FUJIKURA FIBER OPTICS VIET NAM

Form: 0-PR-012-0-Fo-001 | POTENTIAL FAILURE MODE AND EFFECTS ANALYSIS | Page: 2/4 | Ver: 13

Kind of FMEA: ○ Design FMEA ◉ Process FMEA

Product (or project) Name: **pFMEA for Submarine coupler**

Product (or project) spec: **AOP81-60xx-xx-xx**

Members' signature (include 2 cross-function sections at least): PRE2 Khiêm 10203; QAE Thu Trang 10401; PRE2 Thăng 10647; PRE2 Việt.NT 10096

Prepared by: ThangHX

Approved by: (Dept./Div. manager's approval for high risk case, other cases can be approved by section managers) N. Trung

Customer's approval (if required): Comment: ..... Signature and date: .....

FMEA Number: 0-PR-012-0-FO-001-4-RC-0135
Version: 11
FMEA Original Date: 9-Sep-2019
FMEA Revision Date: 18-Oct-2024

I. CONCLUSION:

By reviewing risk for manufacturing process, we see that:
- All the risks were controlled and applying current operation is enough.

===> Acceptance for mass production.

13

II. ANALYSIS

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN
1.1	Preparation	Material by manufacturing ID correctly	(3) FOV internal requirement	Mixing material between ID	Wrong traceability	2	Do not operate with material by each ID	1	1. Training operator follow process rule (do one by one) 2. Visual control by label for ID, material code/Lot number 3. ECS control lot ID by delivery	1	2	Risk acceptance	N/A	N/A	2	1	1	2
1.2	Preparation	Material by manufacturing ID correctly	(3) FOV internal requirement	Wrong lot Number	Wrong traceability	2	Operation with many IDs parallel at same working place	1	1. Training operator follow process rule (do one by one) 2. Visual control by label for ID, material code/Lot number 3. ECS control lot ID by delivery	1	2	Risk acceptance	N/A	N/A	2	1	1	2
1.3	Preparation	Material by manufacturing ID correctly	(3) FOV internal requirement	Wrong lot Number	Wrong traceability	2	Keep many kind material in the same working location	2	1. Training OP follow JBS for 2S, material control (one by one Lot),... 2. Visual control for material before/after processing, stock/doing	2	8	Risk acceptance	N/A	N/A	2	2	2	8
1.4	Preparation	Material by manufacturing ID correctly (Neoceram, FEP, SUS pipe, ..)	(3) FOV internal requirement	Wrong Material type	Wrong product structure	5	Operator pick wrong type (Label is correct)	1	1. Check material name and code for ID before input to process follow process instruction (PS, JBS) 2. Make clear Neo shape classification in PS, JBS ((Detection at Elongation packing))	2	10	Risk acceptance	N/A	N/A	5	1	2	10
1.5	Preparation	Correct FEP tube length	(3) FOV internal requirement	Short tube length	Cannot cover Neoceram follow Customer spec	2	Setting FEP tube do not touch stopping point of Cutting tool	3	1. Checking the length of cutting by sample of each cutting Lot 2. Compare FEP length & NEO length at Elong packing 3. Appreance check after Elong	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	3	2	12
1.6	Preparation	Correct FEP tube length	(3) FOV internal requirement	Short tube length	Cannot cover Neoceram follow Customer spec	2	Using wrong position of cutting tool	3	1. Identification the position cutting tool for each specific length 2. Checking the length of cutting by sample of each cutting Lot 3. Compare FEP length & NEO length at Elong packing 4. Appreance check after Elong	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	3	2	12
1.7	Preparation	Correct FEP tube length	(3) FOV internal requirement	Long tube length	Cannot cover Neoceram follow Customer spec	2	Using wrong position of cutting tool	1	1. Identification the position cutting tool for each specific length 2. Checking the length of cutting by sample of each cutting Lot 3. Compare FEP length & NEO length at Elong packing 4. Appreance check after Elong	2	4	Risk acceptance	N/A	N/A	2	1	2	4
1.8	Preparation	Material was clean: Neoceram	(1) Customer's requirement/agreement	Contamination on Neoceram	UV peel off	2	Do not use correct cleaning solvent	1	1. Training OP follow PS/JBS for requirement of cleaning solvent for each step and material type. 2. Visual control for cleaning solvent by label of material code/name and its container/beaker	2	4	Risk acceptance	N/A	N/A	2	1	2	4
1.9	Preparation	Material was clean: FEP tube	(1) Customer's requirement/agreement	Contamination on FEP tube	Failed optical specification	2	Do not use correct cleaning solvent	1	1. Training OP follow PS/JBS for requirement of cleaning solvent for each step and material type. 2. Visual control for cleaning solvent by label of material code/name and its container/beaker	3	6	Risk acceptance	N/A	N/A	2	1	3	6
1.10	Preparation	Material was clean: FEP tube and Neoceram	(1) Customer's requirement/agreement	Contamination on Neoceram	Failed optical specification	2	Do not use correct cleaning solvent	1	1. Training OP follow PS/JBS for requirement of cleaning solvent for each step and material type. 2. Visual control for cleaning solvent by label of material code/name and its container/beaker	2	4	Risk acceptance	N/A	N/A	2	1	2	4
1.11	Preparation	Material was clean: FEP tube and Neoceram	(1) Customer's requirement/agreement	Contamination on Neoceram	Failed optical specification	2	Do not replace new solvent each time	1	1. Training OP follow PS/JBS for requirement of cleaning solvent for each step and material type. 2. Visual control for cleaning solvent by lable of material code/name and its container/beaker	2	4	Risk acceptance	N/A	N/A	2	1	2	4
1.12	Preparation	Material was clean: FEP tube and Neoceram	(1) Customer's requirement/agreement	Contamination on Neoceram	Failed optical specification	2	Do not replace new solvent each time	1	1. Training OP follow PS/JBS for requirement of cleaning solvent for each step and material type. 2. Visual control for cleaning solvent by lable of material code/name and its container/beaker	2	4	Risk acceptance	N/A	N/A	2	1	2	4
1.13	Preparation	Material was clean: FEP tube and Neoceram	(1) Customer's requirement/agreement	Contamination on Neoceram	Failed optical specification	2	Contaminatice from working place attached after cleaning	3	1. Training to OP for process rule for 2S (clean working area) 2. Check appearance sampling after cleaning 3. Keep material after cleaning in good tray/bag/cleanbooth	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	3	2	12
1.14	Preparation	Material was clean: FEP tube and Neoceram	(1) Customer's requirement/agreement	Contamination was not removed well by cleaning	High reject% at Appearance After Elongation	2	Using wrong cleaning mode of cleaning machine	2	1. Traning OP how to use cleaning machine 2. Attached label on mode button	2	8	Risk acceptance	N/A	N/A	2	2	2	8
1.15	Preparation	Material was clean: FEP tube and Neoceram	(1) Customer's requirement/agreement	Contamination was not removed well by cleaning	High reject% at Appearance After Elongation	2	Set the cleaning time less than specified cleaning time	2	Set up cleaning time for Ultrasonic machine follow process instruction (PS, JBS)	2	8	Risk acceptance	N/A	N/A	2	2	2	8
1.16	Preparation	Material was clean: FEP tube and Neoceram	(1) Customer's requirement/agreement	Contamination was sticked again after well cleaning	High reject% at Appearance After Elongation	2	Jig/Tweezer/Container is dirty	2	Jig/Tweezer/Container must be cleaned follow process instruction (PS, JBS)	2	8	Risk acceptance	N/A	N/A	2	2	2	8
1.17	Preparation	Material was dry well: FEP tube	(1) Customer's requirement/agreement	Remaining liquid inside FEP	High reject% at Appearance After Elongation	2	Dry time not enough	2	1. Check appearance sampling after cleaning 2. Keep material after cleaning in good tray/box 3. The timer's calibration period must be checked follow process instruction (PS, JBS)	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	2	3	12
1.18	Preparation	Material was dry well: Neoceram	(1) Customer's requirement/agreement	Remaining liquid inside NEO groove	High reject% at Appearance After Elongation	2	Dry time not enough	2	1. Check appearance 100% after cleaning 2. Keep material after cleaning in good tray/box 3. The timer's calibration period must be checked follow process instruction (PS, JBS)	1	4	Risk acceptance	N/A	N/A	2	2	1	4
1.19	Preparation	Material was clean well: SUS pipe	(3) FOV internal requirement	Contamination on SUS pipe	Medome peel off	2	Dry time not enough	2	1. Applying air blow with timer. 1. Check appearance sampling after cleaning 2. Keep material after cleaning in bag 3. Appearance check at SUS 100%	2	8	Risk acceptance	N/A	N/A	2	2	2	8
1.20	Preparation	Material was clean well: SUS pipe	(3) FOV internal requirement	Contamination on SUS pipe	Loctie peel off	2	Dry time not enough	2	1. Applying air blow with timer. 1. Check appearance sampling after cleaning 2. Keep material after cleaning in bag 3. Appearance check at SUS 100%	2	8	Risk acceptance	N/A	N/A	2	2	2	8
1.21	Preparation	SUS pipe laser printing and Barcode label is same number	(3) FOV internal requirement	Wrong mapping label and SUS pipe number	Difficult to traceability	2	Do not control ordering of material by Serial number (1 label -1 sus pipe)	1	1. Instruct operation as JBS to control order of SUS pipe number and label by jig. 2. Apply software at input SUS packing for checking product code & label 3. Visual checking label & content of SUS.	2	4	Risk acceptance	N/A	N/A	2	1	2	4
1.22	Preparation	Enough quantity for each material bag	(3) FOV internal requirement	Lack of label or SUS pipe in bag	Could not input at SUS packing	2	Do not control quantity each parts	1	1. Instruct operation as PS to know requirement of label quantity 2. Control material quantity by template/jig 3. Instruct by process rule to check material remained each Lot	2	4	Risk acceptance	N/A	N/A	2	1	2	4
2.1	Cutting Fiber	Correct Fiber type	(1) Customer's requirement/agreement	Wrong material code	Affect to optical properties and structure	5	Wrong pick up fiber bobbin	1	Control product type and material Lot (material type) by Cutting program	1	5	Risk acceptance	N/A	N/A	5	1	1	5

