

Date 9 Oct, 2023

No. SPPU-10371 (4)

Messrs. FOV Ltd.

SPECIFICATION



FOR

Trillian Shuffle Assy

(Fiber Glass Array – Cerrocast – MPO, LC Assy for Lumentum)

Fujikura internal information

提出仕様書No. Fujikura Specification No. (Proposed to customer)	先方仕様書No. Customer Specification No.
PNJHE-1321-64-12 Rev. 5	AD22166179 REV012

仕様書がない場合には斜線  を入れること。(空欄にしない)
In the absence of Fujikura/Customer specifications, Fill an
oblique line  in the column. (Don't leave the column blank.)

Prepared by T.Nakane

*Fiber Optics Components Department
Optical Components Division*

Approved by H.Hishikawa

*Manager,
Fiber Optics Components Department
Optical Components Division*

Fujikura Ltd.

Working Instruction Details

SPPU-10371 (4)

1/11

Product Name	Trillian Shuffle Assy
Product Drawing No.	PNJHE-1321-64-12 Rev.5
Fujikura Product No.	HHE-1321-004-001

No.	Item		Specifications		Inspection Quantity	Place/Cotent Record		Note	
						Record	TR		
1	Product name		Fujikura Product Name	Trillian Shuffle Assy	All	Record All	Record Test Result		
2	Quantity		Comply to the quantity specified in Procurement Specification		All	Record All	Record Test Result		
3	Structure		Same as the structure defined in PNJHE-1321-64-12REV5, Fig.1-1, Fig.1-2 and Fig1-3.		All	Record All	Record Test Result	Measure dimension of 140+/-2 as Fig.1-1 for all product.	
4	Appearance		No damage, scratches that may lead to product non-functionality		All	Record All	Record Test Result	Refer to Lumentum Doc.21152930 and 22166125	
5			Fiber	No damage, No peel off, No abnormality		All	Record All	----	
6			Connector endface and cap	Use cap after cleaning and clean several connector endface before shipping.		All	Record All	----	
7			FAU	PNJHE-1321-22-03 (Latest version)		All	Record All	----	FOV PS No. :9-QC-001-9-PS-061-1532
8			Cerrocass tube	PNJHE-1321-22-02 (Latest version)		All	Record All	----	FOV PS No. :9-QC-001-9-PS-061-1554
9			Cerrocass after soldering	PNJHE-1321-22-03 (Latest version)		All	Record All	----	FOV PS No. :9-QC-001-9-PS-061-1532
10			O/E Cap	PNJHE-1321-22-01 (Latest version)		All	Record All	----	FOV PS No. :9-QC-001-9-PS-061-1531
11			Fiber end face for MT	PNJHA-0038-40-64/RQFU-10136 (Latest version)		All	Record All	----	
12			Fiber end face for LC	PNJHA-0038-40-63 (Latest version)		All	Record All	----	
13			Ferrule end face for MT	PNJHA-0038-40-25/RQFU-10077 (Latest version)		All	Record All	----	
14	Connection (MPO side)		No mechanical abnormalities during connection.		All	Record All	Record Test Result		
15	Optical Performance for Connector	Insertion Loss	12MPO	Not more than 0.6dB	All	Record All	Record All	@1.55um	
16			LC	Not more than 0.3dB	All	Record All	Record All	@1.55um	
17		Return Loss	N/A		----	----	----	RL measurement is not necessary	
18	Inspection for Carrocass	Leak test	<5.0*10 ⁻¹⁰ Pa m3/s by He leak tester		All	Record All	Record All	Record below items for all cerrocass tube. 1. Value of leak 2. Pressure	
19	End Face Geometry for MT		12MPO side	PNJHA-0038-40-52/RQFU-10074 (Latest version)	All	Record All	----		
20	Check for fiber breakage by using a Precision Reflectometer		Need		All	Record All	Record All		
21	Ident check		Same as the numbering arrangement indicated in the drawing, Fig.1-2		All	Record All	----	Apply ID check master plug as Fig.4	
22	Packaging	Loading Condition	Package in such a way that will prevent damages during transportation		All	----	----		
23		Display	Label the product serial number. (Fig.2)		All	Record All	----		
24			One indicate on the carton box as Fig.3.		All	Record All	----		
25	Attachment		Submit the test results for Fujikura separately		All	Record All	----	According to template 1/2 and 2/2, without RL.	
26	Substance Control Requirements		PNJAA-0068-25-01 /SPPU-01019 (Latest version)		----	----	----	Confirm all of materials	
28	Others		4M change		All	Report all	----	Any 4M changing shall be report before apply Refer toLumentum Doc ID: 10129520-136 (R010)	
29	Traceability		manufacturing and inspection record shall be kept at least 5years.		----	Record All	----		

