

## 5 Component Checklist

Component	Reqd+Backup	Availability	Notes
Channel Sounder - TX and RX. See Fig. 33.			
WindFreak SynthNV	3+1	Purchased	Backups from Prof. Anderson
PN Sequence Generator	2+1	Custom-built	Backups from Prof. Anderson
MiniCircuits SBLP-933+	2+4	Purchased	LPF — 4/6 Shipped
MiniCircuits VAT-3+	3	Purchased	3dB attenuator — 2/3 Shipped
MiniCircuits K2-VAT+	2	Purchased	1dB to 10dB attenuators 2/2 Shipped
MiniCircuits ZFL-1000+	2+4	Purchased	Amplifier — 4/6 Shipped
MiniCircuits ZX05-43+	2+4	Purchased	Mixer — 4/6 Shipped
MiniCircuits SHP-900	1+2	Purchased	HPF — 2/3 Shipped
MiniCircuits VBF-2435+	1+5	Purchased	BPF — 5/6 Shipped
MiniCircuits KHFC-1+	1+1	Purchased	Short coaxial cable kit
WR-28 Horn Antenna with Up-converter	1+1	Lent by USNA	Backup from Prof. Anderson
WR-28 Horn Antenna with Down-converter	1+1	Lent by USNA	Backup from Prof. Anderson
USRP B200mini	1+1*	Lent by Andrew	Backup*: USRP N310
Raspberry Pi 4	1+1	Purchased	4GB — 1/2 Shipped
32GB Micro SD	1+1	Purchased	For Raspberry Pi; Setup Needed; 64GB & 128GB cards available
12V Power at Tx	N/A	Provided by POWDER	12V power rails at mount sites
High-Capacity Rechargeable Battery at Rx	1+2	Purchased	Zeus 12V 1.3Ah — 2/3 Shipped; Charger (x2)
TI TPS55165Q1-EVM	1+1	Purchased	Buck-Boost converter at the Rx 1/2 Shipped
Alligator Connectors	13+7	Purchased	System-wide connectivity
Intel NUC SFF	1	Purchased	Tx Python controller
RG58C SMA Coaxial Cable 10ft	1+3	Purchased	Male to 90 Degree Male 2/4 Shipped
RG58C SMA Coaxial Cable 5ft	1+1	Purchased	Male to 90 Degree Male
Low-Loss SMA Coaxial Cable 5m-10m	TBD	Provided by POWDER	Climate-controlled enclosure to pole-mounted Tx
SMA Female to N Male Adapter	1+1	Purchased	For spectrum analyzer connection; Tx installation 1/2 Shipped
Laptop	1	Personal (BK)	Rx Python controller; Overall management
External SSD	2	Personal (YZ)	1TB; Secondary data storage

Component	Reqd+Backup	Availability	Notes
<b>Antenna Rotating Platforms</b>			
ServoCity PT785-S	0+1	Purchased	Closed-loop pan & tilt kit; Backup for PT2645-S <b>1/1 Shipped</b>
ServoCity PT2645-S	2+0	Purchased	Open-loop pan & tilt kit; Use PT785-S as backup
SparkFun Blackboard C	2+2	Purchased	Micro-controller
SparkFun GPS-RTK-SMA ZED-F9P	1+2	Purchased	RTK-GPS breakout
GPS/GNSS Magnetic-Mount Antenna - 3m (SMA)	1+2	Purchased	Antenna for ZED-F9P satellite view — <b>2/4 Shipped</b>
SparkFun Bluetooth Mate Silver	1+2	Purchased	Rx serial; RTK GPS correction data
Portable Charger Power Bank	4+1	Purchased	Component power supplies <b>1/5 Shipped</b>
Lefebure Windows Client	1+1	Personal (BK+YZ)	For RTK GPS correction data
iPhone	1	Personal (BK)	Wireless Hot-spot for Rx connectivity
SparkFun VR IMU Breakout - BNO080	2+2	Purchased	Inertial Motion Unit
SparkFun KIT-15081	1	Purchased	3 Qwiic cables; More needed
Digikey 377-2093-ND	65+65	Purchased	Jumpers (assorted)
<b>Mounts</b>			
L-Bracket	1	Custom-built	From Prof. Anderson
U-bolt clamp (3" inner diameter; >4" length)	1+1	Lent by USNA	From Prof. Anderson
U-bolt clamp (3.5" inner diameter; >4" length)	1+1	Lent by USNA	From Prof. Anderson
Metal Racks	1+1	Lent by Prof. Anderson	Tx communication circuit mount <b>1/2 Shipped</b>
<b>Tools</b>			
FieldFox Handheld Analyzer	1	Lent by Ryan	Portable Spectrum Analyzer
Magnetic Antenna Mount Set	1+1	Purchased	Rx installation
Tape	1+2	Purchased	Tx and Rx mount setup
Handheld Multi-meter	1+1	<a href="#">Provided by POWDER</a>	Debugging the communication circuit components
Keyboard + Mouse + Monitor	1	<a href="#">Provided by POWDER</a>	USRP-GNURadio debugging
Signal Generator	2	<a href="#">Provided by POWDER</a>	Comm system debugging
Spectrum Analyzer	1	<a href="#">Provided by POWDER</a>	Comm system debugging
Lab space	1	<a href="#">Provided by POWDER</a>	Setup; Calibration; Debugging
d740/d840 Compute Node	1+2	<a href="#">Provided by POWDER</a>	Zookeeper; Kafka; Storage (1TB per node)
<b>Miscellaneous</b>			
Adjustable Attenuator	1	Lent by USNA	From Prof. Anderson
ACC and Behavioral Rooftop Access	N/A	<a href="#">Provided by POWDER</a>	Rooftop access to install/uninstall Tx
Safety equipment	1+1	<a href="#">Provided by POWDER</a>	Safety vests and harnesses
Go-Pros	3	Purchased	Vlogging

Table 2: Component checklist (Updated 6/11/2021)