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN 5
2.2	Cutting Fiber	Correct Fiber length	(1) Customer's requirement/agreement	Short fiber cutting length	Wrong product's structure	4	Wrong select cutting of product code	2	1. Control and select cutting condition by program follow product code and fiber code 2. Fiber length is manual cross check at fisrt set of cutting	1	8	Risk acceptance	N/A	N/A	4	2	1	8
2.3	Cutting Fiber	Correct Fiber length	(1) Customer's requirement/agreement	Short fiber cutting length	Wrong product's structure	4	Cutting machine is malfunction (error)	1	Fiber length is manual cross check at first set of cutting	2	8	Risk acceptance	N/A	N/A	4	1	2	8
2.4	Cutting Fiber	Correct Fiber length	(3) FOV internal requirement	Long fiber cutting length	Waste fiber material	1	Wrong select cutting of product code	2	1. Control and select cutting condition by program follow product code and fiber code 2. Fiber length is manual cross check at fisrt set of cutting	1	2	Risk acceptance	N/A	N/A	1	2	1	2
2.5	Cutting Fiber	Correct Fiber length	(3) FOV internal requirement	Long fiber cutting length	Waste fiber material	1	Cutting machine is malfunction (error)	1	Fiber length is manual cross check at fisrt set of cutting	2	2	Risk acceptance	N/A	N/A	1	1	2	2
2.6	Cutting Fiber	Mark of color on fiber correctly	(1) Customer's requirement/agreement	Wrong marking color	Wrong product's structure	2	Use wrong marking pen color	1	- Control sequence of use marking pen following PS by jig - Display the color on LCD monitor - Verification by sample of first set each cutting Lot - Detect at next process (Elong, SUS, Port)	2	4	Risk acceptance	N/A	N/A	2	1	2	4
2.7	Cutting Fiber	Mark of color on fiber correctly	(1) Customer's requirement/agreement	Wrong marking position	Wrong product's structure	2	Identification marking location is incorrect	1	- Control position of marking by fixture. - Config each marking step by cutting program following PS for operation easily.	2	4	Risk acceptance	N/A	N/A	2	1	2	4
2.8	Cutting Fiber	Fiber clean	(3) FOV internal requirement	Exhaust function is not actived (Dust collector machine turn OFF) during fiber blowing	Contamination inside Coupler body	2	Operator accidentally turned off the machine	1	1. Verify the operational status of a dust collector machine using a daily check sheet. 2. Cover the power button of the dust collector to prevent accidental shutdown of the machine. 3. Add a function to control the dust collector for turning it on or off.	1	2	Risk acceptance	N/A	N/A	2	1	1	2
2.9	Cutting Fiber	Fiber clean	(3) FOV internal requirement	Compresses Air is lower than specification	Contamination inside Coupler body	2	Source Compresses Air is weak	1	Compresses Air is controlled by daily checksheet	1	2	Risk acceptance	N/A	N/A	2	1	1	2
2.10	Cutting Fiber	No fiber damaged	(3) FOV internal requirement	Compresses Air is higher than specification	Fiber bending or twisting	2	Source Compresses Air is strong	1	Compresses Air is controlled by daily checksheet	1	2	Risk acceptance	N/A	N/A	2	1	1	2
2.11	Cutting Fiber	Particle level near fiber blowing process in specification	(3) FOV internal requirement	Contamination leakage out from Dust collector box	Contamination is easy to attach back to product under operating	2	The filter of Dust Collector is not cleaned periodically	1	Clean the filter of Dust collector every 3 month by PTE	2	4	Risk acceptance	N/A	N/A	2	1	2	4
2.12	Cutting Fiber	Particle level near fiber blowing process in specification	(3) FOV internal requirement	Contamination leakage out from Dust collector box	Contamination is easy to attach back to product under operating	2	Contamination stick to the blowing Box and fiber tray	2	Clean blowing box and fiber tray daily as per checksheet	2	8	Risk acceptance	N/A	N/A	2	2	2	8
3.1	Fiber heating	Heating temperature in specification	(1) Customer's requirement/agreement	- Heat temperature is lower limited	Failed optical specification: Excess Loss	2	Wrong setting on machine	1	- Daily verification setting and actual temperature. - Instruction to OP observe the display of heat temperature each usage time as JBS.	1	2	Risk acceptance	N/A	N/A	2	1	1	2
3.2	Fiber heating	Heating temperature in specification	(1) Customer's requirement/agreement	- Heat temperature is lower limited	Failed optical specification: Excess Loss	2	Machine if malfunction	1	- Daily verification setting and actual temperature by calibed thermo sensor	1	2	Risk acceptance	N/A	N/A	2	1	1	2
3.3	Fiber heating	Heating temperature in specification	(1) Customer's requirement/agreement	- Heat temperature is higher limited	Failed optical specification: Excess Loss	2	Wrong setting on machine	1	- Daily verification setting and actual temperature. - Instruction to OP observe the display of heat temperature each usage time as JBS.	1	2	Risk acceptance	N/A	N/A	2	1	1	2
3.4	Fiber heating	Heating temperature in specification	(1) Customer's requirement/agreement	- Heat temperature is higher limited	Failed optical specification: Excess Loss	2	Machine if malfunction	1	- Daily verification setting and actual temperature by calibed thermo sensor	1	2	Risk acceptance	N/A	N/A	2	1	1	2
3.5	Fiber heating	Enough heating time	(1) Customer's requirement/agreement	Heating time is short	Failed optical specification: Excess Loss	2	Operator do not follow requirement	2	1. Training OP following JBS 2. Usine verified timer to control the heatine time	2	8	Risk acceptance	N/A	N/A	2	2	2	8
3.6	Fiber heating	Enough heating time	(1) Customer's requirement/agreement	Heating time is long	Failed optical specification: Excess Loss	2	Operator do not follow requirement	2	1. Training OP following JBS 2. Using verified timer to control the heating time	2	8	Risk acceptance	N/A	N/A	2	2	2	8
3.7	Fiber heating	Enough cooling time	(1) Customer's requirement/agreement	Fiber may bending	Failed optical specification: Excess Loss	2	Recorded wrong completing time of heating	1	Training Operator following JBS and usage electronics clock to identify timing	2	4	Risk acceptance	N/A	N/A	2	1	2	4
3.8	Fiber heating	Enough cooling time	(1) Customer's requirement/agreement	Fiber may bending	Failed optical specification: Excess Loss	2	Do the coat removing before acceptance time	2	Training Operator following JBS to re-confirm completing of heating	2	8	Risk acceptance	N/A	N/A	2	2	2	8
4.1	Fiber preparation	Stripping bare fiber length in specification	(3) FOV internal requirement	Short Stripping Length	Failed optical specification: Coupling Ratio	3	Using wrong coating tool type (for required length)	1	1. Make label identification function of each tool 2. Verification fiber length before input at Prooftest and record by checksheet	2	6	Risk acceptance	N/A	N/A	3	1	2	6
4.2	Fiber preparation	Stripping bare fiber length in specification	(3) FOV internal requirement	Short Stripping Length	Failed optical specification: Coupling Ratio	3	Wrong setup of stripping length on tool (mis-match with label indication)	1	1. Do verification stripping length of tool daily before use.	2	6	Risk acceptance	N/A	N/A	3	1	2	6
4.3	Fiber preparation	Stripping bare fiber length in specification	(3) FOV internal requirement	Long Stripping Length	Failed optical specification: Coupling Ratio	3	Using wrong coating tool type (for required length)	1	1. Make label identification function of each tool 2. Verification fiber length before input at Prooftest and record by checksheet	2	6	Risk acceptance	N/A	N/A	3	1	2	6
4.4	Fiber preparation	Stripping bare fiber length in specification	(3) FOV internal requirement	Long Stripping Length	Failed optical specification: Coupling Ratio	3	Wrong setup of stripping length on tool (mis-match with label indication)	1	1. Do verification stripping length of tool daily before use.	2	6	Risk acceptance	N/A	N/A	3	1	2	6
4.5	Fiber preparation	Stripping fiber at red marking dot position	(3) FOV internal requirement	Stripping at wrong position	High reject% at fiber preparation	2	Setting fiber on coat removing tool not correct	2	1. Control the position of red marking dot by template on tool. 2. Training operator following JBS	2	8	Risk acceptance	N/A	N/A	2	2	2	8
4.6	Fiber preparation	Enough Swelling time	(3) FOV internal requirement	Long Swelling time	Fiber broken inside coupler	3	Do not follow process requirement	2	1. Training Operator following JBS 2. Use timer to control swelling time and nnotify to operator for starting cleaning operation	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
4.7	Fiber preparation	Enough Swelling time	(3) FOV internal requirement	Short Swelling time	Increase rework time for Fiber preparation	2	Do not follow process requirement	2	1. Training Operator following JBS 2. Use timer to control swelling time and nnotify to operator for starting cleaning operation	2	8	Risk acceptance	N/A	N/A	2	2	2	8
4.8	Fiber preparation	No UV remain in elongation area	(1) Customer's requirement/agreement	Big UV fiber remain/Contamination	ncrease rework time for Fiber preparation	3	Do not clean bare fiber well	1	1. Training cleaning operation follow JBS 2. Do insnection bare fiber annearance at Prooftest process	1	3	Risk acceptance	N/A	N/A	3	1	1	3
4.9	Fiber preparation	No UV remain in elongation area	(1) Customer's requirement/agreement	Small UV fiber remain/Contamination	Failed optical specification: Excess Loss	3	Do not clean bare fiber well	1	1. Training cleaning operation follow JBS 2. Do inspection bare fiber appearance at Prooftest process	1	3	Risk acceptance	N/A	N/A	3	1	1	3
4.10	Fiber preparation	No UV remain in elongation area	(1) Customer's requirement/agreement	Small UV fiber remain/Contamination	High reject% at Appearance After Elongation	3	Do not clean bare fiber well	1	1. Training cleaning operation follow JBS 2. Do insnection bare fiber annearance at Prooftest process	1	3	Risk acceptance	N/A	N/A	3	1	1	3
4.11	Fiber preparation	Bare fiber is strong (high breaking force)	(1) Customer's requirement/agreement	Bare fiber is damaged strongly	Fiber broken inside coupler	4	Wrong setup of blade position on tool	1	1. Do the verification after change/adjust the blade before apply to process	2	8	Risk acceptance	N/A	N/A	4	1	2	8
4.12	Fiber preparation	Bare fiber is strong (high breaking force)	(1) Customer's requirement/agreement	Bare fiber is damaged strongly	Fiber broken inside coupler	3	Careless in bare fiber handling	2	1. Training Operator following JBS 2. Control 2S in process 3. Use clean paper/dusper and keep in in clean storage condition 4. Replace new blade periodically 5. Control stripper by weibull chart of broken test for all operators and coat removing tools.	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
4.13	Fiber preparation	Fiber passed Proof testing	(1) Customer's requirement/agreement	Wrong screenng result	Fiber broken inside coupler	3	Machine if malfunction	2	Do verification of Prooftest machine daily before usage	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
4.14	Fiber preparation	Do not touch to bare fiber	(2) Common standard	Bare fiber was hit	Fiber broken inside coupler	3	Careless in bare fiber handling	2	1. Training Operator following JBS 2. Control 2S in process	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
4.15	Fiber preparation	Do not touch to bare fiber	(2) Common standard	Bare fiber was hit	Failed optical specification: Excess Loss	3	Operating working space is limited cause by machine design	2	1. Training Operator following JBS 2. Remove recoater part (for model FSR-07)	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
4.16	Fiber preparation	Do not touch to bare fiber	(2) Common standard	Bare fiber was hit	Fiber broken inside coupler	3	Operating working space is limited cause by machine design	2	Training Operator following JBS	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
4.17	Fiber preparation	UV fiber coating is not damaged	(2) Common standard	Fiber UV coating is damaged at clamp postion	Fiber damaged	3	Clamp's design of machine: hold fiber tightly with solid metal clamp (hard material can make fiber damaged)	2	1. Training Operator following JBS 2. Visual inspection next process 3. Remove solid metal part on clamp (for model FSR-07)	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
5.1	Fuse & Elongation	Correct gas flow (H2, O2)	(1) Customer's requirement/agreement	Lack of Gas flow	Failed optical specification: Coupling Ratio	4	Running out of gas cylinder	2	1. Daily checking gas at PTE 2. Daily checkine gas in Coupler Workshop	1	8	Risk acceptance	N/A	N/A	4	2	1	8
5.2	Fuse & Elongation	Correct gas flow (H2, O2)	(1) Customer's requirement/agreement	Lack of Gas flow	Failed optical specification: Coupling Ratio	4	Gas box is closed	2	1. Daily checking before running	1	8	Risk acceptance	N/A	N/A	4	2	1	8
5.3	Fuse & Elongation	Correct fiber port position	(1) Customer's requirement/agreement	Wrong fiber port side (P1-P3, P2-P4)	Wrong product structure	4	Pick wrong port	2	1. Make rule at cutting process to storage 2 fibers in tray seperately in case follow to position. 2. Make clear fiber port position on tray. 3. Operator must check the pre-coloring on fiber follow to the process specification after setting fiber on machine. 4. Detect at SUS packing, Measurement, Port Coloring, App QC	1	8	Risk acceptance	N/A	N/A	4	2	1	8
5.4	Fuse & Elongation	Correct fiber port position	(1) Customer's requirement/agreement	Wrong fiber port side (P1-P3, P2-P4)	Wrong product structure	4	Fiber swap when re-twist	2	1. Operator must check the pre-coloring on fiber follow to the process specification after re-setting fiber on machine. 2. Detect at SUS packing, Measurement, Port Coloring, App QC	1	8	Risk acceptance	N/A	N/A	4	2	1	8
5.5	Fuse & Elongation	Fiber twisting in symmetric shape	(1) Customer's requirement/agreement	Twisting point is not center	Failed optical specification: Coupling Ratio	3	Operator jugde fiber position after twisting is not correct.	2	1. Use twist unit to support fiber setting correctly and observe by camera for adjustment. 2. Training OP follow JBS to adjust and judgement.	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
5.6	Fuse & Elongation	Fiber twisting in symmetric shape	(1) Customer's requirement/agreement	Twisting point is not center	Failed optical specification: Coupling Ratio	3	Twist unit/fixture is not good	2	1. Monthly checking 2. Detect by Camera	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
5.7	Fuse & Elongation	Fiber twisting in symmetric shape	(1) Customer's requirement/agreement	Fiber setting is not balance between clamps	Failed optical/ structure specification	3	Not measure position of stripping point correctly	2	1. Use ruler to control position of stripping point from clamp both sides 2. Check by Camera	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
5.8	Fuse & Elongation	Optical characteristic is met spec of control.	(1) Customer's requirement/agreement	Optical characteristic is out of spec	Failed optical specification	3	Contamination on fiber	1	1. Training Operator following JBS 2. Control 2S in process. 3. Do not keep stripped fiber outside long time (preparea new fiber just in time)	2	6	Risk acceptance	N/A	N/A	3	1	2	6
5.9	Fuse & Elongation	Optical characteristic is met spec of control.	(1) Customer's requirement/agreement	Optical characteristic is out of spec	Failed optical specification	3	- Using un-approved condition	1	1. Control of approved elongation condition by program 2. Elongation condition setting by engineer 3. Check and judge optical result by program 4. Apply provisional inspection if any doubted 5. Verify by reliability test report and get approval before mass production 6. Prevent at Label Packing program	2	6	Risk acceptance	N/A	N/A	3	1	2	6