Product name

Chart 1: Product name

No	品名/Product name	型番/Fujikura Product No.	物品番号/Customer Product No.
1	Trillian Shuffle Assy	HHE-1321-004-001	AD22166179REV012

Original		Remark
Revision		
Revision		

(*) Apply Specification of latest version to all parts.

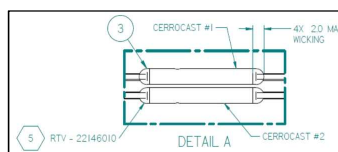
Component	No.	Item	Drawing No. (*)	Material	Qty	Vendor (first time)		Remark			FOV Material Code
	1	FAU_TRILLIAN	PNJHE-1321-72-03	-	1	AFOP	(FJK-CNC)	Supplier Spec No. : PFA-PMZD-U30A2 (*) fiber have damage in repairable area, it can be use by repair. ※Permission to use any color decolorized fiber. (customer approved)			SOF0147
	2	Pre-Angled 12MT-MPO-TP (for 80um fiber)	PNJHY-0005-22-86	PPS	7	FHO or FJK	(FJK-CNC)	PNJHY-0005-22-77 is available too.			CNF0293
	3	12MT Boot	PNJHY-0005-71-25	AR-NEO-80	7	YUWA	(FOV)				CAN0177
	4	Housing SS	PNJHY-0010-71-184	PBT	7	MUTO VN	(FOV)				CAN1114
	5	Spring (C) N	PNJHY-0010-71-84/DRPT-00408	SUS301	14	FOV (Cheye) or FJK	(FOV)				SPR0072
	6	Coupling N (Blue)	PNJHY-0010-71-90/DRPT-10738	PBT	1	YUWA	(FOV)				CAN1426
	7	Coupling N (Orange)	PNJHY-0010-71-119/DRPT-10739	PBT	1	YUWA	(FOV)				CAN1436
	8	Coupling N (Gleen)	PNJHY-0010-71-100/DRPT-00353	PBT	1	YUWA	(FOV)				CAN1442
	9	Coupling N (Beige)	PNJHY-0010-71-103/DRPT-00355	PBT	1	YUWA	(FOV)				CAN1403
	10	Coupling N (Red)	PNJHY-0010-71-102/DRPT-1065	PBT	1	YUWA	(FOV)				CAN1437
	11	Coupling N (Black)	PNJHY-0010-71-99/DRPT-00354	PBT	1	YUWA	(FOV)				CAN1435
	11	Coupling N (Aqua)	PNJHY-0010-71-137/DRPT-00409	PBT	1	YUWA	(FOV)				CAN1441
	12	Spring Push SS	PNJHY-0010-71-185	PBT	14	MUTO VN	(FOV)				CNH1227
	13	Spring (D)N	PNJHY-0010-71-187	SWPB	14	FJK	(FOV)				SPR0094
	14	Pin Clamp SS-M	PNJHY-0010-71-186	PBT	7	MUTO VN	(FOV)				CNH1228
	15	Premier Pin 4(Lead Free)	PNJHY-0010-71-158/DRPT-10517	SUS (NSSC550)	14	FJK	(FJK-CNC)				PIN0039
	16	Cap B	PNJHY-0010-71-95/DRPT-01178	PP	7	YUWA	(FOV)				CAN0066
	17	SILICONE TUBE (YELLOW) DIA. 1.4	PNJAA-0024-22-03	Silicon	(**)	-	(FOV)	(**) Up to product length			MPTSSY0010
	18	HYTREL 6356 0.5X0.9 BL or NA (NIREI)※	PTB0339 or PTB0321	HytreI	(***)	-	(FOV)	(**) Up to product length BL:Color Blue,NA : Natural			PTB0339 orPTB0321
	19	Cerrocass Tube with acid etching	PNJHE-1262-71-38A	Brass	2	Material: Belton Etching: KEIDEN VN or KEIDN JP	(FJK-CNC)	1) One time of re-etching at KEIDN VN is acceptable. 2) Expired date of tube after etching is 1 month. 3) Additional disposal: Cerrocass Tube required acid etching and dry box storage. 4) Supplier Spec No. : PD22022968			MCN0190
	20	O/E Cap	PNJHE-1262-71-16B	-	1	Shengda	(FJK-CNC)	Supplier Spec No. : PD22045645			MCN0204
	21	LC Connector kit (SM, 0.9mm, for 80um fiber)	-	-	5	Orbrey	(FOV)	K-04-0028-0A-2-2 (PNJHY-0048-22-133/ SPSU-10911) is acceptable			
	21-1	LC Ferrule	C-01-3287-0A-2 (Trial No. : KK-071-04-0A-2-2)	Zirconia	5	-		PNJHY-0048-22-132			CNF0335
	21-2	LC Housing parts (SM BTW)	k-04-0008-0A (PNJHY-0048-22-123A/SPSU-10673)	-	5	-		(*)without ferrule			CNH1147
	22	Tepra white 6mmx8m TURIN	SS6K	-	5	-	(FOV)	Label for LC			
	23	Silicon pipe	-	-	5	-	(FOV)	ID: 2mm: OD: 4mm			PTB0403
	24	Sroral silicon tube BLUE	-	-	(250mm)	-	(FOV)	coverd shuffle area Silicon tube 4.5 x5.5 mm blue			MPTSSY0024
	25	Kapton tape	P-221	-	(40mm)	-	(FOV)	width :12.7mm			PLT0096
	26	Yellow masking tape	234J-10	-	(40)	-		3M 234J PLUS width 10mm			
27	Alloy IND 58B142SN SHOT	-	-	-	-	(FOV)	Bi/Sn solder composition for Cerrocass Bi: 58.0%+0.5, Sn: 42.0%+0.5 LIQUIDUS TEMPERATURE: 138deg+/-3 SOLIDUS TEMPERATURE: 138deg+/-3			ALS0001	
Document No.		Product Name	Trillian Shuffle Assy			Qty	TR	Shipping Date	Due Date	Customer	PO No.
		Fujikura Product No.	HHE-1321-004-001			1					
		Proposed drawing number	PNJHE-1321-64-12 Rev. 5								

