

QUALITY CONTROL FLOW CHART OF REFLECTION MONITOR

QC FLOW CHART: 4-QC-0504

Version: 04

Page: 1/8



4 -QC-0504/04

I. Purpose:

This QC flow chart is used for setting up the manufacturing process for Reflection Monitor in FOV

This QC flow chart concerns to Production (PRD), Production engineering (PRE), Quality assurance (QA), Logistic (LOG) and Planning (PLN).

II. Application:

This QC flow chart is applied to all kind of Fiber Laser Unit - Reflection Monitor and its sub-part manufactured in Fujikura Fiber Optics Vietnam Ltd as below:

Table II.1 List of Reflection Monitor:

No.	Product code (Main)	Product code (Sub)	Operation procedure	Product name	Product type	Purchase specification
1	FRM0001	FSL0006	4-OP-0504	Cezanne Reflection Monitor	Reflection monitor	SPC3-10706(3)
2	FSL0005	FSL0006	4-OP-0504	FLU-CMS6 Assy(ForC05)	Clad Mode Stripper 6	SPC3-10705(2)

04

Table III.2 General specifications

No.	Purchase specification	Specification category	Product application	Remarks
1	SPC3-10715(2)	Packing	Cezanne Reflection Monitor	
2	SPC3-10716(2)	Packing	Cezanne Reflection Monitor	
3	SPC3-10718(2)	Visual inspection	Cezanne Reflection Monitor FLU-CMS6 Assy(ForC05)	
4	SPC3-10719(2)	Visual inspection	Cezanne Reflection Monitor FLU-CMS6 Assy(ForC05)	
5	SPC3-10720(4)	Deliverable data	Cezanne Reflection Monitor FLU-CMS6 Assy(ForC05)	
6	SPC3-10690(1)	Outsourcing Specifications Appearance Inspection Standards (Mechanical Parts)	FUC-CMSU_Sub-Assy(ForC05)	
7	SPC3-10740(1)	Guidelines for the Management of Chemical Substances Contained in Products For FOV	FUC-CMSU_Sub-Assy(ForC05) FLU-CMS123 Assy(ForC05) FLU-CMS45 Assy(ForC05)	

This QC flow chart concerns to Production (PRD), Production engineering (PRE), Quality assurance (QA), Logistic (LOG) and Planning (PLN).

III. Reference Documents:

- FMEA: 0-PR-012-0-FO-001-4-RC-0183 ver 02

- Other reference doc. (if any)

+ 4-OP-0504: OPERATION PROCEDURE OF REFLECTION MONITOR

Checked by: Dao Ngoc Trung Date : (follow DMS)	Approved by: Division Manager Date: (follow DMS)
Prepared by: TungDD 10745 Date : 26 th Sep, 2024	Originator: TungDD -10745 Date: 3 rd Aug, 2023

