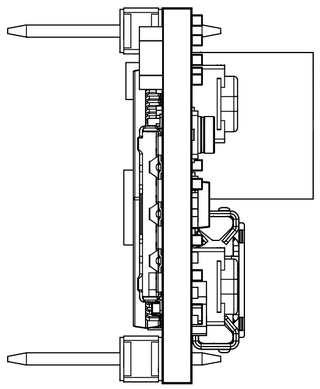

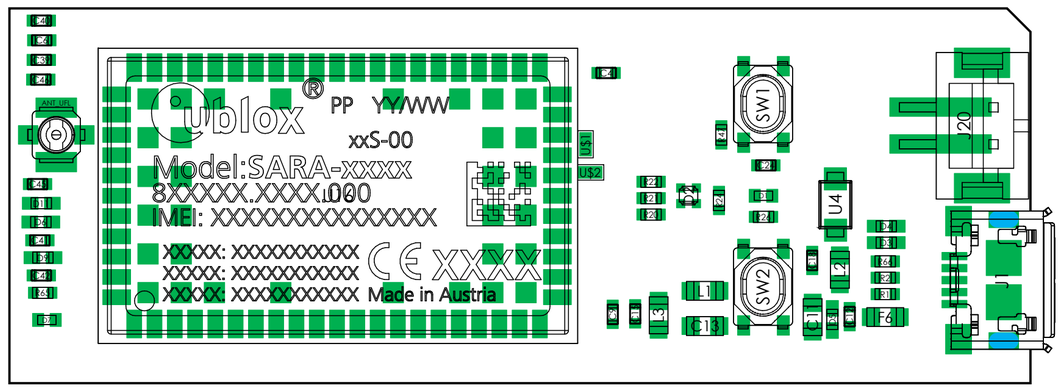

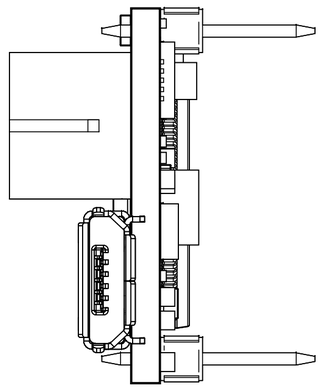

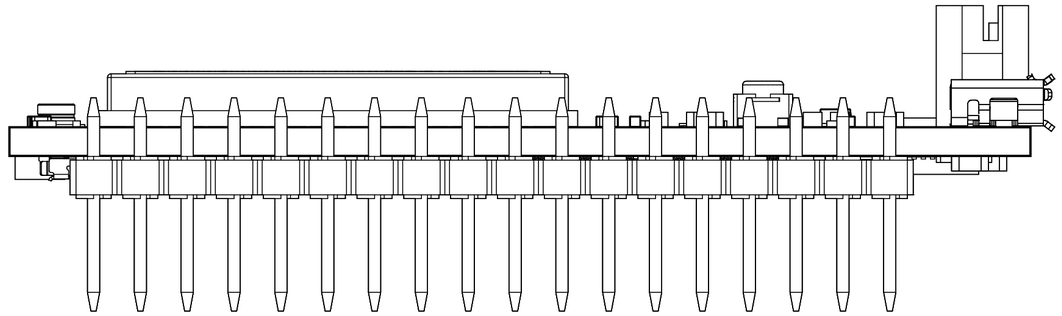

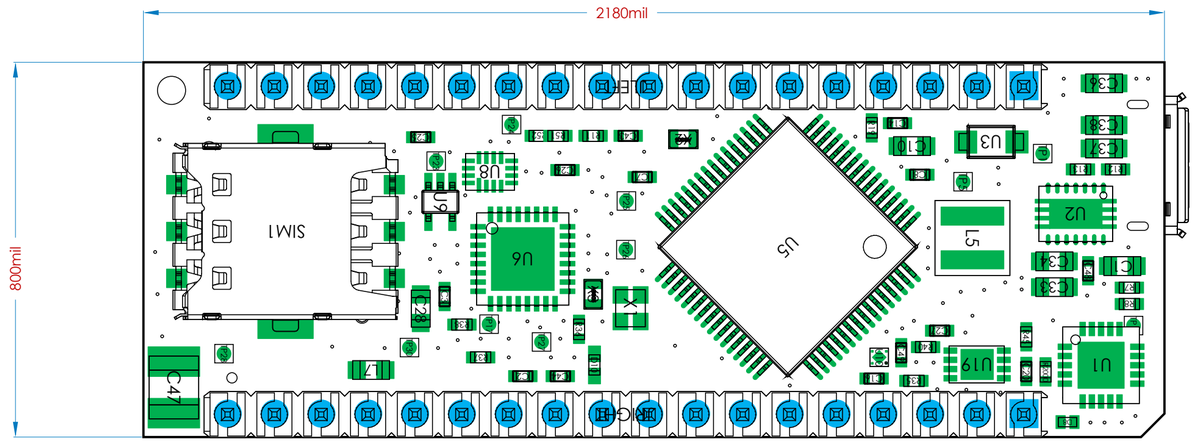

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UNLESS OTHERWISE SPECIFIED:		NAME / DATE
DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL± ANGULAR: MACH± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	DRAWN	BDL 10/6/2017
	CHECKED	
	ENG APPR.	
	MFG APPR.	
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.	
MATERIAL	COMMENTS:	
FINISH		
DO NOT SCALE DRAWING		