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN5
5.10	Fuse & Elongation	Optical characteristic is met spec of control.	(1) Customer's requirement/agreement	Optical characteristic is out of spec	Failed optical specification	3	- Use modified ondition over limited	2	1. Verify actual manufacturing condition with approved condition by program 100% 2. Check and judge optical result by program 3. Apply provisional inspection if any doubted	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
5.11	Fuse & Elongation	Optical characteristic is met spec of control.	(1) Customer's requirement/agreement	Optical characteristic is out of spec	Failed optical specification	4	Movement Operation of Clamp, Torch, Oxygen	2	1. Monthly checking by PRE 2. Yearly maintenance by PTE 3. Detect by the picture of product	2	16	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	2	2	16
5.12	Fuse & Elongation	Clen is in specification	(1) Customer's requirement/agreement	Clen out of spec	Wrong product structure	3	The condition of elongation process was unsuitable	4	1. Control Clen by program automatically. 2. Monitoring elongation defect% daily and feedback quickly to adjust elongation condition	1	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	4	1	12
5.13	Fuse & Elongation	Product pass screening proof test	(1) Customer's requirement/agreement	Failed proof test 250gr	Fiber broken inside coupler	4	The condition of elongation process was unsuitable	3	1. Do broken test sample (500gr) for each condition on machine actively and make monitoring chart. 2. Sampling dean test weekly for manufacturing elongation condition	1	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	3	1	12
5.14	Fuse & Elongation	Product pass screening proof test	(1) Customer's requirement/agreement	Failed proof test 250gr	Fiber broken inside coupler	4	Mechanical was not good Tension loadcell and actual tension has high deviation out of specification	3	1. Daily check tension 2. Do broken test sample (500gr) for each condition on machine actively and make monitoring chart.	1	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	3	1	12
5.15	Fuse & Elongation	Product pass screening proof test	(1) Customer's requirement/agreement	Failed proof test 250gr	Fiber broken inside coupler	4	Movement Operation of Clamp not good	3	1. Monthly checking by PRE 2. Yearly maintenance by PTE	1	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	3	1	12
5.16	Fuse & Elongation	Product pass screening proof test	(1) Customer's requirement/agreement	Failed proof test 250gr	Fiber broken inside coupler	4	The shape after Elongation was asymmetric	3	1. Training Operator judge the shape at twisting step 2. Training Operator judge the shape after Elong	1	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	3	1	12
5.17	Fuse & Elongation	Product pass screening proof test	(1) Customer's requirement/agreement	Failed proof test 250gr	Fiber broken inside coupler	4	Careless in bare fiber handling	2	1. Training Operator following JBS 2. Control 2S in process	1	8	**Risk acceptance**	N/A	N/A	4	2	1	8
5.18	Fuse & Elongation	Fiber shape after elongation	(1) Customer's requirement/agreement	Bad shape after Elongation	Fiber broken inside coupler	4	The twist shape was asymmetric	1	1. Training Operator judge the shape after Elong 2. Screening	3	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	1	3	12
5.19	Fuse & Elongation	Optical characteristic is met spec of control.	(1) Customer's requirement/agreement	Optical characteristic is out of spec	Failed optical specification	4	The Auto Stopping setting condition is not suitable after manufacturing condition change (Change lot fiber, change gas lot)	2	1. Program alarm when changing new lot fiber for recognize to monitoring the trend after apply new lot fiber 2. Allow to turn off Auto Mode when the trend is change 3. PTE inform when changing gas lot	1	8	**Risk acceptance**	N/A	N/A	4	2	1	8
6.1	Neoceram packing	Use resin within expiration	(2) Common standard	Use resin over expired date	FOV: High reject % & FI cost	3	Do not check expired date before usage	1	1. Training Operator following JBS 2. Control expired date by label and program/ ECS at process	2	6	**Risk acceptance**	N/A	N/A	3	1	2	6
6.2	Neoceram packing	Use correct material as required follow ID	(2) Common standard	Use not follow ID	Wrong traceability	3	Mixing material in working place	1	1. Identify material by label and control by ID# 2. Keep good 2S and input material one by one ID, Lot as common rules 3. Control by ECS setting and BOM of each ID	2	6	**Risk acceptance**	N/A	N/A	3	1	2	6
6.3	Neoceram packing	Use correct material type	(1) Customer's requirement/agreement	Use wrong material type	Wrong product structure	3	Mixing material in working place	1	1. Identify material by label and control by ID# 2. Keep good 2S and input material one by one ID, Lot as common rules 3. Control by ECS setting and BOM of each ID	2	6	**Risk acceptance**	N/A	N/A	3	1	2	6
6.4	Neoceram packing	No contamination(neoceram/tube)	(1) Customer's requirement/agreement	Contamination on material	Fiber broken inside coupler	4	Contamination copied from Operator to material when handling	3	1. Training Operator following JBS 2. Control 2S in process 3. Do air blow cleaning before usage 4. Apply ionize cleaning fan at working area 5. Appearance inspection after assembly	1	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	3	1	12
6.5	Neoceram packing	No contamination (neoceram/tube)	(1) Customer's requirement/agreement	Contamination on material	Fiber broken inside coupler	4	Contamination around neoceram attached FEP tube and move to Elongation zone during packing	3	1. Training Operator following JBS (operator handle carefuly to avoid FEP tube rotated). 2. Visual inspection next process	1	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	3	1	12
6.6	Neoceram packing	Fiber was set inside neoceram correctly	(1) Customer's requirement/agreement	Wrong alignment horizontal	Fiber broken inside coupler	4	Fiber was adjusted not enough	2	1. Training Operator following JBS 2. Measure product structure after assembly	1	8	**Risk acceptance**	N/A	N/A	4	2	1	8
6.7	Neoceram packing	Fiber was set inside neoceram correctly	(1) Customer's requirement/agreement	Wrong alignment vertical	Fiber broken inside coupler	4	Do not adjust position of neoceram correctly	2	1. Training Operator following JBS 2. Camera support to check position 3. Use program to support for moving of packing stage	1	8	**Risk acceptance**	N/A	N/A	4	2	1	8
6.8	Neoceram packing	Tension fiber in spec	(1) Customer's requirement/agreement	Low or high pulling force	Fiber broken inside coupler	4	Touch to fiber during adjustment to neoceram	2	1. Training Operator following JBS 2. Support to control tension by proram and spec setting by engineer	1	8	**Risk acceptance**	N/A	N/A	4	2	1	8
6.9	Neoceram packing	Tension fiber in spec	(1) Customer's requirement/agreement	Low or high pulling force	Fiber broken inside coupler	4	Touch the syringe to the bare fiber	2	1. Training Operator following JBS 2. Support to control tension by proram and spec setting by engineer	1	8	**Risk acceptance**	N/A	N/A	4	2	1	8
6.10	Neoceram packing	Apply UV resin correctly as structure required	(1) Customer's requirement/agreement	Wrong control parameter	Wrong product structure	3	Do not control position/length of resin well	2	1. Training Operator following JBS 2, Appearance inspection after assembly	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
6.11	Neoceram packing	UV-7 resin was cured completely	(1) Customer's requirement/agreement	UV intensity is out of specification range	Fiber broken inside coupler	4	Wrong UV power setting	1	Do verification of UV intensity daily before usage and adjust if any	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
6.12	Neoceram packing	UV-7 resin was cured completely	(1) Customer's requirement/agreement	Curing time is not enough	Fiber broken inside coupler	4	Wrong setting of curing time	1	Do verification of UV intensity daily before usage	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
6.13	Neoceram packing	Optical characteristic is met spec of control.	(1) Customer's requirement/agreement	Optical characteristic is out of spec	Failed optical specification	3	Touch the syringe to the bare fiber	2	1. Check and judge optical result by program 2. Apply provisional inspection if any doubted	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
6.14	Neoceram packing	Optical characteristic is met spec of control.	(3) FOV internal requirement	Optical characteristic is out of spec	Failed optical specification	3	- Using un-approved condition	1	1. Control of approved elongation condition by program 2. Elongation condition setting by engineer 3. Check and judge optical result by program 4. Apply provisional inspection if any doubted 5. Verify by reliability test report and get approval before mass production	2	6	**Risk acceptance**	N/A	N/A	3	1	2	6
6.15	Neoceram packing	Cut-off the correct port	(1) Customer's requirement/agreement	Cut-off the wrong port	Reduce performance at Customer side	4	Don't confirm the port position	1	1. Training follow JBS/PS for cut port (Short length of fiber) 2. Detect by Optical measurement (IL, RL) by measurement process and check structure at Port Coloring, App QC	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
6.16	Neoceram packing	No contamination	(3) FOV internal requirement	Contamination inside Coupler	Reduce Product Reliability	4	Contamination when cut-off the fiber	3	1. Apply blow the glove by air gun after cut off the fiber	1	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	3	1	12
6.17	Neoceram packing	Not pulling elongation region	(3) FOV internal requirement	Add pulling force to elongation fiber	Probability of fiber breaking will increase	4	Pulling fiber during fiber cutting	1	1. Fiber is cut after UV curing. Fiber already fixed by UV resin and clamp. Pull force will not be applied to elongated fiber after UV resin curing	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
6.18	Neoceram packing	No contamination	(3) FOV internal requirement	Contamination inside elongation area	Reduce Product Reliability	4	Piece of glass caused by fiber cutting jumps into elongation area	1	1. Keep fiber away ~ 100mm from Neoceram during cutting 2. Wear glove when cut-off the fiber 3. Appearance checking by next process App After Elongation	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN 5
6.19	Neoceram packing	No coating damage	(3) FOV internal requirement	Add damage to coating of other fiber	Reduce Product Reliability	4	Cutting fiber in unstable attitude	1	1. Keep fiber away ~ 100mm from Neoceram during cutting 2. Appearance checking by next process App After Elongation, SUS packing, Port Coloring and QC Inspection	2	8	Risk acceptance	N/A	N/A	4	1	2	8
7.1	Tube Heating	Distance form FEP tube and bare fiber meet specification	(1) Customer's requirement/agreement	Distance out of lower spec	FOV: High reject % & FI cost	3	Temperature was setting too high	1	Do verification of Heater daily before usage and adjust if any	2	6	Risk acceptance	N/A	N/A	3	1	2	6
7.2	Tube Heating	Distance form FEP tube and bare fiber meet specification	(1) Customer's requirement/agreement	Distance out of lower spec	FOV: High reject % & FI cost	3	The drain of Neoceram is easy turned downward to heater surface and make FEP tube dent	2	Training Operator following JBS (operator handle carefuly to avoid setup product in opposite side)	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
7.3	Tube Heating	Fiber UV coating is not damaged	(2) Common standard	Fiber UV coating is damaged at top of Neoceram	FOV: High reject % & FI cost	3	Careless operation: hold fiber at neoceram top tightly	2	1. Training Operator following JBS (operator handle carefuly to keep fiber straight from coupler body) 2. Visual inspection next process	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
7.4	Tube Heating	Bare fiber is strong (high breaking force)	(1) Customer's requirement/agreement	Bare fiber is damaged strongly inside product	Fiber broken inside coupler	4	Operators use tweezers not keep product at center zone, tweezer can be move to near bare fiber zone	2	1. Training Operator following JBS 2. Visual inspection next process 3. Measure optical characteristic and RL (sampling) to find product which its fiber was broken 4. Make droptest for each machine and monitoring weekly	2	16	Risk acceptance but need monitoring the result of risk	N/A	N/A	4	2	2	16
7.5	Tube Heating	Bare fiber is strong (high breaking force)	(1) Customer's requirement/agreement	Bare fiber is damaged strongly inside product	Fiber broken inside coupler	4	Neoceram slip off from tweezers when operator hold product by tweezers not tighly	2	1. Training Operator following JBS 2. Visual inspection next process 3. Measure optical characteristic and RL (sampling) to find product which its fiber was broken 4. Make droptest for each machine and monitoring weekly	2	16	Risk acceptance but need monitoring the result of risk	N/A	N/A	4	2	2	16
7.6	Tube Heating	Bare fiber is strong (high breaking force)	(1) Customer's requirement/agreement	Bare fiber is damaged strongly inside product	Failed Droptest	3	Unstable manufacturing condition	2	1. Training Operator following JBS 2. Visual inspection next process 3. Measure optical characteristic and RL (sampling) to find product which its fiber was broken 4. Make droptest for each machine and monitoring weekly	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
8.1	Appearance after elongation	UV and expired	(2) Common standard	Use resin over expired date	Decrease product quality in long-term	3	Do not check expired date before usage	1	1. Training Operator following JBS 2. Control expired date by label and program/ ECS at process	2	6	Risk acceptance	N/A	N/A	3	1	2	6
8.2	Appearance after elongation	Judgement correctly	(1) Customer's requirement/agreement	Judgement wrongly	Decrease product quality in long-term	3	Wrong understanding of requirement	2	1. Training Operator following JBS, Checksheet one by one checking points. 2. Random cross checking by skill members	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
8.3	Appearance after elongation	Judgement correctly	(1) Customer's requirement/agreement	Judgement wrongly	Decrease product quality in long-term	3	Wrong measurement	2	1. Training Operator following JBS/ PS, Checksheet one by one checking points. 2. Usage microscope with template to support checking easily	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
8.4	Appearance after elongation	Judgement correctly	(1) Customer's requirement/agreement	Judgement wrongly	Decrease product quality in long-term	3	Wrong data input	2	1. Training operators how to input data into a computer using a software 2. Remind operators to double-check their data input before saving	1	6	Risk acceptance	N/A	N/A	3	2	1	6
8.5	Appearance after elongation	Judgement enough item checking	(1) Customer's requirement/agreement	Judgement lack of item checking	Decrease product quality in long-term	3	OP do not follow process	2	1. Training Operator following PS/JBS, Checksheet one by one checking points. 2. Random cross checking by skill members 3. Apply checking software at Appearance after elongation	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
9.1	Temperature cycle (Note: all Aging process)	Aging correct temperature	(1) Customer's requirement/agreement	Aging temperature was higher	Risk to delay delivery	2	Select wrong aging program	1	1. Training Operator following JBS, PS 2. Control by aging program and ECS to detect wrong process 3. Apply check list before running aging 4. Verify aging data actually by thermo sensor/recorder by template	1	2	Risk acceptance	N/A	N/A	2	1	1	2
9.2	Temperature cycle (Note: all Aging process)	Aging correct temperature	(1) Customer's requirement/agreement	Aging temperature was lower	Risk to delay delivery	2	Select wrong aging program	1	1. Training Operator following JBS, PS 2. Control by aging program and ECS to detect wrong process 3. Apply check list before running aging 4. Verify aging data actually by thermo sensor/recorder by template	1	2	Risk acceptance	N/A	N/A	2	1	1	2
9.3	Temperature cycle (Note: all Aging process)	Enough heating cycle (time)	(1) Customer's requirement/agreement	Lack of heating cycle	Risk to delay delivery	2	Select wrong aging program	1	1. Training Operator following JBS, PS 2. Control by aging program and ECS to detect wrong process 3. Apply check list before running aging 4. Verify aging data actually by thermo sensor/recorder by template	1	2	Risk acceptance	N/A	N/A	2	1	1	2
9.4	Temperature cycle (Note: all Aging process)	Enough heating cycle (time)	(1) Customer's requirement/agreement	Surplus heating cycle	Risk to delay delivery	2	Select wrong aging program	1	1. Training Operator following JBS, PS 2. Control by aging program and ECS to detect wrong process 3. Apply check list before running aging 4. Verify aging data actually by thermo sensor/recorder by template	1	2	Risk acceptance	N/A	N/A	2	1	1	2
9.5	Temperature cycle (Note: all Aging process)	Enough holding time	(1) Customer's requirement/agreement	Not enough holding time	Risk to delay delivery	2	Input product quantity into chamber over limited	1	1. Training Operator following JBS, PS 2. Verify aging data actually by thermo sensor/recorder by template	1	2	Risk acceptance	N/A	N/A	2	1	1	2
9.6	Temperature cycle (Note: all Aging process)	Enough holding time	(1) Customer's requirement/agreement	Not enough holding time	Risk to delay delivery	2	Temperature of environment was high	1	Monitor temperature of environment	1	2	Risk acceptance	N/A	N/A	2	1	1	2
9.7	Temperature cycle (Note: all Aging process)	Enough holding time	(1) Customer's requirement/agreement	Not enough holding time	Risk to delay delivery	2	Perfomance of chamber down	2	Verify aging data actually by thermo sensor/recorder by template	1	4	Risk acceptance	N/A	N/A	2	2	1	4
9.8	Temperature cycle (Note: all Aging process)	Must input enough aluminum board for 1 chamber	(3)FOV internal requirement	Over quantity	Over capacity for 1 chamber	3	Input to much board for 1 chamber	2	Instruction in PS	1	6	Risk acceptance	N/A	N/A	3	2	1	6
9.9	Temperature cycle (Note: all Aging process)	Must input enough aluminum board for 1 chamber	(3)FOV internal requirement	Over quantity	Over capacity for 1 chamber	3	Input to much board for 1 chamber	2	Instruction in PS	1	6	Risk acceptance	N/A	N/A	3	2	1	6
10.1	Appearance after 24H Aging	Determine correct Egure area	(1) Customer's requirement/agreement	Larger than actual: Re-aging if wrong Egure ratio ≥ 2.5%	Take time to re-work	2	Operation define the Egure shape was not optimal	2	1. Training OP how to define optimal shape 2. Make sample (photo) in PS	2	8	Risk acceptance	N/A	N/A	2	2	2	8
10.2	Appearance after 24H Aging	Determine correct Egure area	(1) Customer's requirement/agreement	Larger than actual: Re-aging if wrong Egure ratio ≥ 2.5%	Take time to re-work	2	Operation define wrong dimension of shape	2	Training OP how to determine dimension in PS/JBS	2	8	Risk acceptance	N/A	N/A	2	2	2	8
10.3	Appearance after 24H Aging	Determine correct Egure area	(1) Customer's requirement/agreement	Larger than actual: Re-aging if wrong Egure ratio ≥ 2.5%	Take time to re-work	2	Adjust scale after calibration	2	1. Training OP understanding about the scale of microscope after calibration 2. Applied stopper to fix the scale	2	8	Risk acceptance	N/A	N/A	2	2	2	8
10.4	Appearance after 24H Aging	Determine correct Egure area	(1) Customer's requirement/agreement	Small than actual: Flow out to next process if wrong Egure <2.5%	Neoceram surface is not fix	2	Operation define the Egure shape was not optimal	2	1. Training OP how to define optimal shape 2. Make sample (photo) in PS	2	8	Risk acceptance	N/A	N/A	2	2	2	8
10.5	Appearance after 24H Aging	Determine correct Egure area	(1) Customer's requirement/agreement	Small than actual: Flow out to next process if wrong Egure <2.5%	Neoceram surface is not fix	2	Operation define wrong dimension of shape	2	Training OP how to determine dimension in PS/JBS	2	8	Risk acceptance	N/A	N/A	2	2	2	8
10.6	Appearance after 24H Aging	Determine correct Egure area	(1) Customer's requirement/agreement	Small than actual: Flow out to next process if wrong Egure <2.5%	Neoceram surface is not fix	2	Adjust scale after calibration	2	1. Training OP understanding about the scale of microscope after calibration 2. Applied stopper to fix the scale	2	8	Risk acceptance	N/A	N/A	2	2	2	8
10.7	Appearance after 24H Aging	Determine correct Egure area	(1) Customer's requirement/agreement	Reject if wrong Egure ratio > 40%	Reject good product	2	Operation define the Egure shape was not optimal	2	1. Training OP how to define optimal shape 2. Make sample (photo) in PS 3. ENG/Technician cross-check before reject	2	8	Risk acceptance	N/A	N/A	2	2	2	8
10.8	Appearance after 24H Aging	Determine correct Egure area	(1) Customer's requirement/agreement	Reject if wrong Egure ratio > 40%	Reject good product	2	Operation define wrong dimension of shape	2	1.Training OP how to determine dimension in PS/JBS 2. ENG/Technician cross-check before reject	2	8	Risk acceptance	N/A	N/A	2	2	2	8
10.9	Appearance after 24H Aging	Determine correct Egure area	(1) Customer's requirement/agreement	Reject if wrong Egure ratio > 40%	Reject good product	2	Adjust scale after calibration	2	1. Training OP understanding about the scale of microscope after calibration 2. Applied stopper to fix the scale 3. ENG/Technician cross-check before reject	2	8	Risk acceptance	N/A	N/A	2	2	2	8
10.10	Appearance after 24H Aging	Determine correct Hakuri area (UV-7 peel-off)	(1) Customer's requirement/agreement	Reject if wrong peel-off ratio > 50%	Reject good product	2	Operation define the Egure shape was not optimal	2	1. Training OP how to define optimal shape 2. Make sample (photo) in PS 3. ENG/Technician cross-check before reject	2	8	Risk acceptance	N/A	N/A	2	2	2	8