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QUALITY CONTROL FLOW CHART OF REFLECTION MONITOR

QC FLOW CHART: 4-QC-0504

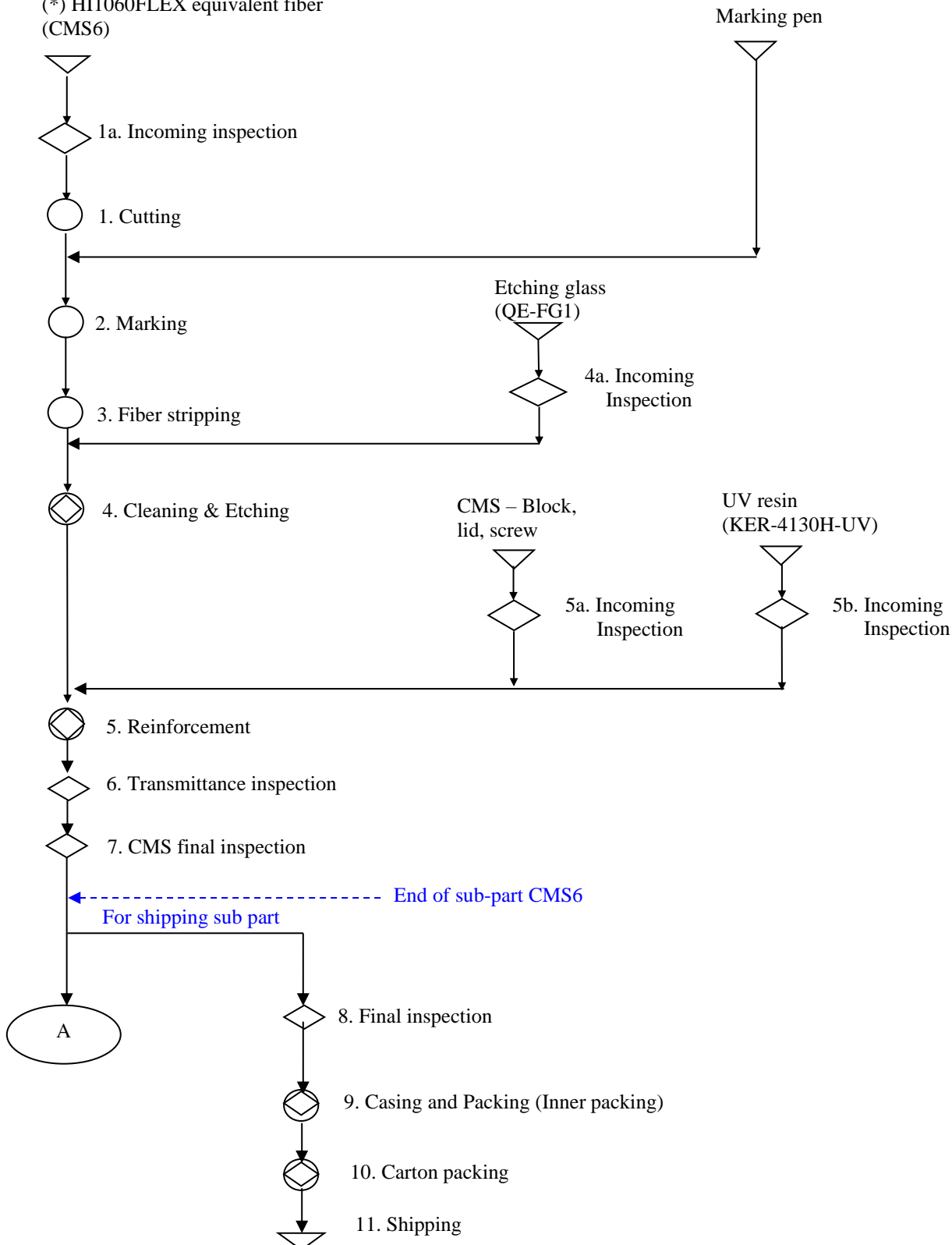
Version: 04

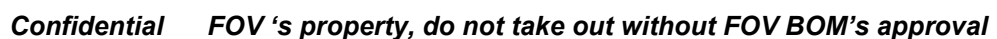
Page: 2/8

IV. Term definition:

CMS: Clad Mode Stripper

FLU: Fiber Laser Unit

V. Content:**V.1 QC Flow chart for all processes as shown in the following Figure:**(*) HI1060FLEX equivalent fiber
(CMS6)



QUALITY CONTROL FLOW CHART OF REFLECTION MONITOR

QC FLOW CHART: 4-QC-0504

Version: 04

Page: 4/8

2. Quality Control Items for each process:

Quality control items for detail of CMS as shown in the following table:

Process		Quality Control Items	Instrument	Sampling	Document	PIC
No.	Name					
1a	Incoming inspection (HI1060FLEX equivalent fiber - CMS6)	Refer to 9-PR-012				QAE PRD_INC
1	Cutting	Fiber type	Visual	All	4-OP-0504	PRD PRE
		Cutting length	Template			
2	Marking	Direction CMS	Label	All	4-OP-0504	PRD PRE
		Marking color	Marking pen			
		Marking position	Template			
		Marking length	Template			
		Fiber winding diameter	Winding tool			
3	Fiber stripping	Stripping position	Visual	All	4-OP-0504	PRD PRE
		Stripping times	Visual			
		Removing length	Template			
4a	Incoming inspection (QE-FG1)	Refer to 9-PR-012				QAE PRD_INC
4	Cleaning & Etching	Bare fiber appearance (No contamination, damaged)	Green light	All	4-OP-0504	PRD PRE
		Etching gel type	Visual			
		Etching gel expired date	Program			
		Etching temperature	Thermal control system & Etching jig			
		Etching length	Etching jig			
		Etching time	Timer			
		Removal Etching time (after Etching)	Timer			
		Etching appearance	Led flash loupe			
		Etching length after cleaning	Ruler			
5a	Incoming inspection (CMS block, cover, screw)	Refer to 9-PR-012				QAE PRD_INC
5b	Incoming inspection (UV resin KER-4130H-UV)	Refer to 9-PR-012				QAE PRD_INC
5	Reinforcement	UV resin expired date	Program	All	4-OP-0504	PRD PRE
		CMS block/lid appearance	Visual			
		Resin volume	Dispenser			
		Resin appearance	Led flash loupe			
		CMS direction	Visual			
		Fiber direction	Visual			
		Fiber position	Reinforcement jig			
		Tension	Weight			
		Prooftest	Weight			
		Proof time	Manual			
		UV intensity	UV system			
		Curing time	UV system			
		UV curing	Manual			
		CMS lid direction	Visual			
		Screw type	Visual			