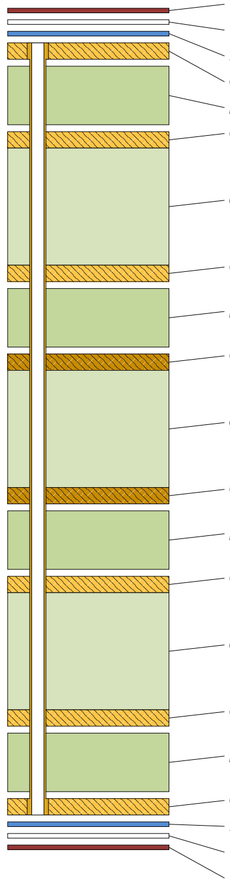
NEXT ASSY	USED ON
APPLICATION	

hologram.io

TITLE: Dash 1.2 Rev E

SIZE	DWG. NO.	
SCALE: 1:1	WEIGHT:	SHEET 1 OF 3

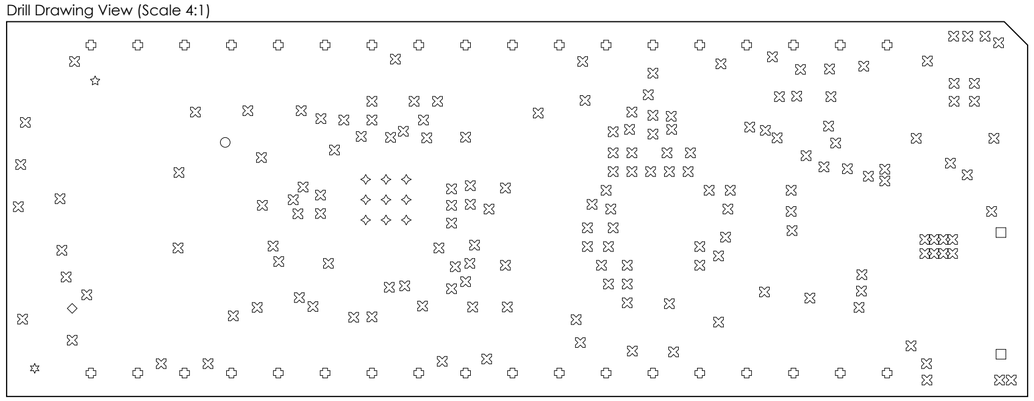
Layer Stack Legend



Material	Layer	Thickness	Dielectric Material	Type	Gerber
	Top Paste			Paste Mask	GTP
	Top Overlay			Legend	GTO
Surface Material	Top Solder	0.4mil(0.010mm)	Solder Resist	Solder Mask	GTS
Copper	**Top Layer**	**1.4mil(0.036mm)**		**Signal**	**GTL**
Prepreg		*5.0mil(0.127mm)*	*FR-4*	*Dielectric*	
Copper	**Signal Layer 1**	**1.4mil(0.036mm)**		**Signal**	**G1**
Core		*10.0mil(0.254mm)*	*FR-4*	*Dielectric*	
Copper	**Signal Layer 2**	**1.4mil(0.036mm)**		**Signal**	**G2**
Prepreg		*5.0mil(0.127mm)*		*Dielectric*	
Copper	**Internal Plane 1**	**1.4mil(0.036mm)**		**Internal Plane**	**GP1**
Core		*10.0mil(0.254mm)*		*Dielectric*	
Copper	**Internal Plane 2**	**1.4mil(0.036mm)**		**Internal Plane**	**GP2**
Prepreg		*5.0mil(0.127mm)*		*Dielectric*	
Copper	**Signal Layer 3**	**1.4mil(0.036mm)**		**Signal**	**G3**
Core		*10.0mil(0.254mm)*		*Dielectric*	
Copper	**Signal Layer 4**	**1.4mil(0.036mm)**		**Signal**	**G4**
Prepreg		*5.0mil(0.127mm)*		*Dielectric*	
Copper	**Bottom Layer**	**1.4mil(0.036mm)**		**Signal**	**GBL**