※2 If PTB0339 is out of stock, switch to PTB0321 at any time.

Mixing of materials within the same PO is not allowed.

In this case, Separate POs. (Ex.: If there are PO 500pcs,

PO1 (PTB0339) 240 pcs PO2 (PTB0321) 260 pcs)

[illegible]

Apply Super small Super X onto to the end of MT boot for EPOTEK353ND not to flow out.
Applied Super X shall not be over MT boot and not touch or push Pin Cramp.



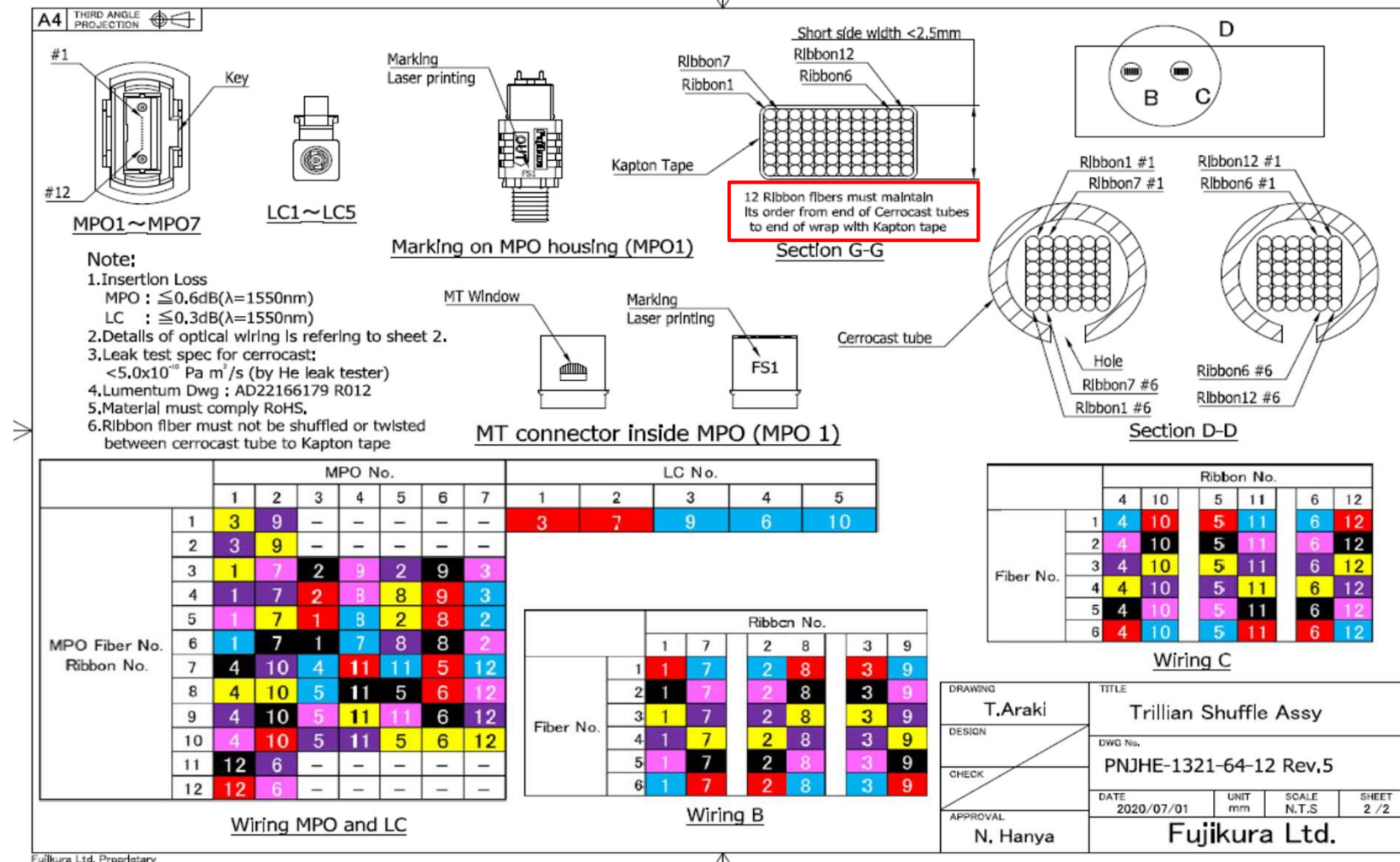
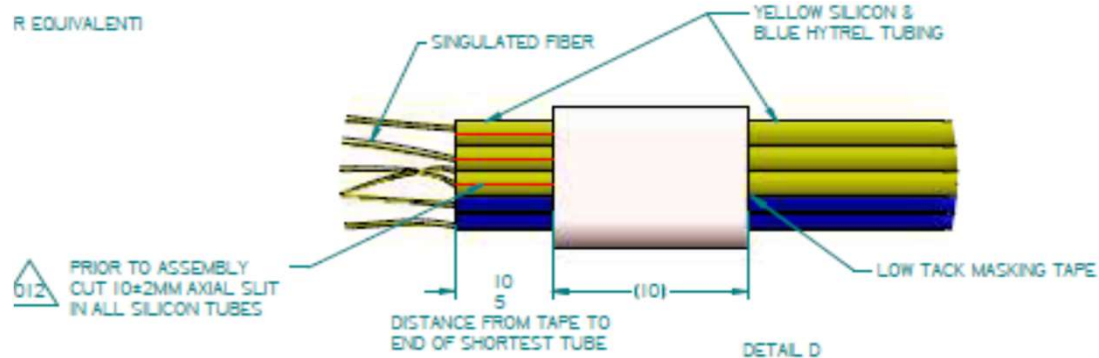
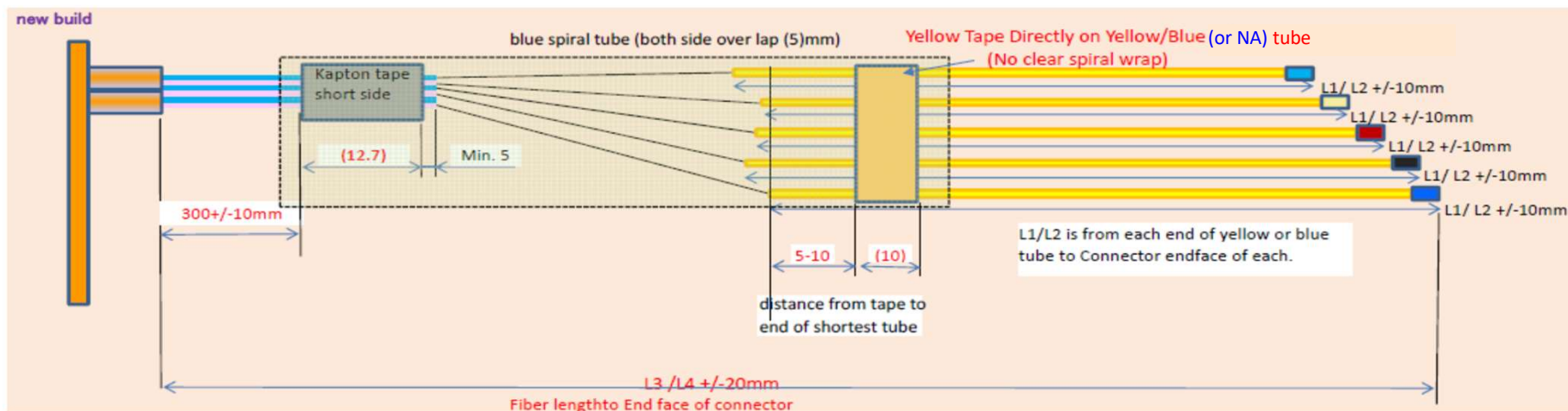
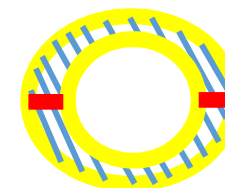


