

ME537 - PRODUCT REALIZATION			
PROJECT NAME	3D Tic Tac Toe		
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DOCUMENT TRACKING			
VERSION	EDITS COMPLETED BY	DATE	DESCRIPTION OF EDIT
1.0	Sung Won	03/19/2020	Created DFMEA

Item number	Item and function	Potential Failure Mode	Potential Effect(s) of Failure	Severity (1 mild - 10 severe)	Potential Cause(s)/ Mechanism(s) of Failure	Occurrence (1 seldom - 10 often)	Design Controls	Detection (1 easy - 10 hard)	RPN	Recommended Action(s)	Responsibility and Target Completion Date	Action Results	Severity	Occurrence	Detection	RPN
1.1	Acrylic board sliding through slots	Stuck	Forcing and breaking	7	Incorrect tolerance, misalignment of slots	2	Acrylic board is laser cut smaller than the inner dimension of box. Slots on the box cut first before cutting the wood into 4 individual panels.	200.00%	28	Check the slots are straight and cut all the way through before cutting into 4 panels						0
1.2	Acrylic board staying on the box	Slides off the box	Pieces fall out of the box	8	Incorrect tolerance	2	Slots cut to be slightly wider than the thickness of the acrylic board	300.00%	48	Cut the slots with the lower tolerance first and then cut wider if needed						0
2.1	Stacking pieces	Pieces do not fit and as a result, do not stack	Game cannot be played	9	Incorrect tolerance, stubs wear down over time	3	Tolerance added so that pieces connect and disconnect with minimal force. Life testing for pieces.	300.00%	81	SPC for the fits of the pieces						0
2.2	Sufficient number of pieces for each type	Missing piece	Game cannot be played	9	Incorrect number of pieces packaged with the box, user loses piece(s)	2	Minimum of 14 pieces of each type packaged	300.00%	54	Add functionality test to check the number of pieces						
2.3	Fitting peg breaks off	Broken piece	Full game cannot be played	5	Poor quality of cast, too much force is applied, fit too tight	2	Ensure quality meets standards and that size is within spec	200.00%	20	Add extra game pieces in case the piece is misplaced, breaks, or wears down						
3.1	Rope carrying the box	Rope tears or disconnects from the box	Box cannot be carried	4	Rope not properly tied, low durability of rope	1	High quality rope used	200.00%	8	Add durability test for rope						0
4.1	Box stores pieces	Box breaks or cracks	Pieces cannot be stored	7	Repeated dropping or force applied to box	3	High quality and sturdy wood used	300.00%	63	Perform drop test for the product						0
4.2	Box easy and safe to handle	Splinters	Injury to user	8	Error in post-processing	3	Wood sanded down and polished with Shellac	300.00%	72	Add quality test for the finish of the wood						0