Surface Material	Bottom Solder	0.4mil(0.010mm)	Solder Resist	Solder Mask	GBS
	Bottom Overlay			Legend	GBO
	Bottom Paste			Paste Mask	GBP

Total thickness: 62.0mil(1.575mm)

Drill Drawing View (Scale 4:1)



Drill Table

Symbol	Count	Hole Size	Plated	Hole Tolerance
✧	9	0.20(7.9)	Plated	None
⊠	168	0.20(8.0)	Plated	None
□	2	0.50(19.7)	Plated	None
☆	1	0.61(24.0)	Plated	None
○	1	0.80(31.5)	Non-Plated	None
◇	1	1.00(39.4)	Non-Plated	None
⌬	36	1.02(40.0)	Plated	None
✡	1	1.57(62.0)	Plated	None
	219 Total			

Notes:

1. PCB material FR4, Nominal thickness 0.063". Stackup thicknesses are NOMINAL, and for reference only.
2. Solder mask BLUE both sides
3. Overlay WHITE, LPI both sides. Overlay to be applied to top side after Via Tenting, using advanced silk screen process.

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NEXT ASSY	USED ON	
APPLICATION		

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL±
ANGULAR: MACH± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	BDL	10/6/2017
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

hologram.io

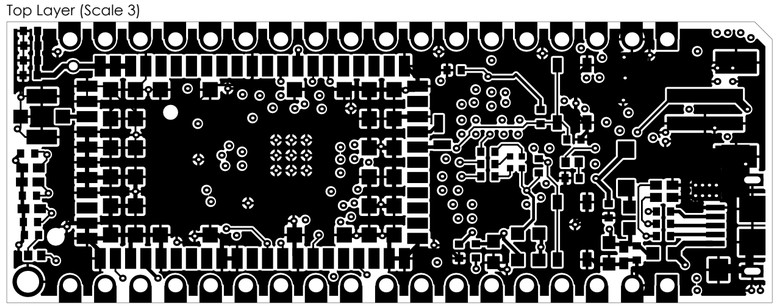
TITLE

Dash 1.2 Rev E

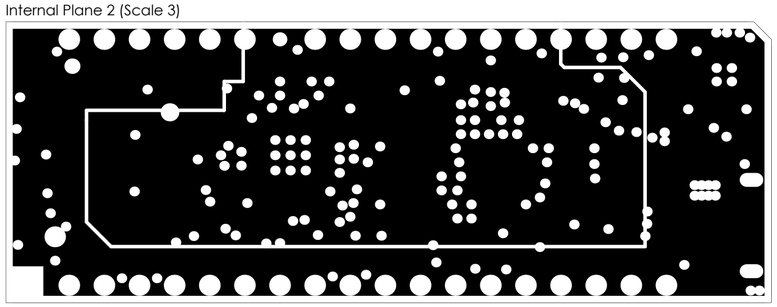
SIZE	DWG. NO.	