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN 5
10.11	Appearance after 24H Aging	Determine correct Hakuri area (UV-7 peel-off)	(1) Customer's requirement/agreement	Reject if wrong peel-off ratio > 50%	Reject good product	2	Operation define wrong dimension of shape	2	1.Training OP how to determine dimension in PS/JBS 2. ENG/Technician cross-check before reject	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
10.12	Appearance after 24H Aging	Determine correct Hakuri area (UV-7 peel-off)	(1) Customer's requirement/agreement	Reject if wrong peel-off ratio > 50%	Reject good product	2	Adjust scale after calibration	2	1. Training OP understanding about the scale of microscope after calibration 2. Applied stopper to fix the scale 3. ENG/Technician cross-check before reject	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
10.13	Appearance after 24H Aging	Determine correct Hakuri area (UV-7 peel-off)	(1) Customer's requirement/agreement	Reject if wrong peel-off ratio < 50%	Data of peel-off is incorrect	2	Operation define the Egure shape was not optimal	2	1. Training OP how to define optimal shape 2. Make sample (photo) in PS	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
10.14	Appearance after 24H Aging	Determine correct Hakuri area (UV-7 peel-off)	(1) Customer's requirement/agreement	Reject if wrong peel-off ratio < 50%	Data of peel-off is incorrect	2	Operation define wrong dimension of shape	2	Training OP how to determine dimension in PS/JBS	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
10.15	Appearance after 24H Aging	Determine correct Hakuri area (UV-7 peel-off)	(1) Customer's requirement/agreement	Reject if wrong peel-off ratio < 50%	Data of peel-off is incorrect	2	Adjust scale after calibration	2	1. Training OP understanding about the scale of microscope after calibration 2. Applied stopper to fix the scale	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
11.1	Termination	Terminated correct port	(1) Customer's requirement/agreement	Terminate wrong port	Reduce performance at Customer side	4	Don't confirm the color of tape at the port tail	1	1. Training follow JBS/PS for cut port (Tape color) 2. Detect by Optical measurement (IL, RL) by measurement process and check structure at Port Coloring, App QC	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
11.2	Termination	Return Loss at 1x2 meet spec	(1) Customer's requirement/agreement	Fail Return Loss	Reject product	3	Cutting port surface is not smooth	2	1. Training and follow up operator skill for fiber cutting 2. Setup process specification margin 1dB higher than final RL measurement.	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
11.3	Termination	Return Loss at 1x2 meet spec	(2) Common standard	Fail Return Loss	Take time to re-work	2	Bad splicing point	2	1. Limit splicing loss is < 0.5dB on splicers setting 2. Control statistic RL 3-sigma in RL measurement program	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
11.4	Termination	Return Loss at 1x2 meet spec	(2) Common standard	Fail Return Loss	Take time to re-work	2	Wrong splicing mode	2	Fix splicing mode on spilcers and make clear in JBS	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
11.5	Termination	Return Loss at 1x2 meet spec	(2) Common standard	Fail Return Loss	Take time to re-work	2	Impact splicing point when measuring	2	1. Put splicing point on fix position 2. Require no operation on splicing point at measurement system when measuring in JBS	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
11.6	Termination	Return Loss at 1x2 meet spec	(2) Common standard	Fail Return Loss	Take time to re-work	2	Impact lead fiber when measuring	1	Require no operation at measurement system when measuring in JBS	1	2	**Risk acceptance**	N/A	N/A	2	1	1	2
11.7	Termination	Return Loss at 1x2 meet spec	(2) Common standard	Fail Return Loss	Take time to re-work	2	Lead fiber 's too press	2	Checking status of lead fiber at early of shift (in JBS)	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
11.8	Termination	Return Loss at 1x2 meet spec	(2) Common standard	Fail Return Loss	Take time to re-work	2	BR0 value is affected by fiber length (BR0 use for calculation RL value)	2	Applied power check each 8h to re-define BR0 or replace lead fiber	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
11.9	Termination	Return Loss at 1x2 meet spec	(1) Customer's requirement/agreement	Fail Return Loss	Take time to re-work	2	Connect wrong configuration	1	1. Training follow JBS/PS for cut port (Tape color) 2. Detect by Optical measurement (IL, RL) by measurement process and check structure at Port Coloring, App QC	2	4	**Risk acceptance**	N/A	N/A	2	1	2	4
11.10	Termination	Correct RL Value	(1) Customer's requirement/agreement	Incorrect RL value	Reduce performance at Customer side	4	Connect wrong configuration	1	1. Training follow JBS/PS for cut port (Tape color) 2. Detect by Optical measurement (IL, RL) by measurement process and check structure at Port Coloring, App QC	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
11.11	Termination	Apply reflect treatment (Coreless, Matching gel, Small-winding,….) for all opposite ports of input port	(1) Customer's requirement/agreement	Fail Return Loss	Take time to re-work	2	Don't connect required port to apply reflect treatment	1	1. Training follow JBS/PS to apply reflect treatment 2. In case of RL can not meet spec, OP have to re-confirm the connection	2	4	**Risk acceptance**	N/A	N/A	2	1	2	4
11.12	Termination	Length of termination port in spec (0.5~2.5mm)	(1) Customer's requirement/agreement	Short termination port	RL might fail	2	Have not support tool/jig for confirm the length of the termination port	1	1. Operator cut the fiber and manual control the length of fiber while operating. 2. Apply to measure the fiber cut length before SUS packing by Microscope	2	4	**Risk acceptance**	N/A	N/A	2	1	2	4
11.13	Termination	Length of termination port in spec (0.5~2.5mm)	(1) Customer's requirement/agreement	Long termination port	Bad appearance	2	Have not support tool/jig for confirm the length of the termination port	1	1. Operator cut the fiber and manual control the length of fiber while operating. 2. Apply to measure the fiber cut length before SUS packing by Microscope	2	4	**Risk acceptance**	N/A	N/A	2	1	2	4
11.14	Termination	Length of Elastic resin C: 2.0 ~ 4.0mm	(1) Customer's requirement/agreement	Short length of resin C	Return loss was not stable	2	Have not support tool/jig for confirm the length of the adhesive	2	1. Operator put the adhesive to fiber and manual control the length of adhesive while operating. 2. Apply to measure the adhesive length before SUS packing by Microscope	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
11.15	Termination	Length of Elastic resin C: 2.0 ~ 4.0mm	(1) Customer's requirement/agreement	Long length of resin C	Bad appearance	2	Have not support tool/jig for confirm the length of the adhesive	2	1. Operator put the adhesive to fiber and manual control the length of adhesive while operating. 2. Apply to measure the adhesive length before SUS packing by Microscope	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
11.16	Termination	Air bubble does not touch bare fiber	(1) Customer's requirement/agreement	Air bubble touch bare fiber	Return loss was not stable	3	Action of taking adhesive from the syring	2	1. Training operation follow JBS 2. Check air bubble after apply resin by naked eyes 3. ENG check in case of suspect air bubble touch bare fiber	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
11.17	Termination	Resin C was cured	(1) Customer's requirement/agreement	Resin is not dry completely	Return loss was not stable	2	Too much resin amount	2	1. Training operation follow JBS 2. Apply Clock/Timer to control waiting timer	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
12.1	SUS packing	Using resin within expiration (include for Loctite 5091 resin and Elastic D resin)	(2) Common standard	Use resin over expired date	Reduce Product Reliability	4	Do not check expired date before using	1	Control expired date by label and program/ ECS at process	1	4	**Risk acceptance**	N/A	N/A	4	1	1	4
12.2	SUS packing	Using Loctite 5091 resin at 1st injection	(1) Customer's requirement/agreement	Using wrong type of resin	Reduce Product Reliability	4	Do not check resin type before using	1	1. Identify resin by label and scan to declare of usage & control by program 2. Visual control to remind OP about which resin types will be used for products.	1	4	**Risk acceptance**	N/A	N/A	4	1	1	4
12.3	SUS packing	Using Loctite 5091 resin at 1st injection	(1) Customer's requirement/agreement	Not inject Loctie	Cannot keep Neoceram in SUS pipe	4	Not pay attention	1	1. Visual check at before UV curing and Inject Elastic D resin 2. Follow instruction from JBS/PS	3	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	1	3	12
12.4	SUS packing	Using Elastic D resin for cone part of head coupler	(1) Customer's requirement/agreement	Using wrong type of resin	Reduce Product Reliability	4	Do not check resin type before using	1	1. Identify resin by label and scan to declare of usage & control by program 2. Visual control to remind OP about which resin types will be used for products.	1	4	**Risk acceptance**	N/A	N/A	4	1	1	4
12.5	SUS packing	Enough Elastic D resin on head SUS	(1) Customer's requirement/agreement	Lack of resin	No Impression on Customer side	1	Miss judgment from Operator	3	1. Visual check at App SUS, Port Coloring, App QC 2. Follow instruction from JBS/PS	3	9	**Risk acceptance**	N/A	N/A	1	3	3	9
12.6	SUS packing	Use correct SUS pipe for each product	(1) Customer's requirement/agreement	Using wrong SUS pipe of other product	Wrong identify at Customer side	2	Mixing material in working place	2	1. Identify material by label and control by ID# 2. Keep good 2S and input material one by one ID, Lot as common rules 3. Apply program to check material label with product code as its number (FOV serial, Elongation code, FOV product code)	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
12.7	SUS packing	Correct SUS pipe laser printing content	(1) Customer's requirement/agreement	Using wrong SUS pipe of other product	Wrong identify at Customer side	2	Pick up wrong	2	1. Identify material by label and control by ID# 2. Keep good 2S and input material one by one ID, Lot as common rules 3. Apply program to check material label with product code as its number (FOV serial, Elongation code, FOV product code)	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
12.8	SUS packing	Can detect SUS appearance NG	(1) Customer's requirement/agreement	Cannot detect SUS appearance NG	Bad Impression on Customer side	2	- Operator skip this checking item	1	1. Standardize inspection order in PS 2. Training operators based on process specification/JBS 3. Patrol by Leader and SV.	3	6	**Risk acceptance**	N/A	N/A	2	1	3	6
12.9	SUS packing	Can detect SUS appearance NG	(1) Customer's requirement/agreement	Cannot detect SUS appearance NG	Bad Impression on Customer side	2	Mis-judgment	1	- Make clear and easy to understand criteria in PS, with appropriate figure/image	3	6	**Risk acceptance**	N/A	N/A	2	1	3	6
12.10	SUS packing	Correct fiber position	(1) Customer's requirement/agreement	Port will be swapped	Wrong product's structure	4	Alignment of Neoceram inside of SUS was downward	1	1. Training operator to understanding the making position on SUS setting board (PS, JBS) 2. Port coloring, App QC check	3	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	1	3	12
12.11	SUS packing	Correct fiber position	(1) Customer's requirement/agreement	Port will be swapped	Wrong product's structure	4	Insert SUS pipe when printing laser was downward (back of Neoceram)	1	1. Training operator to understanding the making position on SUS setting board (PS, JBS) 2. Port coloring, App QC check	3	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	1	3	12
12.12	SUS packing	Enough waiting time for Loctite flow down	(3) FOV internal requirement	Lack of resin inside body of coupler	Reduce Product Reliability	4	Not enough time for Loctite flow down	1	1. Control waiting timer by timer 2. Check to extra resin before apply UV curing	3	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	1	3	12
12.13	SUS packing	UV intensity is in specification range	(1) Customer's requirement/agreement	UV intensity is lower than Lower Specification Limit	Loctice resin may not be cured enough (could not keep coupler inside firmly)	3	Performance of lamp was reduced day by day	1	1. Applying daily checking by UV meter 2. Apply margin control	3	9	**Risk acceptance**	N/A	N/A	3	1	3	9
12.14	SUS packing	UV intensity is in specification range	(1) Customer's requirement/agreement	UV intensity is lower than Lower Specification Limit	Loctice resin may not be cured enough (could not keep coupler inside firmly)	3	UV light source was broken suddently	1	1. Applying daily checking by UV meter 2. Instruct to Operator to observe the UV light at the bottom of jig under curing operation as JBS.	3	9	**Risk acceptance**	N/A	N/A	3	1	3	9
12.15	SUS packing	UV intensity is in specification range	(1) Customer's requirement/agreement	UV intensity is lower than Lower Specification Limit	Loctice resin may not be cured enough (could not keep coupler inside firmly)	3	Board was not closed with stopper	1	Use alarm light for UV curing jig when insert board into closely	2	6	**Risk acceptance**	N/A	N/A	3	1	2	6

