Bill Of Materials

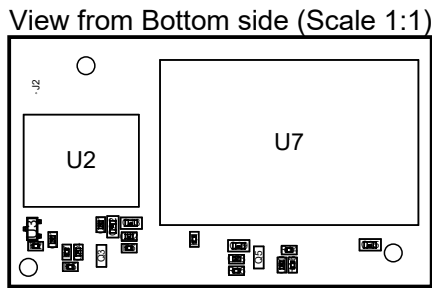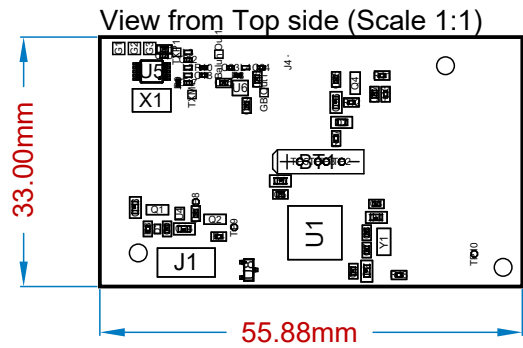| Line #	Designator	Name	Quantity	Manufacturer 1	Manufacturer Part Number 1	Supplier 1	Supplier Part Number 1	Value
1	BT1	KEYSTONE_99	1	Keystone Electronics	99	Digi-Key	36-99-ND	
2	C1, C3, C5, C9, C11, C12, C15, C16, C19, C25, C28, C31	C0402	12	Samsung	CL05F104ZO5NNNC	Digi-Key	1276-1004-6-ND	0.1uF
3	C2, C4, C6, C13, C26, C29, C32, C33, C34, C35	C0603	10	Samsung	CL10A475KO8NNNC	Digi-Key	1276-1784-1-ND	4.7uF
4	C7, C8	C0402	2	Murata	GRM1555C1H4R3CA01D	Digi-Key	490-5943-6-ND	4.3pF
5	C10, C21	C0402	2	Samsung	CL05A105MP5NNNC	Digi-Key	1276-1448-1-ND	1uF
6	C14, C27, C30	C0402	3	Taiyo Yuden	EMK105B7223KV-F	Mouser	963-EMK105B7223KV-F	0.022uF
7	C17, C22	Chip Capacitor	2	Murata	GCM1555C1H100FA16D	Digi-Key	490-14348-1-ND	10 pF
8	C18	Chip Capacitor	1					np
9	C20	Chip Capacitor	1	Murata	GRM1555C1H101JA01J	Digi-Key	490-7754-6-ND	100 pF
10	C23, C24	Chip Capacitor	2	KEMET	CBR04C180F5GAC	Digi-Key	399-8828-6-ND	18 pF
11	D1	RB521S30T1G	1	ON Semiconductor	RB521S30T1G	Digi-Key	RB521S30T1GOSCT-ND	
12	D2	D0603	1					B
13	J1	10 PIN	1	Samtec	FTSH-105-01-F-D-K	Digi-Key	SAM8909-ND	
14	J2, J4	73412-0110	2	Molex	73412-0110	Digi-Key	WM5587DKR-ND	
15	L1, L3	0402	2	TDK	MLG1005SR10JT000	Digi-Key	445-3071-1-ND	100 nH
16	L2	0402	1	TDK	MHQ1005PR39HT000	Digi-Key	445-175487-1-ND	390 nH
17	L4	0402	1	TDK	MLG1005S91NJT000	Digi-Key	445-6318-1-ND	91 nH
18	Q1, Q3, Q4, Q5	NTR2101PT1G	4	ON Semiconductor	NTR2101PT1G	Digi-Key	NTR2101PT1GOSCT-ND	
19	Q2	2N7002ET1G	1	ON Semiconductor	2N7002ET1G	Digi-Key	2N7002ET1GOSCT-ND	
20	R1, R18	R0402	2	Yageo	RC0402FR-0747KL	Digi-Key	311-47.0KLRCT-ND	47k
21	R2, R17	R0402	2	TE Connectivity	CRGCQ0402F220R	Digi-Key	A129619CT-ND	220R
22	R3, R4	R0402	2	Panasonic	ERJ-2RKF4993X	Digi-Key	P499KLDKR-ND	500k
23	R5, R6, R11, R12, R14, R15	R0402	6	Yageo	RC0402FR-071ML	Digi-Key	311-1.00MLRCT-ND	1.0M
24	R7, R13, R16	R0402	3	Bourns	CR0402-FX-1002GLF	Digi-Key	CR0402-FX-1002GLFCT-ND	220k
25	R8	Chip Resistor	1					NP
26	R9, R10	Chip Resistor	2	Yageo	RC0402JR-070RL	Digi-Key	311-0.0JRDKR-ND	0
27	U1	STM32L071KZT6	1	STMicroelectronics	STM32L071KZT6	Digi-Key	497-18578-ND	
28	U2	RF RCVR GNSS/GPS 1.575GHZ 24LCC	1	u-blox	NEO-M8N-0	Digi-Key	672-1008-1-ND	
29	U3	DRV5032FBDBZT	1	Texas Instruments	DRV5032FBDBZT	Digi-Key	296-46624-1-ND	
30	U4	IC REG LINEAR 3.3V 200MA ESV	1	Toshiba	TCR2EE33,LM(CT	Digi-Key	TCR2EE33LM(CTCT-ND	
31	U5	Si4010-GT	1	Silicon Labs	SI4010-C2-GT	Digi-Key	336-1997-5-ND	-
32	U6	Gain Block	1	Infineon	BGA427H6327XTSA1	Digi-Key	BGA427H6327XTSA1CT-ND	
33	U7	XB9X-DMUS-001	1	Digi International	XB9X-DMUS-001	Digi-Key	602-1888-ND	
34	U8	STM809TWX6F	1	STMicroelectronics	STM809TWX6F	Digi-Key	497-3339-1-ND	
35	X1	Crystal	1	ECS International	ECS-100-10-30B-CKL-TR	Digi-Key	XC2106DKR-ND	10 MHz
36	Y1	32.768kHz	1	NDK	NX3215SA-32.768K-STD-MUA-8	Digi-Key	644-1156-1-ND	