Fig. 1-2



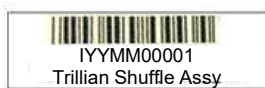
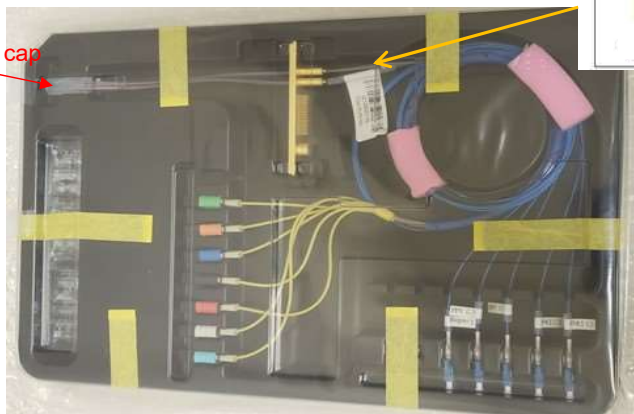
tube slit shall be both side



See X- section of tube slit

Packing method : Fig 2

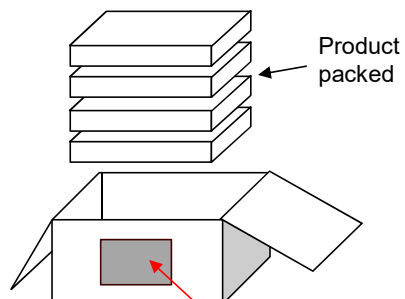
FAU
attached
protecting cap



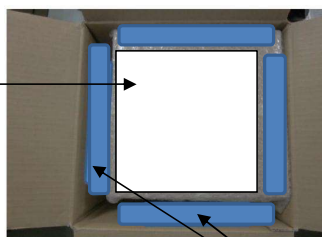
Legend: IYYMM00001
Character to identify product PNJHE-1321-25-11*
YYMM: year and month manufacturing
00001: 5 digits increase by monthly