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN 5
12.16	SUS packing	UV intensity is in specification range	(1) Customer's requirement/agreement	UV intensity is lower than Lower Specification Limit	Loctice resin may not be cured enough (could not keep coupler inside firmly)	3	Product set on board was not in center -> UV light is not focus on resin (head of coupler)	1	1. Visual check of SUS's position before injecting loctite resin into SUS pipe 2. Maxium deviation of SUS's position (from 5 to 7 mm) is still in the UV curing area	1	3	Risk acceptance	N/A	N/A	3	1	1	3
12.17	SUS packing	UV intensity is in specification range	(1) Customer's requirement/agreement	UV intensity is lower than Lower Specification Limit	Loctice resin may not be cured enough (could not keep coupler inside firmly)	3	Setting UV light bundle guideline is too far head of coupler -> UV light is not focus on resin (head of coupler)	1	1. Apply stopper for UV bundle guideline on UV curing jig. 2. Daily apply a standard board on UV jig to confirm the distance between UV bundle guideline and SUS pipe before use (Checksheet of UV curing jig)	1	3	Risk acceptance	N/A	N/A	3	1	1	3
12.18	SUS packing	No contamination touch to fiber	(1) Customer's requirement/agreement	Contamination touch to fiber	Reduce Performance level	2	Contamination on resin	2	1. Inspection at App SUS by Microscope	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	2	3	12
12.19	SUS packing	No contamination touch to fiber	(1) Customer's requirement/agreement	Contamination touch to fiber	Reduce Performance level	2	Contamination on fiber	2	Inspection at App SUS by Microscope	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	2	3	12
12.20	SUS packing	No airbubble touch to fiber	(1) Customer's requirement/agreement	Air bubble in resin touch to fiber	Reduce Performance level	2	Air bubble on resin	2	Inspection at App SUS by Microscope	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	2	3	12
12.21	SUS packing	No airbubble touch to fiber	(1) Customer's requirement/agreement	Air bubble in resin touch to fiber	Reduce Performance level	2	Air bubble was created by Operarion when iniect resin	2	Inspection at App SUS by Microscope	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	2	3	12
12.22	SUS packing	No resin peel off	(1) Customer's requirement/agreement	Resin peel-off	Bad Impression on Customer side	2	Clean operation touch to the resin	2	1.Instruction follow JBS 2.Inspection at App SUS by Microscope 3.Inspection at Port Coloring, App QC	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	2	3	12
12.23	SUS packing	Appearance of resin is good (Cone shape)	(1) Customer's requirement/agreement	Contamination in resin touch to fiber	FOV: High reject % & FI cost	3	Contamination in syringe	2	1. Maintain syringe after using in box 2. Check appearance after SUS packing at Port coloring and Final Appearance process	1	6	Risk acceptance	N/A	N/A	3	2	1	6
12.24	SUS packing	Appearance of resin is good (Cone shape)	(1) Customer's requirement/agreement	Contamination in resin touch to fiber	Customer: Not satisfied with appearance quality	3	Apply resin is too much, flow out of SUS head	2	1. Training insert D resin enough & fully with small needle 2. Cleaning resin after injecting resin 3. Check appearance after SUS packing at Port coloring and Final Appearance process	1	6	Risk acceptance	N/A	N/A	3	2	1	6
12.25	SUS packing	Appearance of resin is good (Cone shape)	(1) Customer's requirement/agreement	Air bubble in resin touch to fiber	FOV: High reject % & FI cost	3	Injection resin can be made air bubble	2	1. Instruct injecting resin with no air bubble by visual 2. Check appearance after SUS packing at Port coloring and Final Appearance process	1	6	Risk acceptance	N/A	N/A	3	2	1	6
12.26	SUS packing	Appearance of resin is good (Cone shape)	(1) Customer's requirement/agreement	Air bubble in resin touch to fiber	Customer: Not satisfied with appearance quality	3	Apply resin is too much, flow out of SUS head	2	1. Training insert D resin enough & fully with small needle 2. Cleaning resin after injecting resin 3. Check appearance after SUS packing at Port coloring and Final Appearance process	1	6	Risk acceptance	N/A	N/A	3	2	1	6
12.27	SUS packing	Appearance of resin is good (Cone shape)	(1) Customer's requirement/agreement	Resin deformed	FOV: High reject % & FI cost	3	The needle touch resin	2	1. Instruct injecting resin with no air bubble by visual 2. Check appearance after SUS packing at Port coloring and Final Appearance process	1	6	Risk acceptance	N/A	N/A	3	2	1	6
12.28	SUS packing	Appearance of resin is good (Cone shape)	(1) Customer's requirement/agreement	Resin deformed	Customer: Not satisfied with appearance quality	3	Apply resin is too much, flow out of SUS head	2	1. Training insert D resin enough & fully with small needle 2. Cleaning resin after injecting resin 3. Check appearance after SUS packing at Port coloring and Final Appearance process	1	6	Risk acceptance	N/A	N/A	3	2	1	6
12.29	SUS packing	Appearance of resin is good (Cone shape)	(1) Customer's requirement/agreement	Resin peel-off	FOV: High reject % & FI cost	3	Resin D and Loctite touch together with not good condition	2	1. Training inject D resin enough & fully with small needle 2. Check appearance after SUS packing at Port coloring and Final Appearance process	1	6	Risk acceptance	N/A	N/A	3	2	1	6
12.30	SUS packing	Appearance of resin is good (Cone shape)	(1) Customer's requirement/agreement	Resin peel-off	Customer: Not satisfied with appearance quality	3	Apply resin is too much, flow out of SUS head	2	1. Training insert D resin enough & fully with small needed 2. Cleaning resin after injecting resin 3. Check appearance after SUS packing at Port coloring and Final Appearance process	1	6	Risk acceptance	N/A	N/A	3	2	1	6
12.31	SUS packing	No resin stick on fiber	(1) Customer's requirement/agreement	Fiber was stick resin	Bad impression on Customer side	2	Resin D stick on fiber (Near SUS head area only) when injection resin	2	1. Training the postion to inject D resin into coupler 2. Cleaning after injection if detect 3. Check appearance after SUS packing at Port coloring and Final Appearance process	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	2	3	12
12.32	SUS packing	No resin stick on fiber	(1) Customer's requirement/agreement	Fiber was stick resin	Bad impression on Customer side	2	Apply resin is too much, flow out of SUS head	2	1. Training insert D resin enough & fully with small needle 2. Cleaning resin after injecting resin 3. Check appearance after SUS packing at Port coloring and Final Appearance process	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	2	3	12
12.33	SUS packing	No fiber damaged	(1) Customer's requirement/agreement	UV coat is scratch/deformed	Bad impression on Customer side	2	Fiber is touched UV bundle guideline when insert to UV curing jig	2	1. Apply stopper for UV jig and daily apply a standard board on UV jig to confirm the distance between UV bundle guideline and SUS pipe before use (Checksheet of UV curing jig) 2. Check appearance after SUS packing at Port coloring and Final Appearance process.	1	4	Risk acceptance	N/A	N/A	2	2	1	4
12.34	SUS packing	No fiber damaged	(1) Customer's requirement/agreement	UV coat is scratch/deformed	Bad impression on Customer side	2	Fiber is touched the board edge with heavy press when align fiber	2	Check appearance after SUS packing at Port coloring and Final Appearance process	1	4	Risk acceptance	N/A	N/A	2	2	1	4
12.35	SUS packing	No fiber damaged	(1) Customer's requirement/agreement	Fiber is crack/broken	Not satisfied with appearance quality	3	Fiber is touched UV bundle guideline when insert to UV curing jig	2	1. Apply stopper for UV jig and daily apply a standard board on UV jig to confirm the distance between UV bundle guideline and SUS pipe before use (Checksheet of UV curing jig) 2. Check appearance after SUS packing at Port coloring and Final Appearance process 3. Check optical characteristic at IL measurement process	1	6	Risk acceptance	N/A	N/A	3	2	1	6
12.36	SUS packing	No fiber damaged	(1) Customer's requirement/agreement	Fiber is crack/broken	Not satisfied with appearance quality	3	Fiber is touched the board edge with heavy press when alignment fiber	2	1. Check appearance after SUS packing at Port coloring and Final Appearance process. 2. Check optical characteristic at Loss measurement process	1	6	Risk acceptance	N/A	N/A	3	2	1	6
12.37	SUS packing	Can detect resin damaged	(1) Customer's requirement/agreement	Cannot detect resin damaged	Cannot keep fiber with SUS pipe	3	- Operator skip this checking item	1	1. Make clear inspection order in PS - Trainine operators based on process specification/JBS	4	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	1	4	12
12.38	SUS packing	Can detect resin damaged	(1) Customer's requirement/agreement	Cannot detect resin damaged	Cannot keep fiber with SUS pipe	3	Mis-judgment	1	- Make clear and easy to understand criteria in PS, with appropriate figure/image	4	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	1	4	12
12.39	SUS packing	Can detect fiber damaged	(1) Customer's requirement/agreement	Cannot detect fiber damaged	Bad Impression on Customer side	2	- Opearator skip this checking item	2	1. Make clear inspection order in PS 2. Training operators based on process specification/JBS 3. Appearance 200% at PRD Port before Port and QC Appearance 4. Usage loupe and plate for detect damaged point.	2	8	Risk acceptance	N/A	N/A	2	2	2	8
12.40	SUS packing	Can detect fiber damaged	(1) Customer's requirement/agreement	Cannot detect fiber damaged	Bad Impression on Customer side	2	Mis-judgment	2	- Make clear and easy to understand criteria in PS, with appropriate figure/image	2	8	Risk acceptance	N/A	N/A	2	2	2	8
12.41	SUS packing	No resin stick on SUS pipe	(1) Customer's requirement/agreement	Cannot detect resin on SUS pipe	Bad Impression on Customer side	2	The checking zone was not defined clearly	2	- Make clear and easy to understand criteria in PS, with appropriate figure/image	2	8	Risk acceptance	N/A	N/A	2	2	2	8
13.1	Loss	Connection correctly (input/output port)	(1) Customer's requirement/agreement	Wrong measured input port	Difficult in calculation to assembly coupler	4	Operator determine wrong input port	2	1. Use tool to check color to determine input/outport 2. Program will judge "NG - optical" result for product after measurement 3. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	2	16	Risk acceptance but need monitoring the result of risk	N/A	N/A	4	2	2	16
13.2	Loss	Connection correctly (input/output port)	(1) Customer's requirement/agreement	Wrong output port (swap port 3dB)	Difficult in calculation to assembly coupler	3	Operator determine wrong output port	2	1. Use tool to check color to determine input/outport 2. Program will alert swap port if wrong output connection 3. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
13.3	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Bad splicing point	2	1. Limit splicing loss is < 0.5dB on splicers 2. Apply Cutback method to eliminate effectiveness of splicing loss. 3. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	2	8	Risk acceptance	N/A	N/A	2	2	2	8
13.4	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Wrong splicing mode	2	1. Fix splicing mode on spilcers and make clear in JBS. 2. Apply Cutback method to eliminate effectiveness of splicing loss. 3. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	2	8	Risk acceptance	N/A	N/A	2	2	2	8
13.5	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Bare fiber connect to sensor too far	2	1. Distance of bare fiber to sensor have to use holder and cleaver 2. Apply fiber holder jig and instruct Operator connect to holder correctly (JBS) 3. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss 4. Apply Repeatability checking after connection.	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	2	3	12