View from Top side (Scale 2:1)

Notes:
1. Passive components are interchangable with those of same specification
2. Resistors are 5% tolerance unless otherwise specified
3. "NP" denotes non-populated components

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:

.X ± 0.2
.0X ± 0.01
.00X ± 0.005
.000X ± 0.0005

MATERIAL: FR-4
FINISH: ENIG

	NAME	DATE
DRAWN	CRH	7-29-19
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

GRAND VALLEY STATE UNIVERSITY
301 W Fulton, Grand Rapids, MI, 49504

TITLE

ANIMAL TRACKING

SIZE	DRAWING NO.	REVISION
B	10000	AA

SCALE: 1:1 | WEIGHT: | SHEET 1 OF 2

DO NOT SCALE DRAWING

View from Top side (Scale 1:1)

33.00mm

55.88mm

View from Bottom side (Scale 1:1)

U2   U7

Top Layer (Scale 1:1)
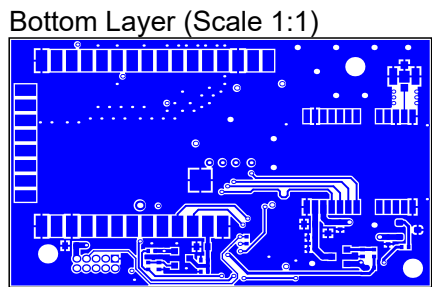
Ground (Scale 1:1)

Power (Scale 1:1)

Bottom Layer (Scale 1:1)
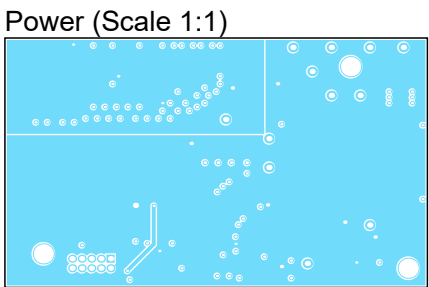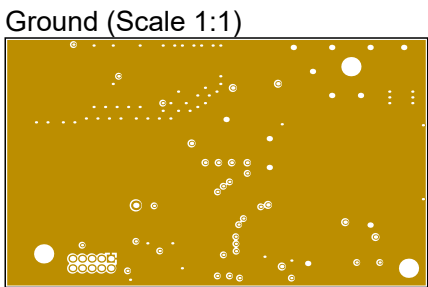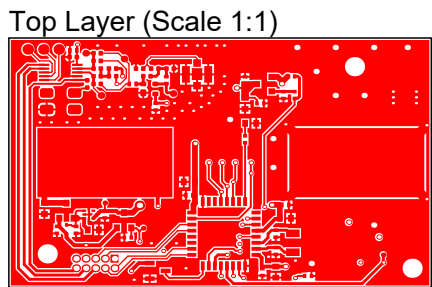
Layer Stack Legend

	Material	Layer	Thickness	Dielectric Material	Type	Gerber
		Top Overlay			Legend	GTO
	Surface Material	Top Solder	0.40mil	Solder Resist	Solder Mask	GTS
	Copper	Top Layer	1.40mil		Signal	GTL
	Prepreg		*4.33mil*	*PP-006*	*Dielectric*	
	CF-004	Ground	1.38mil		Signal	G1
			44.49mil	*FR-4*	*Dielectric*	
	CF-004	Power	1.38mil		Signal	G2
	Prepreg		*4.33mil*	*PP-006*	*Dielectric*	
	Copper	Bottom Layer	1.40mil		Signal	GBL
	Surface Material	Bottom Solder	0.40mil	Solder Resist	Solder Mask	GBS
		Bottom Overlay			Legend	GBO

Total thickness: 59.51mil

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN INCHES

TOLERANCES:
.X   ± 0.2
.0X   ± 0.01
.00X   ± 0.005
.000X   ± 0.0005

MATERIAL:
FR-4

FINISH:
ENIG

	NAME	DATE
DRAWN	CRH	7-29-19
CHECKED		
ENG APPR.		
MFG APPR.		
Q.A.		

COMMENTS:

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TITLE

ANIMAL TRACKING

DO NOT SCALE DRAWING

SIZE
B

DRAWING NO.
10000

REVISION
AA

SCALE: 1:1   WEIGHT: SHEET 2 OF 2