SCALE: 1:1	WEIGHT:	SHEET 2 OF 3

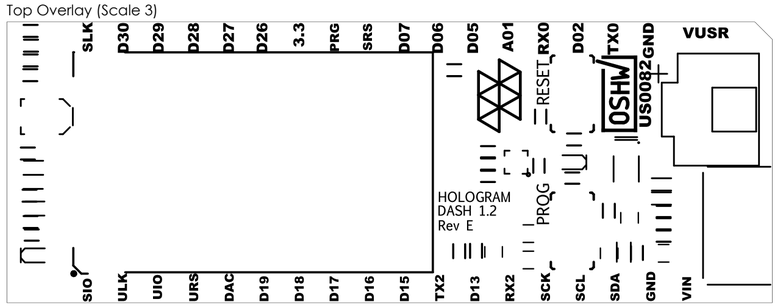
Top Layer (Scale 3)



Internal Plane 2 (Scale 3)



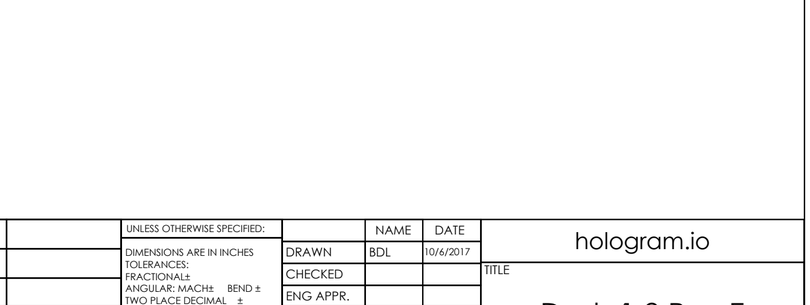
Top Overlay (Scale 3)



Signal Layer 1 (Scale 3)

Signal Layer 3 (Scale 3)

Bottom Overlay (Scale 3)



Signal Layer 2 (Scale 3)

Signal Layer 4 (Scale 3)

Mechanical 1 (Scale 3)

Internal Plane 1 (Scale 3)

Bottom Layer (Scale 3)

Mechanical 2 (Scale 3)

JRIGHT

JLEFT

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NEXT ASSY	USED ON
APPLICATION	

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TOLERANCES:
FRACTIONAL±
ANGULAR: MACH± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±

INTERPRET GEOMETRIC TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

	NAME	DATE
DRAWN	BDL	10/6/2017
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

hologram.io

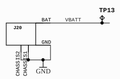
TITLE

Dash 1.2 Rev E

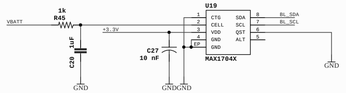
SIZE	DWG. NO.	