Example of label indication


Label attach on spiral tube as below
(customer request to prevent for fiber damage)



Indication item for Carton box label : Fig 3



Buffer material

受注番号 Entry No.	118068261-1		発注番号 Control No.	1906949-1	
品目 C D Product Code	HHE-1321-004-001		管理 C D Stock Code		
品名 Product Name	Trillian Shuffle Assy				
客先品名 Customer's Product Name	AD22166179 REV012				
数量 Quantity	12	PC	条長 Length	T. No.	1
製造年月 Manufacturing Date	2018	年 Year	8	月 Month	1 / 5
			個口 Box No.		
Fujikura					

*Use EDI data from Fujikura Ltd.

Fig. 3 Indication item for Carton box label

Note:

- 1) Barcode shall be used barcode 3 of 9 format

Environmental requirement

Follow the PNJAA-0068-25-01/[SPPU-01019](#)(latest version)
: General Specification on Substance Control Requirements

Drawing of ID check master plug

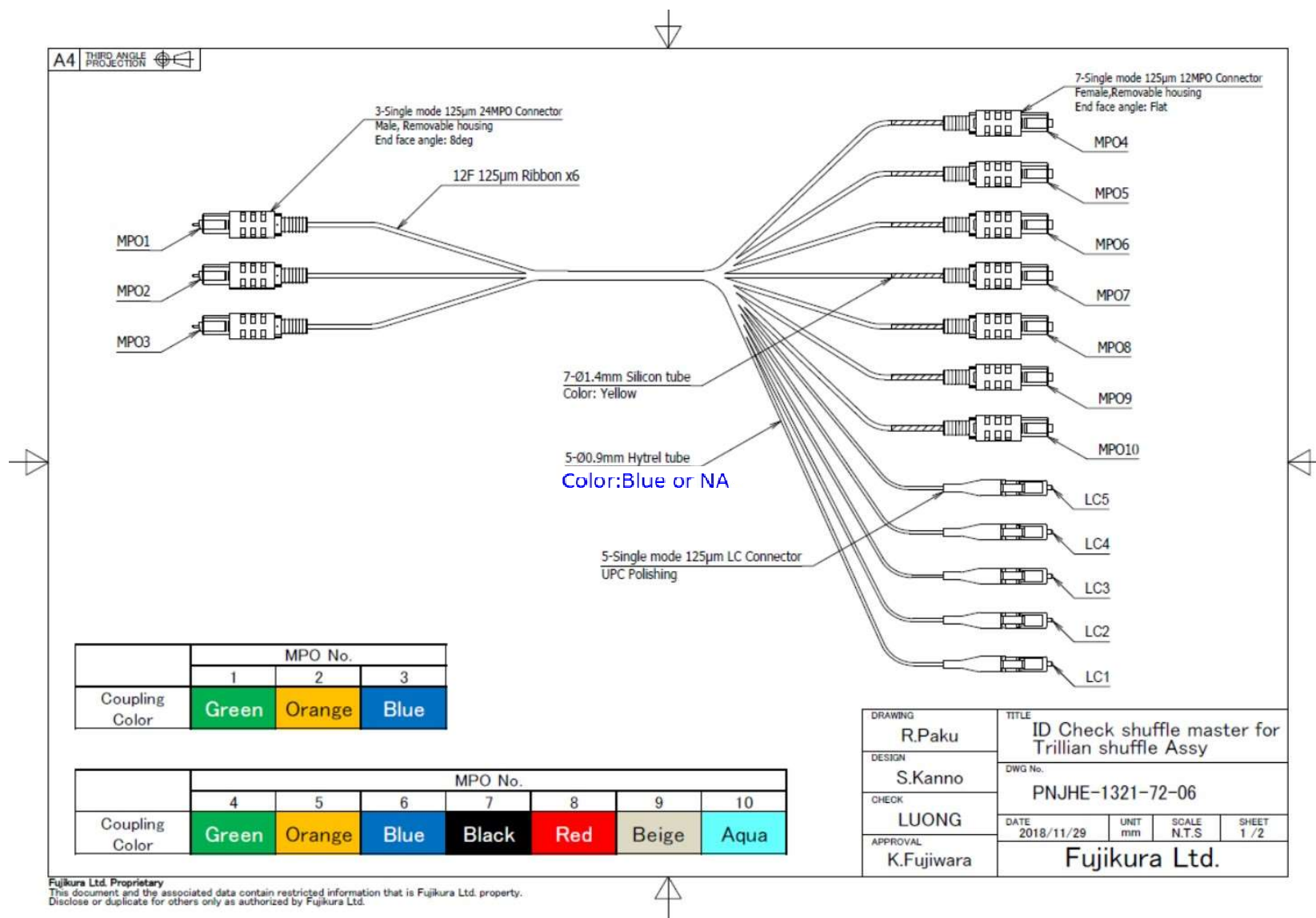


Fig. 4

Test Inspection Report

Issue date : 9-Feb-2018

Fujikura Ltd.

Product Name:	Trillian Shuffle Assy
Fujikura Product No.	HHE-1321-004-001
Customer Product No.	AD22166179REV012
Lot No:	(FJK P/O No.)
Quantity:	xx pcs

1. Test Results

Test Item		Inspection Quantity	Specifications	Test Results	Judgement
Structure and Dimensions		All	Conform to Specifications	Conform to Specifications	Good
Optical Characteristics	Insertion Loss for 12MPO	All	Not more than 0.6dB	Not more than 0.6dB	Good
	Insertion Loss for LC	All	Not more than 0.3dB	Not more than 0.3dB	Good
Inspection for Carrocast	Leak test	All	$\leq 5.0 \times 10^{-10}$ Pa m ³ /s by He leak tester	Conform to Specifications	Good
Appearance		All	No deformation, damage or scratches that may lead to product failure	No deformation, damage or scratches that may lead to product failure	Good

2. Test Condition

Light Source	LED
Wavelength	1550nm