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN 5
13.6	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Bare fiber connect to sensor too closed	2	1. Distance of bare fiber to sensor have to use holder and cleaver 2. Apply fiber holder jig and instruct Operator connect to holder correctly (JBS) 3. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss 4. Apply Repeatability checking after connection.	3	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	2	2	3	12
13.7	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Contamination on sensor	1	1. Reading wrong outpower -> Fail optical: ENG will detect by measurement Standard coupler weekly 2. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	2	4	**Risk acceptance**	N/A	N/A	2	1	2	4
13.8	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Contamination on bare fiber	1	1. Make clear requirement for cleaning bare fiber in JBS 2. Applied Cut repeatability check before measuring (Compare output power between 2 cutting times) 3. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	2	4	**Risk acceptance**	N/A	N/A	2	1	2	4
13.9	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Bare fiber cutting bad condition	2	1. Applied Cut repeatability check before measuring (Compare output power between 2 cutting times) 2. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	3	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	2	2	3	12
13.10	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Don't insert to matching gel (4 port product)	1	1. Require to insert to matching gel in JBS 2. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	2	4	**Risk acceptance**	N/A	N/A	2	1	2	4
13.11	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Bad contact fiber to matching gel (4 port product)	2	1. Require to insert to matching gel in JBS 2. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
13.12	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Impact splicing point when measuring	1	1. Put splicing point on fix position 2. Require no operation at measurement system when measuring in JBS 3. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	4	8	**Risk acceptance**	N/A	N/A	2	1	4	8
13.13	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Impact lead fiber when measuring	1	1. Require no operation at measurement system when measuring in JBS 2. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	4	8	**Risk acceptance**	N/A	N/A	2	1	4	8
13.14	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Lead fiber 's too press	1	1. Checking status of lead fiber at early of shift (in JBS) 2. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	4	8	**Risk acceptance**	N/A	N/A	2	1	4	8
13.15	Loss	Measurement data is correct for product	(1) Customer's requirement/agreement	Over uncertainty between FOV and customer	Difficult in calculation to assembly coupler	2	Don't winding Cutback loop (Only 1550nm band)	1	1. Make template to require winding Cutback loop and require it in JBS 2. At final loss, there is FIL spec (Fluctuation in Insertion Loss) to check again with Insertion loss at Process Loss	4	8	**Risk acceptance**	N/A	N/A	2	1	4	8
13.16	Loss	Optical characteristic is correct for product	(1) Customer's requirement/agreement	Swap other product (Same product type)	Difficult in calculation to assembly coupler	4	Mistake when transfer board (Re-confirm label color or big board - TDL measurement)	2	1. TDL measuring only can apply big board 2. Confirm SUS number match with serial number at Port, App	1	8	**Risk acceptance**	N/A	N/A	4	2	1	8
13.17	Loss	Optical characteristic is correct for product	(1) Customer's requirement/agreement	Swap other product (Different product type)	Can not use in Customer	5	Mistake when transfer board (Re-confirm label color or big board - TDL measurement)	2	1. TDL measuring only can apply big board 2. Confirm SUS number match with serial number at Port, App	1	10	**Risk acceptance**	N/A	N/A	5	2	1	10
13.18	Loss	Finish judgement for special spec	(1) Customer's requirement/agreement	Do not confirm checking result from Engineering	NG product could be flow out to Customer	3	Mistake while control WIP	1	1. Notify to PRD share serial need to check to ENG/Clerk directly by Scan out software 2. Detect by Test report	2	6	**Risk acceptance**	N/A	N/A	3	1	2	6
13.19	Loss	Judgement correctly for special spec	(1) Customer's requirement/agreement	Flow out to Customer	NG product could be flow out to Customer	3	Using wrong template for judgement	1	1. Name of template with product code in tittle to prevent using wrong 2. Training to related member how to use template and abnormal in case of using wrong	2	6	**Risk acceptance**	N/A	N/A	3	1	2	6
13.20	Loss	Enough measurement data	(1) Customer's requirement/agreement	Lack of data for Test report	Lack of data for Test report	3	Operator did not measure enough port	2	1. Program only judge on ECS if enough measured port	1	6	**Risk acceptance**	N/A	N/A	3	2	1	6
13.21	Loss	Enough measurement data	(1) Customer's requirement/agreement	Lack of data for Test report	Lack of data for Test report	3	Operator did not follow NC treatment	2	1. (Rework) - Control by e-Nonconforming 2. Program only judge on ECS if enough measured port	1	6	**Risk acceptance**	N/A	N/A	3	2	1	6
13.22	Loss	Enough sampling size for Temperature Depend Loss (Final loss only)	(1) Customer's requirement/agreement	Not enough quantity for shipping	Delay shipping	4	Operator did not measure TDL follow program's instruction	1	1. Prevent at Scan out 2. Test report control quantity for shipping.	1	4	**Risk acceptance**	N/A	N/A	4	1	1	4
14.1	Return Loss	Connection correctly (input port)	(1) Customer's requirement/agreement	Wrong input port	Take time to re-work	2	Operator determine wrong port number (as product configuration)	2	1. Use support tool to check color of mark to determine port number 2. Optical RL will be judge failed by program	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
14.2	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	Bad splicing point	2	1. Limit splicing loss is < 0.5dB on splicers setting 2. Control statistic RL 3-sigma in RL measurement program	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
14.3	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	Wrong splicing mode	2	1. Fix splicing mode on spilcers and make clear in JBS. 2. Control statistic RL 3-sigma in RL measurement program	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
14.4	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	Do not splicing with coreless fiber (980nm)	2	1. PS require for splicing with coreless fiber showed on screen at work place 2. Optical RL will be judge failed by program 3. Control statistic RL 3-sigma in RL measurement program	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
14.5	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	Not applied small winding for reflection treatment (1550nm)	2	1. PS require for small winding fiber showed on screen at work place 2. Applied jig (~4mm diameter for loop) to winding loop 3. Control statistic RL 3-sigma in RL measurement program	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
14.6	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	Applied small winding for reflection treatment, but don't winding enough loops (1550nm)	2	1. Applied jig (~4mm diameter for loop) to winding loop and make clear loop quantity's requirement in JBS (at least 3 loops). 2. Control statistic RL 3-sigma in RL measurement program	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
14.7	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	Applied small winding for reflection treatment, but winding loops was not keep tighten during measurement (1550nm)	2	1. Applied jig (~4mm diameter for loop) to winding loop and make clear operation how to keep fiber winding by jig in JBS (at least 3 loops). 2. Control statistic RL 3-sigma in RL measurement program	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
14.8	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	Applied small winding for reflection treatment, but winding loops diameter was big (1550nm)	2	1. Applied jig (~4mm diameter for loop) to winding loop and make clear operation how to keep fiber winding by jig in JBS (at least 3 loops). 2. Control statistic RL 3-sigma in RL measurement program	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
14.9	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	Impact splicing point when measuring	2	1. Put splicing point on fix position 2. Require no operationon splicing point at measurement system when measuring in JBS 3. Control statistic RL 3-sigma in RL measurement program	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
14.10	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	Impact lead fiber when measuring	1	1. Require no operation at measurement system when measuring in JBS 2. Control statistic RL 3-sigma in RL measurement program	1	2	**Risk acceptance**	N/A	N/A	2	1	1	2
14.11	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	Lead fiber 's too press	2	1. Checking status of lead fiber at early of shift (in JBS) 2. Control statistic RL 3-sigma in RL measurement program	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
14.12	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Take time to re-work	2	BR0 value is affected by fiber length (BR0 use for calculation RL value)	2	1. Applied power check each 8h to re-define BR0 or replace lead fiber 2. Control statistic RL 3-sigma in RL measurement program	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
14.13	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Customer: Unsatisfied with measurement accuracy	3	Bad splicing point	2	1. Limit splicing loss is < 0.5dB on splicers setting 2. Control statistic RL 3-sigma in RL measurement program	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
14.14	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Customer: Unsatisfied with measurement accuracy	3	Wrong splicing mode	2	1. Fix splicing mode on spilcers and make clear in JBS. 2. Control statistic RL 3-sigma in RL measurement program	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN 5
14.15	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Customer: Unsatisfied with measurement accuracy	3	Applied small winding for reflection treatment, but winding loops was not keep tighten during measurement (1550nm)	2	1. Applied jig (~4mm diameter for loop) to winding loop and make clear operation how to keep fiber winding by jig in JBS (at least 3 loops). 2. Control statistic RL 3-sigma in RL measurement program	1	6	**Risk acceptance**	N/A	N/A	3	2	1	6
14.16	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Customer: Unsatisfied with measurement accuracy	3	Applied small winding for reflection treatment, but winding loops diameter was big (1550nm)	2	1. Applied jig (~4mm diameter for loop) to winding loop and make clear operation how to keep fiber winding by jig in JBS (at least 3 loops). 2. Control statistic RL 3-sigma in RL measurement program	1	6	**Risk acceptance**	N/A	N/A	3	2	1	6
14.17	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Customer: Unsatisfied with measurement accuracy	3	Impact splicing point when measuring	2	1. Put splicing point on fix position 2. Require no operationon splicing point at measurement system when measuring in JBS 3. Control statistic RL 3-sigma in RL measurement program	1	6	**Risk acceptance**	N/A	N/A	3	2	1	6
14.18	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Customer: Unsatisfied with measurement accuracy	3	Impact lead fiber when measuring	1	1. Require no operation at measurement system when measuring in JBS 2. Control statistic RL 3-sigma in RL measurement program	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
14.19	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Customer: Unsatisfied with measurement accuracy	3	Lead fiber 's too press	2	1. Checking status of lead fiber at early of shift (in JBS) 2. Control statistic RL 3-sigma in RL measurement program	1	6	**Risk acceptance**	N/A	N/A	3	2	1	6
14.20	Return Loss	Measurement data is correct of product	(1) Customer's requirement/agreement	Failed RL	Customer: Unsatisfied with measurement accuracy	3	BR0 value is affected by fiber length (BR0 use for calculation RL value)	2	1. Applied power check each 8h to re-define BR0 or replace lead fiber 2. Control statistic RL 3-sigma in RL measurement program	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
14.21	Return Loss	Optical characteristic is correct for product	(1) Customer's requirement/agreement	Swap other product (Same product type)	Take time to re-work	3	Scan input but measuring on other product	1	1. Applied scan serial on board directly 2. Only allow 1 product on measurement system	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
14.22	Return Loss	Optical characteristic is correct for product	(1) Customer's requirement/agreement	Swap other product (Different product type)	Take time to re-work	3	Scan input but measuring on other product	1	1. Apply scan serial on board directly 2. Only allow 1 product on measurement system 3. Control statistic RL 3-sigma in RL measurement program can detect if the product was different type	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
14.23	Return Loss	Enough measurement data	(1) Customer's requirement/agreement	Lack of data for Test report	Take time to re-work	3	Operator did not measure enough port	1	1. Program only judge on ECS if enough measured port 2. Test report will check enough data or not	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
14.24	Return Loss	Enough measurement data	(1) Customer's requirement/agreement	Lack of data for Test report	Take time to re-work	3	Operator did not follow NC treatment	1	(Rework) - Control by e-Nonconforming 1. Program only judge on ECS if enough measured port 2. Test report will check enough data or not	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
14.25	Return Loss	Enough RL sampling quantity for shipping	(1) Customer's requirement/agreement	Lack of sampling RL quantity	FOV: Take time to check	2	Operator did not identify the product which applied sampling RL measurement	1	1. RL sampling product identified by attachment with Green label select by VB6 measurement program 2. Set up pick sampling size automatically by MFG/ECS function 3. Test report control quantity for shipping.	1	2	**Risk acceptance**	N/A	N/A	2	1	1	2
14.26	Return Loss	Enough RL sampling quantity for shipping	(1) Customer's requirement/agreement	Lack of sampling RL quantity	Customer: Have no RL product to guarantee for shipping	3	Operator did not identify the product which applied sampling RL measurement	1	1. RL sampling product identified by attachment with Green label select by VB6 measurement program 2. Set up pick sampling size automatically by MFG/ECS function 3. Test report control quantity for shipping.	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
14.27	Return Loss	Enough RL sampling quantity for shipping	(1) Customer's requirement/agreement	Lack of sampling RL quantity	FOV: Take time to check	2	Operator did not measure RL follow program's instruction	1	1. Port coring will check for the product with measured or not 2. Test report control quantity for shipping.	1	2	**Risk acceptance**	N/A	N/A	2	1	1	2
14.28	Return Loss	Enough RL sampling quantity for shipping	(1) Customer's requirement/agreement	Lack of sampling RL quantity	Customer: Have no RL product to guarantee for shipping	3	Operator did not measure RL follow program's instruction	1	1. Port coring will check for the product with measured or not 2. Test report control quantity for shipping.	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
15.1	Port coloring	Laser printing content same with label	(3) FOV internal requirement	Cannot detect mismatch information	Must take action to check	2	Operator Overlook	2	1. Check printing laser content Final App 2. Apply Blind test	1	4	**Risk acceptance**	N/A	N/A	2	2	1	4
15.2	Port coloring	Appearance of resin was acceptable	(1) Customer's requirement/agreement	Cannot detect Resin damaged	Product's appearance was not good	2	Operator Overlook	2	1. Check printing laser content Final App 2. Apply Blind test	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
15.3	Port coloring	Detect fiber damaged	(2) Common standard	Cannot detect Fiber damaged	Quality of product is reduced	3	Operator Overlook	2	1. Final App will re-check for appearance of fiber. 2. Usage coloring detecting tool for damaged point.	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
15.4	Port coloring	Marking color are correct	(1) Customer's requirement/agreement	Wrong marking color	Could make wrong connection at Customer side	4	Do not check the port configuration after setting on template	1	1. Training OP checking follow PS/JBS 2. Operator check the color on the template and product 2. Cross checking at Final Appearance process	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
15.5	Port coloring	Marking color are correct	(1) Customer's requirement/agreement	Wrong marking color	Could make wrong connection at Customer side	4	Using wrong template	1	1. Training operator confirm template type following product code as JBS and PS before use 2. Cross check by Leader after changing product code or template 3. Cross checking by final appearance inspection process	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
15.6	Port coloring	Marking color are correct	(1) Customer's requirement/agreement	Wrong marking color	Could make wrong connection at Customer side	4	Don't change new template when change product	1	1. Cross check with marking pen, PS and template 2. Cross checking at Final Appearance process	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
15.7	Port coloring	Marking color are correct	(1) Customer's requirement/agreement	Wrong marking color	Could make wrong connection at Customer side	4	Using wrong color of marking pen -> Setting wrong order	1	1. Cross check with marking pen, PS and template 2. Cross check by Leader after changing product code or template 3. Cross checking by final appearance inspection process	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
15.8	Port coloring	Marking color are correct	(1) Customer's requirement/agreement	Wrong marking color	Customer will recognize wrong port	4	Using wrong color of marking pen -> Pick up wrong	3	1. Cross check with marking pen, PS and template before marking 2. Cross checking at Final Appearance process	2	24	**Must take countermeasure and then evaluate the risk again**	1. 15-Sep-2024 2. 3-Jul-2024 3. 30-Sep-2024	1. Apply checking color on Top Cap and Bottom Cap before select the marking pen for Visibility of color 2. Change the method of confirmation the mark pen (after pick up) with pre-coloring before apply whole port length. 3.Design new fixture to control sequence of usage marking pen matching with product's port fiber (coloring requirement).	4	2	2	16
15.9	Port coloring	Marking color are correct	(1) Customer's requirement/agreement	No color on required port	Could make wrong connection at Customer side	4	Forget marking (Human mistake)	1	1. Training check color on product before transfer to next process 2. Cross checking at Final Appearance process	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
15.10	Port coloring	Marking color are correct	(1) Customer's requirement/agreement	No color on required port	Could make wrong connection at Customer side	4	Mistake control WIP before/after at process	1	1. Cross checking at Final Appearance process	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
15.11	Port coloring	Marking color are correct	(1) Customer's requirement/agreement	Mixing color	Inconvenience for Customer	3	Coppied color from other port	2	1. Dry wiping after marking follow JBS 2. Seperatate ports position by template after marking each port 3. Cross checking at Final Appearance process	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
15.12	Port coloring	Enough marking length	(1) Customer's requirement/agreement	Surplus marked length	Inconvenience for Customer	2	Determine wrong marking end-start point	1	1. Make template with end-start marking point 2. Cross checking at Final Appearance process	2	4	**Risk acceptance**	N/A	N/A	2	1	2	4
15.13	Port coloring	Enough marking length	(1) Customer's requirement/agreement	Lack of marked length	Inconvenience for Customer	2	Determine wrong marking end-start point	1	1. Make template with end-start marking point 2. Cross checking at Final Appearance process	2	4	**Risk acceptance**	N/A	N/A	2	1	2	4
15.14	Port coloring	At least half of fiber have clear color continuously.	(1) Customer's requirement/agreement	Color is not painted continuously.	Inconvenience for Customer	2	The next coloring is not overlap with the previous coloring step.	1	1. Instruct the marking method (overlap position) follow JBS 2. Appearance fiber coloring after coloring 3. Mark 2 times at least on port 4. Cross checking at Final Appearance process	2	4	**Risk acceptance**	N/A	N/A	2	1	2	4
16.1	Final Appearance	Can detect mismatch between SN on SUS, SN on checksheet and SN on product label	(3) FOV internal requirement	Cannot detect the mismatch between SN on SUS, SN on checksheet and SN on product label	Wrong traceability	3	Laser printing is hard to check so OP cannot check clearly.	2	- Shade the SUS pipe to check the laser printing and compare with SN on checksheet and SN on product's label. - Check SUS no with product label at Port coloring, QC Final Appearance	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
16.2	Final Appearance	Can detect mismatch between SN on SUS, SN on checksheet and SN on product label	(3) FOV internal requirement	Cannot detect the mismatch between SN on SUS, SN on checksheet and SN on product label	Wrong traceability	3	Opearator skip this checking item	1	- Standardize inspection order in PS. - Training operators based on process specification/JBS. - Patrol by Leader and SV. - Test skill Operators.	3	9	**Risk acceptance**	N/A	N/A	3	1	3	9