QUALITY CONTROL FLOW CHART OF REFLECTION MONITOR

QC FLOW CHART: 4-QC-0504

Version: 04

Page: 5/8

		Screw quantity	Visual			
		Screw position	Visual			
		CMS lid appearance (after assembly)	Visual			
6	Transmittance inspection	Inspection condition (Temperature and humidity)	Thermal & humidity recorder	All	4-PR-014	PRD PRE
		Connection diagram	Visual	All	4-OP-0504	
		Stability time	Timmer			
		Transmittance	Transmittance inspection system			
		Transmittance judgement	Template			
7	CMS final inspection	Fiber length	Template	All	4-OP-0504	PRD_QC PRE
		CMS appearance (metal part)	Visual			
		Fiber appearance	Visual (Microscope in case of NC confirmation)			
8	Final inspection (For Sub part)	Product Structure	Visual	All	4-OP-0504	PRD_QC QAE
		Screw quantity of CMS	Visual/Template			
		Appearance of CMS	Visual			
		Fiber length	Template			
		Fiber appearance	Visual Microscope (Confirm NC)			
		Winding diameter	Winding Jig			
9	Casing and Packing (Inner packing) (For Sub part)	Plastic case appearance	Visual	All	4-OP-0504	PRD_QC QAE
		Packing position	Visual			
		Product quantity	Visual and Program			
		Tape length	Ruler			
		Tape quantity	Jig	1pc/roll		
		Label content	Visual			
		Label appearance	Visual			
		Label position	Visual			
10	Outer packing (For Sub part)	Cardboard appearance	Visual	All	4-OP-0504	PRD_QC QAE
		Cardboard type	Program			
		Packing quantity	Visual and Program			
		Label content	Visual	1pc/roll		
		Label appearance	Visual	All		
		Storage condition (temperature and humidity)	Thermal & humidity recorder			
11	Shipping (For Sub part)	- P/O No. - Quantity of product - Appearance of cargo when transferring to forwarder.	Visual	All	4-OP-0504	PLN
12a	Incoming inspection (WDM coupler)	Refer to 9-PR-012				QAE PRD_INC
12b	Incoming inspection (Tap coupler)	Refer to 9-PR-012				QAE PRD_INC
12c	Incoming inspection (630HP fiber)	Refer to 9-PR-012				QAE PRD_INC
12d	FBG filter	Refer to 9-PR-012				QAE PRD_INC
12e	Coreless fiber	Refer to 9-PR-012				QAE PRD_INC
12f	Incoming inspection (Reflective plate)	Refer to 9-PR-012				QAE PRD_INC

QUALITY CONTROL FLOW CHART OF REFLECTION MONITOR

QC FLOW CHART: 4-QC-0504

Version: 04

Page: 6/8

12g	Incoming inspection RTV resin (SE-9186)	Refer to 9-PR-012				QAE PRD_INC
12	Preparation	Terminated port for FBG	Visual	All	4-OP-0504	PRD PRE
		Terminated length for FBG	Template			
		Terminated port for Coupler (WDM, Tap)	Visual			
		Terminated length for Coupler (WDM, Tap)	Template			
		Fiber type	Visual			
		Fiber length (630HP fiber, coreless fiber)	Template			
		RTV resin expired date	Program			
		Fixing position (WDM and Tap coupler)	Visual			
		Fixing direction (FBG, WDM and Tap coupler)	Template			
		Connection each component	Spicer			
		Sleeve shrinkage	Heater of splicer			
		Winding diameter	Tape measure			
13a	Incoming inspection (AlN fiber trace)	Refer to 9-PR-012				QAE PRD_INC
13b	AlN Cleaning	Quantity per cleaning	Visual	All	4-OP-0504	PRD PRE
		Cleaning condition	Ultrasonic machine			
		AlN fiber trace appearance (no liquid)	Air gun			
		AlN fiber trace appearance	Visual			
13c	Incoming inspection (Silicone resin 6520A/B)	Refer to 9-PR-012				QAE PRD_INC
13d	Resin mixing	Resin type	Visual	All	4-OP-0504	PRD PRE
		Resin expired date	Program			
		Resin mixing rate	Weight			
		Mixing time	Mixing machine			
		Defoaming time	Mixing machine			
		Vacuum pressure	Vacuum machine			
		Vacuum time	Timer			
		Expired after vacuum	Visual			
13e	Incoming inspection (SE-9186 Clear)	Refer to 9-PR-012				QAE PRD_INC
13	Reflection monitor assembly	Connection each component	Visual	All	4-OP-0504	PRD PRE
		G1,G2 point appearance	Visual			
		Prooftest	Reinforcement jig			
		Resin mixing type	Visual			
		Resin amount	Visual			
		Fiber position in AlN trace	Template			
		Reinforcement tension	Weight			
		Temperature of resin curing	Heater			
		Heating time	Heater			
		Resin type	Visual			
		Resin expired date	Program			
		Fixing resin point	Visual			
		Waiting time	Timer			
		14	Reflection inspection			
Connection diagram	Visual			All	4-OP-0504	
Current of Light source	Visual					
Optical characteristic	Test report of coupler and measurement system					

