Visualization Block

J1
LED matrix data

16	
OE	15
STB	14
CLK	13
D	12
C	11
B	10
A	9
	8
B1	7
G1	6
R1	5
	4
B0	3
G0	2
R0	1

GND

+5V

J2
LED matrix power

1
2
3
4

GND

Communication Block

SIM_RST

R7
16k

AE1
Antenna

R8
20k

SIM_RX

R3
16k

GND

+4V

U2
SIM800L

1	NET		SPKN	12
2	VCC		SPKP	11
3	RST		MICN	10
4	RXD		MICP	9
5	TXD		DTR	8
6	GND		RING	7

R4
20k

SIM_TX

R6
10k

GND

GND

Charge Block

SC1
10W

U3

1	VIN+	VOUT+	3	BAT+
2	VIN−	VOUT−	4	BAT−

BQ24650 charge controller

Control Block

GND

+5V

C4
100n

C5
100n

GND

U1
ATmega328P−PU

PD7	13	7	B1
PD6	12	6	G1
PD5	11	5	R1
PD4	6	4	B0
PD3	5	3	G0
PD2	4	2	R0
PD1	3	TXD	SIM_RX
PD0	2	RXD	SIM_TX

R5
10k   +5V

RESET/PC6   1

PC5	28	A5
PC4	27	A4
PC3	26	A3	D
PC2	25	A2	C
PC1	24	A1	B
PC0	23	A0	A

XTAL2/PB7   10
XTAL1/PB6   9

Y1
16MHz

C1
22pF

C2
22pF

GND

PB5	19	
PB4	18	13
PB3	17	12
PB2	16	11	CLK
PB1	15	10	STB
PB0	14	9	OE
		8	SIM_RST

C3
100n

AREF   21

VCC   7
AVCC   20   +5V

GND

Power Block

BAT+

SW1
Power switch   +12V

1   2

BT1
12V/14Ah

GND

BAT−

CFF1
10nF

R1
1k/1%

R2
2.21k/1%

+12V
IN+

VR1
LM2596S−ADJ

1	VIN	FB	4
5	ON/OFF	OUT	2
	GND		
3			

CIN1
35V/680uF

L1
33uH

+4V
OUT+

D1
100V/5A

COUT1
16V/470uF

C6
100nF

OUT−

GND

GND

+12V
IN+

VR2
LM2596S−5

1	VIN	FB	4
5	ON/OFF	OUT	2
	GND		
3			

CIN2
35V/680uF

L2
33uH

+5V
OUT+

D2
100V/5A

COUT2
25V/330uF

C7
100nF

OUT−

IN−

GND

GND