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN 5
16.3	Final Appearance	Can detect SUS appearance NG	(1) Customer's requirement/agreement	Cannot detect SUS appearance NG	Bad Impression on Customer side	2	Operarator skip this checking item	2	- Standardize inspection order in PS. - Training operators based on process specification/JBS. - Patrol by Leader and SV.	3	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	2	2	3	12
16.4	Final Appearance	Can detect SUS appearance NG	(1) Customer's requirement/agreement	Cannot detect SUS appearance NG	Bad Impression on Customer side	2	Mis-judgment	1	- Make clear and easy to understand criteria in PS, with appropriate figure/image.	3	6	**Risk acceptance**	N/A	N/A	2	1	3	6
16.5	Final Appearance	Can detect resin damaged	(1) Customer's requirement/agreement	Cannot detect resin damaged	Cannot keep fiber with SUS pipe	3	Operarator skip this checking item	1	- Make clear inspection order in PS. - Training operators based on process specification/JBS.	4	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	1	4	12
16.6	Final Appearance	Can detect resin damaged	(1) Customer's requirement/agreement	Cannot detect resin damaged	Cannot keep fiber with SUS pipe	3	Mis-judgment	1	- Make clear and easy to understand criteria in PS, with appropriate figure/image	4	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	1	4	12
16.7	Final Appearance	Can detect fiber damaged	(1) Customer's requirement/agreement	Cannot detect fiber damaged	Bad Impression on Customer side	2	Operarator skip this checking item	2	- Make clear inspection order in PS - Training operators based on process specification/JBS - Appearance at PRD Port before Port and QC Appearance - Usage black background to increase ability of detection.	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
16.8	Final Appearance	Can detect fiber damaged	(1) Customer's requirement/agreement	Cannot detect fiber damaged	Bad Impression on Customer side	2	Mis-judgment	2	- Make clear and easy to understand criteria in PS, with appropriate figure/image	2	8	**Risk acceptance**	N/A	N/A	2	2	2	8
16.9	Final Appearance	Can detect wrong color's length	(1) Customer's requirement/agreement	Cannot detect wrong port length	Inconvenience when using at customer's side	3	Using wrong template to check port coloring length	2	- Cross check template at when changing product code - Compare product code on template with product code on PS, serial.	2	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	2	2	12
16.10	Final Appearance	Can detect wrong color on port	(1) Customer's requirement/agreement	Cannot detect wrong port's color	Wrong connection at customer's side	4	Operator use incorrect method of inspection: do not separate each fiber's port	2	- Make clear the correct method in document - Updated template clearly and instruction for confirmed points (side, color marking) for port identification correctly - Check template type when change product code - Senarate each port by sponge	2	16	**Must take countermeasure and then evaluate the risk again**	30-Apr-2025	1. Apply camera for image processing to detect swap port	4	1	2	8
16.11	Final Appearance	Can detect the short-length product	(1) Customer's requirement/agreement	Short-length product is flowed out to customer	Cannot connect at customer's side	4	Using wrong template	1	- Apply cross check template (cutting position) by leader on table before cutting - Compare code on Template with code on product serial and document	2	8	**Risk acceptance**	N/A	N/A	4	1	2	8
16.12	Final Appearance	Cut Correct length of each port	(1) Customer's requirement/agreement	Short-length product is flowed out to customer	Cannot connect at customer's side	4	Using wrong template	1	- Apply cross check template (cutting position) by leader on table before cutting - Compare code on Template with code on product serial and document	3	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	1	3	12
16.13	Final Appearance	Cut Correct length of each port	(1) Customer's requirement/agreement	Short-length product is flowed out to customer	Cannot connect at customer's side	4	Cutting wrong position	1	- Cover inactive template by sheet - Apply cross check template (cutting position) by leader on table before cutting - Detect change product code by software - Training OP the correct cutting method.	3	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	4	1	3	12
16.14	Final Appearance	Cut Correct length of each port	(1) Customer's requirement/agreement	Surplus length	Inconvenience when using at customer's side	3	No cutting	1	- Training OP follow JBS. - Apply jig to control cutting quantity	4	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	1	4	12
16.15	Final Appearance	Cut Correct length of each port	(1) Customer's requirement/agreement	Surplus length	Inconvenience when using at customer's side	3	Using wrong template	1	- Apply cross check template (cutting position) by leader on table before cutting - Compare code on Template with code on product serial and document	4	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	1	4	12
16.16	Final Appearance	Cut Correct length of each port	(1) Customer's requirement/agreement	Surplus length	Inconvenience when using at customer's side	3	Cutting wrong position	1	- Cover inactive template by sheet - Apply cross check template (cutting position) by leader on table before cutting - Training OP the correct cutting method.	4	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	1	4	12
17.1	QC Casing	Put SUS pipe in the tray/ sponge in correct direction	(1) Customer's requirement/agreement	Put SUS pipe in the tray/ sponge in wrong direction	Inconvenience when using at customer's side	2	OP do wrong operation	1	- Describle the SUS pipe direction in PS clearly	4	8	**Risk acceptance**	N/A	N/A	2	1	4	8

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN 5
17.2	QC Casing	Fiber is not crossing in spool	(1) Customer's requirement/agreement	Fiber is crossing	Fiber damaged	3	Fiber is not wind straightly	1	- Instruct OP to wind fiber straightly - Insert sponge at the remained drain to prevent fiber crossing - Re-check after winding at casing and QC Appearance 200%	2	6	Risk acceptance	N/A	N/A	3	1	2	6
17.3	QC Casing	Fiber is wind correct groove	(1) Customer's requirement/agreement	Winding fiber wrong groove	Inconvenience when using at customer's side	2	OP do wrong operation	1	- Describle in document clearly. - Template is describled clearly - Re-check after winding at casing and QC Appearance 200%	2	4	Risk acceptance	N/A	N/A	2	1	2	4
17.4	QC Casing	Fiber is wind correct direction	(1) Customer's requirement/agreement	Winding fiber wrong direction	Inconvenience when using at customer's side	2	OP do wrong operation	1	- Describle in document clearly. - Template is describled clearly	3	6	Risk acceptance	N/A	N/A	2	1	3	6
17.5	QC Casing	Fiber is kept inside each groove	(1) Customer's requirement/agreement	Fiber is not kept inside groove	Fiber damaged	3	OP insert wrong position	1	- Describle in document clearly.	3	9	Risk acceptance	N/A	N/A	3	1	3	9
17.6	QC Casing	The winding length in each groove follow customer's requirement	(1) Customer's requirement/agreement	Winding fiber wrong length	Inconvenience when using at customer's side	2	OP do wrong operation	1	- Describle in document clearly. - Template is describled clearly	3	6	Risk acceptance	N/A	N/A	2	1	3	6
17.7	QC Casing	Correct spool's layout in tray	(1) Customer's requirement/agreement	Wrong spool's layout in tray	Inconvenience when using at customer's side	2	OP do wrong operation	1	- Describle in document clearly. - Re-check layout of each port at casing and QC Appearance 200%	2	4	Risk acceptance	N/A	N/A	2	1	2	4
17.8	QC Casing	Correct sponge's quantity on each groove	(1) Customer's requirement/agreement	Surplus sponge	Inconvenience when using at customer's side	2	No control quantity in line	1	- Use jig to control quantity of each spool - Describle jig in PS clearly - Re-check at casing and QC Appearance 200%	2	4	Risk acceptance	N/A	N/A	2	1	2	4
17.9	QC Casing	Correct sponge's quantity on each groove	(1) Customer's requirement/agreement	Lack of sponge	Cannot keep fiber inside spool	3	No control quantity in line	1	- Use jig to control quantity of each spool - Describle jig in PS clearly - Re-check at casing and QC Appearance 200%	2	6	Risk acceptance	N/A	N/A	3	1	2	6
17.10	QC Casing	Correct material for casing	(1) Customer's requirement/agreement	Use wrong material (spool cao) use for Subcom	Inconvenience when using at customer's side	2	Pick up wrong material	1	- Identify material by label - Describle material code in PS clearly	3	6	Risk acceptance	N/A	N/A	2	1	3	6
17.11	QC Casing	Correct material for casing	(1) Customer's requirement/agreement	Use wrong material (spool thấp) use for ASN	Fiber damaged	3	Pick up wrong material	1	- Identify material by label - Describle material code in PS clearly	3	9	Risk acceptance	N/A	N/A	3	1	3	9
17.12	QC Casing	Correct material for casing	(1) Customer's requirement/agreement	Use wrong material (tray, sponge)	Cannot keep product completely	3	Pick up wrong material	1	- Identify material by label - Describle material code in PS clearly	3	9	Risk acceptance	N/A	N/A	3	1	3	9
17.13	QC Casing	Fiber is kept inside tray (apply for casing into trav 3.0)	(1) Customer's requirement/agreement	Fiber is not kept inside tray	Fiber damaged	3	Fiber is not put inside tray	1	- Add instruction clearly - Instruct to OP to casing	3	9	Risk acceptance	N/A	N/A	3	1	3	9
17.14	QC Casing	Fiber is kept inside tray (apply for casing into trav 3.0)	(1) Customer's requirement/agreement	Fiber is not kept inside tray	Fiber damaged	3	Not enough sponge	1	- Use jig to control quantity of each tray - Describle jig in document	3	9	Risk acceptance	N/A	N/A	3	1	3	9
17.15	QC Casing	Fiber is kept inside tray (apply for casing into trav 3.0)	(1) Customer's requirement/agreement	Fiber is not kept inside tray	Fiber damaged	3	Not enough tape	1	- Use jig to control quantity of each coil - Describle jig in PS	3	9	Risk acceptance	N/A	N/A	3	1	3	9
17.16	QC Casing	Enough sponge inside tray	(1) Customer's requirement/agreement	Surplus sponge	Inconvenience when using at customer's side	2	No control quantity in line	1	- Use jig to control quantity of each spool - Describle jig in document	3	6	Risk acceptance	N/A	N/A	2	1	3	6
17.17	QC Casing	Enough sponge inside tray	(1) Customer's requirement/agreement	Lack of sponge	Cannot keep fiber inside tray	3	No control quantity in line	1	- Use jig to control quantity of each spool - Describle jig in document	3	9	Risk acceptance	N/A	N/A	3	1	3	9
17.18	QC Casing	Enough tape for each port	(1) Customer's requirement/agreement	Surplus tape	Inconvenience when using at customer's side	2	No control quantity in line	1	- Use jig to control quantity of each coil - Describle jig in PS	3	6	Risk acceptance	N/A	N/A	2	1	3	6
17.19	QC Casing	Close Correct direction of tray body and tray cover	(1) Customer's requirement/agreement	Wrong direction of tray body and tray cover	Inconvenience at customer's side	3	Do not check tray cover and tray direction before closing	1	- Describle method of fix the tray cover and tray body - Check at label process	3	9	Risk acceptance	N/A	N/A	3	1	3	9
17.20	QC Casing	Can detect packing material (tray, label)'s appearance damaged	(3) FOV internal requirement	Cannot detect packing material's appearance damaged	Inconvenience when using at customer's side	2	Operator skip checking items	1	- Make clear inspection order in PS - Check packing material's appearance at Casing and QC Appearance 200%	3	6	Risk acceptance	N/A	N/A	2	1	3	6
17.21	QC Casing	Can detect packing material (tray, label)'s appearance damaged	(3) FOV internal requirement	Cannot detect packing material's appearance damaged	Inconvenience when using at customer's side	2	Mis-judgment	1	- Make clear and easy to understand criteria in PS, with appropriate figure/image	3	6	Risk acceptance	N/A	N/A	2	1	3	6
17.22	QC Casing	Correct label's position	(1) Customer's requirement/agreement	wrong label's position	Inconvenience when using at customer's side	2	Have no instruct on document	1	- Describle label's position in PS - Use jig to paste label	3	6	Risk acceptance	N/A	N/A	2	1	3	6
17.23	QC Casing	Correct label's content	(1) Customer's requirement/agreement	Wrong label's content	Fail Identification product as requirement from customer	3	Set up in-correct value	1	- Apply cross checking between Clerk - Eng - Apply check sampling 1pc/code/printing date	3	9	Risk acceptance	N/A	N/A	3	1	3	9
18.1	QC 200% Appearance (Apply for product codes requiremented in QC flow chart)	Detect fiber crossing	(1) Customer's requirement/agreement	Cannot detect fiber crossing	Inconvenience when using at customer's side	2	Document have not declare this checking item	2	- Update PS to make clear the checking items - Instruct to OP to check spool fully. - Blind test to assure that OP can detect this defect	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	2	2	3	12
18.2	QC 200% Appearance (Apply for product codes requiremented in QC flow chart)	Detect wrong Layout	(1) Customer's requirement/agreement	Cannot detect wrong layout	Inconvenience when using at customer's side	2	- Document have not declare this checking item	1	- Update PS to make clear the checking items - Blind test to assure that OP can detect this defect	3	6	Risk acceptance	N/A	N/A	2	1	3	6
18.3	QC 200% Appearance (Apply for product codes requiremented in QC flow chart)	Enough sponge inside tray	(1) Customer's requirement/agreement	Surplus sponge	Inconvenience when using at customer's side	2	Do not use jig to control sponge	1	- Use jig to control quantity - Describle jig in PS	3	6	Risk acceptance	N/A	N/A	2	1	3	6
18.4	QC 200% Appearance (Apply for product codes requiremented in QC flow chart)	Enough sponge inside tray	(1) Customer's requirement/agreement	Lack of sponge	Cannot keep fiber inside tray	3	Do not use jig to control sponge	1	- Use jig to control quantity - Describle jig in PS	3	9	Risk acceptance	N/A	N/A	3	1	3	9
18.5	QC 200% Appearance (Apply for product codes requiremented in QC flow chart)	Close Correct direction of tray body and tray cover	(1) Customer's requirement/agreement	Wrong direction of tray body and tray cover	Inconvenience at customer's side	2	Do not check tray cover and tray direction before closing	1	- Describle method of fix the tray cover and tray body	3	6	Risk acceptance	N/A	N/A	2	1	3	6
18.6	QC label	Enough label	(1) Customer's requirement/agreement	Lacking of bag's label	Fail Identification product as requirement from customer	3	Do not control quantity	1	- Label program check - Re-confirm at carton packing - Use jig to control label's quantity	1	3	Risk acceptance	N/A	N/A	3	1	1	3
18.7	QC label	Enough label	(1) Customer's requirement/agreement	Lacking of ESD label	Identify the product's information is not enough	2	Do not control quantity	1	- Re-confirm at carton packing - Use jig to control label's quantity	2	4	Risk acceptance	N/A	N/A	2	1	2	4
18.8	QC label	Enough label	(1) Customer's requirement/agreement	Surplus label (product label and ESD label)	Inconvenience for customer	2	Do not control quantity	1	- Re-confirm at carton packing - Use iig to control label's quantity	2	4	Risk acceptance	N/A	N/A	2	1	2	4
18.9	QC label	Correct label	(1) Customer's requirement/agreement	Swap label	Fail Identification product as requirement from customer	3	Mistake during operation	1	- Use cover sheet to cover each product	4	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	1	4	12
18.10	Vacuum packing	Bag is vacuum completely	(1) Customer's requirement/agreement	Bag is loosen	Dissatisfied customers	2	Vacuum specifiaction (time, force,...) is lower than set up	1	- Reconfirm with sample - Check at carton packing	2	4	Risk acceptance	N/A	N/A	2	1	2	4
18.11	Vacuum packing	Tray is not damaged after vacuum	(1) Customer's requirement/agreement	Tray is deformed	Dissatisfied customers	2	Vacuum specifiaction (time, force,...) is higher than set up	1	- Reconfirm with sample - Check at carton packing	2	4	Risk acceptance	N/A	N/A	2	1	2	4
19.1	QC Packing	Can detect NG appearance on carton box/label/Inmact label	(1) Customer's requirement/agreement	Cannot detect NG appearance carton box/label/Inmact label	Dissatisfied customers	2	Operator skip this checking item	1	- Make clear inspection order in PS - Training operators based on process specification/JBS	4	8	Risk acceptance	N/A	N/A	2	1	4	8
19.2	QC Packing	Can detect NG appearance on carton box/label/Inmact label	(1) Customer's requirement/agreement	Cannot detect NG appearance carton box/label/Inmact label	Dissatisfied customers	2	Mis-judgment	1	- Make clear and easy to understand criteria in PS, with appropriate figure/image	4	8	Risk acceptance	N/A	N/A	2	1	4	8
19.3	QC Packing	Correct carton box type	(1) Customer's requirement/agreement	Wrong carton box type	Cannot keep product safety	2	Pick up wrong carton box	1	- Describle carton box type in Document.	3	6	Risk acceptance	N/A	N/A	2	1	3	6
19.4	QC Packing	Correct Impact label's type	(1) Customer's requirement/agreement	Wrong Impact label's type (more strict than spec)	Wrong guarantee	3	Pick up wrong material	1	- Decleare material code in PS - Re-confirm Impact label kind at TR checking	3	9	Risk acceptance	N/A	N/A	3	1	3	9
19.5	QC Packing	Correct Impact label's type	(1) Customer's requirement/agreement	Wrong Impact label's type (lighter than spec)	Wrong guarantee	4	Pick up wrong material	1	- Decleare material code in PS - Re-confirm Impact label kind at TR checking	3	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	4	1	3	12
19.6	QC Packing	Correct impact label direction	(1) Customer's requirement/agreement	Wrong impact label direction	May not enough guarantee	3	No jig to paste and check direction of Impact label	1	- Use jig to paste and check direction of Impact label - Re-confim Impact label at TR checking	3	9	Risk acceptance	N/A	N/A	3	1	3	9
19.7	QC Packing	Enough carton's label	(1) Customer's requirement/agreement	Lack of carton's label	Dissatisfied customers	2	Forget paste label on box	1	- Paste label before scanning - Checking by software	1	2	Risk acceptance	N/A	N/A	2	1	1	2
19.8	QC Packing	Enough carton's label	(1) Customer's requirement/agreement	Surplus carton's label	Dissatisfied customers	2	Not control quantity	1	- Control label's quantity	3	6	Risk acceptance	N/A	N/A	2	1	3	6
19.9	QC Packing	Correct carton label	(1) Customer's requirement/agreement	Stick label wrong	Indentify product wrong	3	Pick up wrong label	1	- Software can detect	1	3	Risk acceptance	N/A	N/A	3	1	1	3
19.10	QC Packing	Enough product's quantity for each box	(1) Customer's requirement/agreement	Surplus product in carton box	Inconvenience for customer	2	Do not control quantity each box	2	- Control product quantity from Labeling to Carton packing. - Control by software	2	8	Risk acceptance	N/A	N/A	2	2	2	8
19.11	QC Packing	Enough product's quantity for each box	(1) Customer's requirement/agreement	Lack of product in carton box	Dissatisfied customers	3	Do not control quantity each box	2	- Control product quantity from Labeling to Carton packing. - Control by software	2	12	Risk acceptance but need monitoring the result of risk	N/A	N/A	3	2	2	12
19.12	QC Packing	Correct product type in carton box	(1) Customer's requirement/agreement	Wrong product type in carton box	Dissatisfied customers	3	Put wrong product type for carton packing	1	- Software can detect	2	6	Risk acceptance	N/A	N/A	3	1	2	6
19.13	QC Packing	Correct carton box's direction	(2) Common standard	Wrong carton box's direction	Dissatisfied customers	2	Wrong operation	1	- Instruct the correct direction in common standard	2	4	Risk acceptance	N/A	N/A	2	1	2	4
20.1	QC Final packing	Carton box is storaged in spec	(1) Customer's requirement/agreement	Carton box is storaged out of spec	Dissatisfied customers	2	Do not control the storaged condition	1	- Control storage condition by setting alarm on system	2	4	Risk acceptance	N/A	N/A	2	1	2	4
20.2	QC Final packing	Impact label/Shockwatch is not actived by packing operation	(3) FOV internal requirement	Impact label/Shockwatch is actived by packing operation	Reduce performance	3	No instruct to do not touch on Impact label/Shockwatch during packing	1	- Instruct to OP to not touch on Impact label/Shockwatch during packing. - Training OP through PS and JBS	3	9	Risk acceptance	N/A	N/A	3	1	3	9

