

Risk #	Risk Description	Effect	Cause(s)	Likelihood (0-min, 3-max)	Severity (0-min, 3-max)	Importance (Likelihood x Severity)	Action to Minimize Risk
19	PCB Design Fails to work	Project fails to work during demonstration	unforeseen technical problems with layout, mistakes from translating schematic to layout	3	4	12	Push off PCB submission date to MSD II, verify independently each node connection on the PCB software, have multiple knowledgeable sources check layout before submission
21	Transmission frequency is too noisy	Poor data quality/possible no data transmission	Other devices using transmit frequency in the vicinity of the utilized area	3	3	9	Add additional power amplification, measure noise level of area before demonstrating the functionality
12	Software protocol is undeveloped	Unable to communicate with board	Lack of programming/debugging time	3	3	9	Allow proper time to program software interface, seek out CE assistance for programming, buy evaluation modules to allow more programming time
20	Technical Expertise are unable to solve troubleshooting problems	Delays in troubleshooting, pushed off schedule	Lack of knowledge for given problem, misplacement of personal on team	3	2	6	Have weekly meetings including problems encountered, seek out expertise if being pushed off track
18	Parts are misplaced from shipping	Delays and possible loss of parts and money	Unspecified shipping contacts, strange delivery times, unclear recipients	2	3	6	Send to Chris Fisher, add team number to Attn:
14	Soldering of Components fails	Circuit does not behave properly	misplacement of parts, small package size	2	3	6	Ensure proper training of SMD equipment, request inspection from knowledgeable expert
9	USB Implementation fails	The Module Doesn't work	Timing Issues, lack of time for programming	2	3	6	Grant extra time for task, work on standard protocol that is easy to implement, seek out assistance in programming
16	Power Supply did not meet specific value	The system may not function properly	Power Electronics fail to achieve certain voltage	2	2	4	Include switch for usb power, place extra regulator footprint for possible change of regulator
11	Transmission range is too short	The module doesn't meet specs	Output power is too small, testing environment produces too much noise	2	2	4	Ensure proper power for transmission range, look into range extender chip
8	Parts Fail	The Module Doesn't work	Bad Parts, bad treatment of component, improper parts picked, solder mask error	2	2	4	Ensure parts meet the needs they are picked for
6	Wrong/Miss order/shipment	Delays, possibility to exceed the budget	Inadequate research/Poor supplier/shipping	2	2	4	Double check the order
15	Project does not meet requirements	Need to modify the specifications	Mis-calculation/ interpretation	1	3	3	Consider external component for enhancement
10	Power Supply Design is Incomplete	The Module Doesn't work	Lack of time/ too much complexity/ Power supply mismatch	1	3	3	Keep up to date with power supply group's progress, incorporate optional regulator to power off of usb
7	Physical sizing doesn't fit/match	Need to modify the board	Miscommunication, did not unify the metrics	1	3	3	Adhere to interface regulations/ participate in interface meetings, allow margins of error
4	The Antenna doesn't work	The whole project doesn't work, Transmission problems	Bad weather, Poor Antenna choice/ Poor Antenna Design	1	3	3	Ensure proper antenna for demonstration conditions

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3	The components don't match the PCB footprint	Rework to PCB or reorder of PCB (Wasting time and money)	Poor layout design, lack of investigation into datasheets	1	3	3	Use proper layout tools and check datasheets
2	Someone gets sick	Alters schedule, wasting time	Risky behavior/Poor constitution/chance	3	1	3	Good health behaviors
5	We are short on time	Non-finalization of product	Bad organization, unexpected Problems, unable to troubleshoot problems	1	2	2	Anticipation and organization
1	We exceed the budget	Incomplete Project	Poor Planning, Budget Restraints, unforeseen costs in components	1	2	2	Create a budget for the project, Add a margin of error
17	Power switching interfere with the RF-signal	Signal transmission failed or not accurate	Power Electronics fail to shield it's signal	0	3	0	Add shielding to our RF Module
13	USB to RS232 Connector does not work on robot	Unable to communicate with robot for demonstration	Lack of interface definition for interface with robot	0	3	0	Bring up the need for a proper protocol for interface with robot