QUALITY CONTROL FLOW CHART OF REFLECTION MONITOR

QC FLOW CHART: 4-QC-0504

Version: 04

Page: 7/8

		Judgment	Template				
15	Final inspection	Product Structure	Visual	All	4-OP-0504	PRD_QC QAE	
		CMS Screw quantity	Template				
		Resin fix quantity	Template				
		Resin fix position	Template				
		Resin appearance	Visual				
		Mechanical appearance	Visual				
		Product length	Template				
		Fiber bending diameter	Ruler/Template				
		Fiber appearance	Visual Microscope (NC confirm)				
		Fiber bending diameter	Template				
Fiber winding diameter	Winding tool						
16	Casing and Packing (Inner packing)	Plastic case appearance	Visual	All	4-OP-0504	PRD_QC QAE	
		Packing position	Visual				
		Product quantity	Visual and Program				
		Tape length	Ruler				
		Tape quantity	Jig	1pc/roll			
		Label content	Visual				
		Label appearance	Visual				
		Label position	Visual				
17	Carton packing	Cardboard appearance	Visual	All	4-OP-0504	PRD_QC QAE	
		Cardboard type	Program				
		Packing quantity	Visual and Program				
		Label content	Visual	1pc/roll			
		Label appearance	Visual				
		Storage condition (temperature and humidity)	Thermal & humidity recorder				
18	Shipping	- P/O No. - Quantity of product transferring to forwarder. - Appearance of cargo when transferring to forwarder.	Visual	All	4-OP-0504	PLN	

VI. Review:

- Regularly review of Production engineering or quality engineer (the engineer(s) designated by PRE/QAE manager and manager as necessary).
- When anybody in FOV found unsuitable points of this QC flow chart & would like to suggest revising it. (Refer to 0-Pr-001: Control of document)

VII. Record

No.	Record	Responsibility for keeping	Retention time
1	Related check sheet of PRD	PRD	11 years
2	Related check sheet of QA	QAE	11 years

Identification, storage, protection, retrieval & disposition of these records refer to 0-Pr-004 (Control of record).

Note: Nonconforming product, material shall be identified & controlled according to relevant procedures: 9-PR-008.

QUALITY CONTROL FLOW CHART OF REFLECTION MONITOR

QC FLOW CHART: 4-QC-0504

Version: 04

Page: 8/8

REVISION HISTORY

Date	Person	Ver	Description		Reason of change	Change Requester
			Old contents	New contents		
26 th -Sep-2024	TungDD – 10745	4	Table II.1: SPC3-10706(2)	Table II.1: SPC3-10706(3)	Customer requirement	PRE2 Manager
20th, Jul-2024	TungDD – 10745	3	Table II.2: SPC3-10720(3) N/A	Table II.2: SPC3-10720(4) Add SPC3-10690(1) Add SPC3-10740(1)	Customer requirement	PRE2 Manager
			N/A	5. Reinforcement: Remove: Resin appearance (Enough resin)	Expand Internal audit FY2024	
				6. Transmittance inspection and 15. Reflection inspection: - Add: Inspection condition (Temperature and humidity)		
			Section name - Incoming inspection: LOG, QAE - Shipping: LOG, PLN	Section name - Incoming inspection: PRD_INC, QAE - Shipping: PLN	Update FOV organization	
	Thuong HTH		15. Final inspection: - Fiber bending diameter Ruler/Template - Fiber winding diameter by Ruler/Template - Fiber turning	15. - Fiber bending diameter remove Ruler - Fiber winding diameter by winding Tool - Remove due to including Product Structure	Correct as actual control	Duc TNM
3rd May 2024	TungDD – 10745	2	N/A	2. Marking: Add item Marking color	Following CO: 9-PR-0014-9-FO-0001-4-RC-0065	PRE2 Manager
			III. FMEA: 0-PR-012-0-FO-001-4-RC-0183 version 01	III. FMEA: 0-PR-012-0-FO-001-4-RC-0183 version 02		
			-	5. Reinforcement: Remove “Resin volume”	Duplicated	
Aug 3rd, 2023	TungDD – 10745	1	-	New version	New product	PRE3 Manager