SCALE: 1:1	WEIGHT:	SHEET 3 OF 3

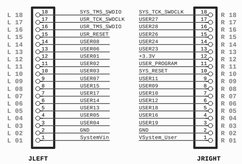
Battery Connector



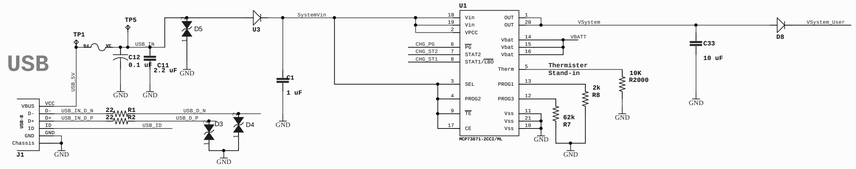
Battery Monitor



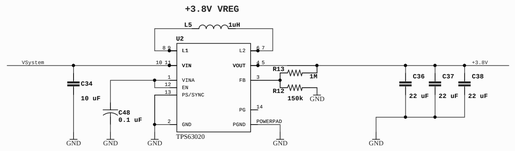
User Pins



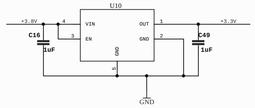
Battery Charger/System Voltage



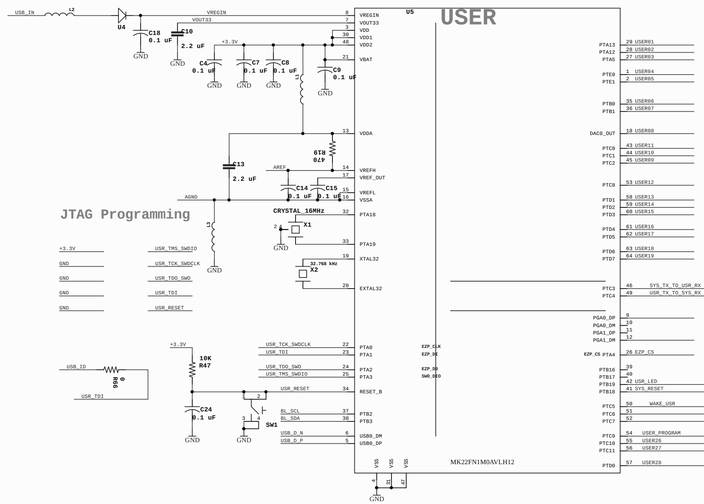
+3.8V VREG



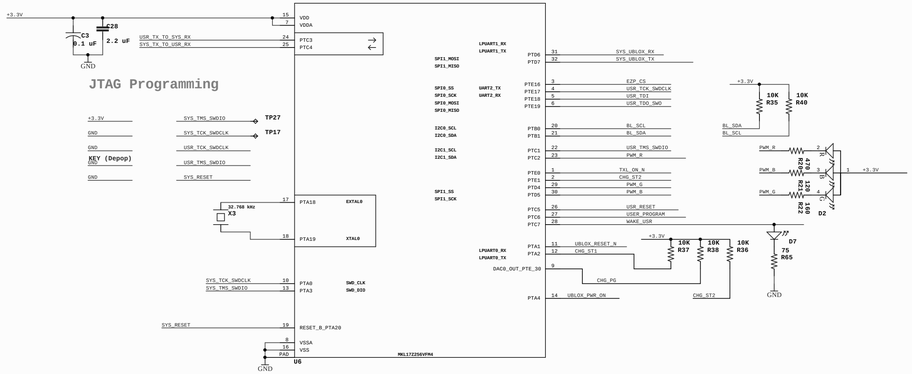
+3.3V VREG



USER



System


+3.3V
C3
0.1 uF
C28
2.2 uF
GND
VDD
VDDA
PTC3
PTC4
USR_TX_TO_SYS_RX
SYS_TX_TO_USR_RX
JTAG Programming
SPI1_MOSI
SPI1_MISO
SPI0_SS
SPI0_SCK
SPI0_MOSI
SPI0_MISO
I2C0_SCL
I2C0_SDA
I2C1_SCL
I2C1_SDA
SPI1_SS
SPI1_SCK
LPUART1_RX
LPUART1_TX
UART2_TX
UART2_RX
LPUART0_RX
LPUART0_TX
PTD6 31 SYS_UBLOX_RX
PTD7 32 SYS_UBLOX_TX
PTE16 3 EZP_CS
PTE17 4 USR_TCK_SWDCLK
PTE18 5 USR_TDI
PTE19 6 USR_TDO_SWO
PTB0 20 BL_SCL
PTB1 21 BL_SDA
PTC1 22 USR_TMS_SWDIO
PTC2 23 PWM_R
PTE0 1 TXL_ON_N
PTE1 2 CHG_ST2
PTD4 29 PWM_G
PTD5 30 PWM_B
PTC5 26 USR_RESET
PTC6 27 USER_PROGRAM
PTC7 28 WAKE_USR
PTA1 11 UBLOX_RESET_N
PTA2 12 CHG_ST1
9
CHG_PG
PTA4 14 UBLOX_PWR_ON
DAC0_OUT_PTE_30
CHG_ST2
10K R35
10K R40
PWM_R
PWM_B
PWM_G
R 0 R
R 0 B
R 0 G
D2
+3.3V
10K R37
10K R38
10K R36
D7
75 R65
TP28
UBLOX_VCC
C47
330uF
C39
0.1 uF
C5
0.1 uF
C40
0.1 uF
C46
0.1 uF
ANT_UFL
GND
GND
GND