Item number	Process	Requirements	Requirement classification	Potential Failure Mode	Potential Effect(s) of Failure	Severity	Potential Cause(s) / Failure Mechanism(s)	Occurrence	Current Design/ProcessControls (Prevention/Detection)	Detect	RPN	Final Decision	Responsibility & Target Completion Date	Actions Taken	Severity	Occurrence	Detect	RPN
20.3	QC Final packing	Detect impact label/shockwatch active	(3) FOV internal requirement	Could not detect impact label/shockwatch actived	Reduce performance	3	Opearator skip this checking item	1	- Make clear inspection order in PS - Training operators based on process specification/JBS	4	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	1	4	12
20.4	QC Final packing	Detect impact label/shockwatch active	(3) FOV internal requirement	Could not detect impact label/shockwatch actived	Reduce performance	3	Mis-judgment	1	- Make clear and easy to understand criteria in PS, with appropriate figure/image	4	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	1	4	12
20.5	QC Final packing	Packing correct PO on the pallet	(1) Customer's requirement/agreement	Packing wrong PO on the pallet	Dissatisfied customers	3	Pick up wrong carton box	1	- OP pick up carton box follow label on pallet - Checking by software	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
21.1	Shipping	Pick up correct PO	(1) Customer's requirement/agreement	Pick up wrong PO	Dissatisfied customers	3	Pick up wrong Pallet	1	- OP pick up pallet follow label on pallet and Packing List - Checking by software	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
21.2	Shipping	Enough quantity of pallet	(1) Customer's requirement/agreement	Lack of quantity	Dissatisfied customers	3	Pick up wrong Pallet	1	- OP pick up pallet follow label on pallet and Packing List - Checking by software	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
21.3	Shipping	Enough quantity of pallet	(1) Customer's requirement/agreement	Surplus of quantity	Dissatisfied customers	3	Pick up wrong Pallet	1	- OP pick up pallet follow label on pallet and Packing List - Checking by software	1	3	**Risk acceptance**	N/A	N/A	3	1	1	3
21.4	Shipping	Detect impact label/shockwatch active	(3) FOV internal requirement	Could not detect impact label/shockwatch actived	Reduce performance	3	Opearator skip this checking item	1	- Make clear and update instruction for LOG	4	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	1	4	12
21.5	Shipping	Detect impact label/shockwatch active	(3) FOV internal requirement	Could not detect impact label/shockwatch actived	Reduce performance	3	Mis-judgment	1	- Make clear and update instruction for LOG	4	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	1	4	12
21.6	Shipping	Detect cargo damaged before	(3) FOV internal requirement	Could not detect cargo damaged	Reduce performance	3	Mis-judgment	1	- Make clear and update instruction for LOG	4	12	**Risk acceptance but need monitoring the result of risk**	N/A	N/A	3	1	4	12

Noted:

Severity: An assessment of the seriousness of the effect (as listed in the previous column) of the potential failure mode to the next components, subsystem, system, or customer if it occurs. Severity applies to the effect only.
Occurrence: This is the likelihood that a specific cause/mechanism (as listed in the previous column) will occur. Like severity, occurrence uses a ranking number.
Detect: Assessment of the ability of the current design controls to detect a potential design weakness.
Requirement classification: sellect 1 of 3 options: (1)Customer's requirement/agreement, (2)Common standard, (3)FOV internal requirement

POTENTIAL FAILURE MODE AND EFFECTS ANALYSIS

FMEA'S REVISION HISTORY

Preparing Date	PIC	Ver	Old content	New content		
				Description	Reason of change	Change requester
18-Oct-24	Khiem-10203 Viet-10546 Thang-10641 Trang-10401	11	SUS Packing process (#12.41)	SUS Packing process (#12.41)	Follow CAR: 24-ST707	
			Port Coloring process (#15.8): Using wrong color of marking pen-> Pick up wrong Occurrence 1: --> Final Decision: Risk acceptance No Action taken	Port Coloring process (#15.8): Using wrong color of marking pen-> Pick up wrong Occurrence: 3 --> Final Decision: Must take countermeasure and then evaluate the risk again Add action: 1. Apply checking color on Top Cap and Bottom Cap before select the marking pen for Visibility of color 2. Change the method of confirmation the mark pen (after pick up) with pre-coloring before apply whole port length. 3.Design new fixture to control sequence of usage marking pen matching with product's port fiber (coloring requirement).	Follow CAR: 24-ST702	
			Final Appearance process (#16.3): Occurrence: 1 No Action taken	Final Appearance process (#16.3): Occurrence: 2 --> Final Decision: Risk acceptance but need monitoring the result of risk	Evaluate score follow CAR: 24-ST707	
			Final Appearance process (#16.10): Occurrence: 1 No Action taken	Final Appearance process (#16.10): Occurrence: 2 --> Final Decision: Must take countermeasure and then evaluate the risk again Add action taken: Apply camera for image processing to detect swap port	Action for claim fiber swap	
			QC Casing process (#17.23) Do not have failure mode: Wrong label's content	QC Casing process (#17.23): Add failure mode: Wrong label's content	Review after trouble wrong label's content CAPA-AOP-24-006	
29-Jul-24	Thang-10641	10	N/A	Add Item 5.19 Fuse & Elongation	Applying CO: 9-PR-0014-9-FO-0001-4-RC-0054	PRE2 Manager
			N/A	Add Item 6.15, 6.16, 6.17, 6.18, 6.19 Neoceram packing	Applying 4M: 4-PR-007-4-FO-0007-4-RC-0155	
27-May-24	Khiem-10203	9	Item: 15.1: Laser printing content can be visible Item 15.3: SUS pipe appeanrace do not scratch, deformation	Remove Item: 15.1; 15.3 by simpify inpestion item SUS Apperance at Port Coloring process	Applying CO: 9-PR-0014-9-FO-0001-4-RC-0087	Trung DN
	TrangTNT - 10401		Item 18.1: QC 200% Appearance (Apply for product codes requiremented in QC flow chart): Can detect mismatch between SN on SUS and SN on product label Item 16.1: Final Appearance: Can detect mismatch between SN on SUS, SN on checksheet and SN on product label: current control: - Check SUS no with product label at Port coloring, QC Final Appearance, QC Appearance 200%. Item 17.1: QC Casing: Put SUS pipe in the tray/ sponge in correct direction: current control: Describle in PS and re-confirm at App 200%	Remove item: 18.1: QC 200% Appearance (Apply for product codes requiremented in QC flow chart): Can detect mismatch between SN on SUS and SN on product label Item 16.1: Final Appearance: Can detect mismatch between SN on SUS, SN on checksheet and SN on product label: current control: - Check SUS no with product label at Port coloring, QC Final Appearance Item 17.1: QC Casing: Put SUS pipe in the tray/ sponge in correct direction: current control: Describle in PS	Applying CO: 9-PR-0014-9-FO-0001-9-RC-0030	Duc.TNM
14-May-24	Trang-10401	8	Item: 20.4, 21.1, 21.2, 21.3: no control by software	Item: 20.4, 21.1, 21.2, 21.3: update control by software	Applying CO: 9-PR-0014-9-FO-0001-9-RC-0034	Duc.TNM
26-Dec-23	Trang-10401 Viet-10546 Thang-10641 Voc-10887 Huy-10893	7	NA	Update and correction content all process for FMEA more detail	Review FMEA follow new concept from BOM	PRE3 Manager