Measurement connector	Measure by Master Reference Connector (MPO connector)

3. Results for Insertion Loss Inspection

Style example

Serial No	Connector	Insertion Loss (MPO≤0.6 dB, LC≤0.3 dB)												Max Value	Leak test result				Judgement
															Value of leak		Pressure		
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12		Cerrocact 1	Cerrocact 2	Cerrocact 1	Cerrocact 2	
	LC1	-	-	-	-	-	-	-	-	-	-	-	-						Good
	LC2	-	-	-	-	-	-	-	-	-	-	-	-						
	LC3	-	-	-	-	-	-	-	-	-	-	-	-						
	LC4	-	-	-	-	-	-	-	-	-	-	-	-						
	MPO1	-											-						
	MPO2																		
	MPO3																		
	MPO4																		
	MPO5																		
	MPO6						-	-											

Ident : 線番確認	Good
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Rev.	Date	History	Reason	Issued	Checked	Approved
	2018. Sep.28	Issued		Kanno	Shida	Fujiwara
A	2018 Oct.19	<p>Page 1: Add mentions of appearance spec for some material.</p> <p>Page 3: Add "Plastic tape, no. 7239".</p> <p>Add "Alloy IND 58BI42SN SHOT"</p> <p>Page 4, 5: Change drawing</p> <p>Page 6: Add label indication.</p>	<p>To make clear for appearance spec by adding FOV PS No.</p> <p>Customer requests to apply marking for shuffle area.</p> <p>To make clear for alloy material</p> <p>Customer's request was changed. To make clear for some dimensions for Cerrocast.</p> <p>To make clear for label indication.</p>	Kanno	Shida	Fujiwara
B	2018 Nov.12	<p>Page 1: Change appearance spec No. for FAU, Cerrocast, and O/E Cap.</p> <p>Page 4: Add detail about fixed tape and spiral silicon tube.</p> <p>Page 6: Change label content</p>	<p>Change to Fujikura No. instead of FOV PS No.</p> <p>To make clear for design.</p> <p>Change to correct content for this product.</p>	Kanno	Shida	Fujiwara
C	2019 Feb. 12	<p>Page 3: Changed LC connector from "C-09-4286-0A-2-2" to "KK-071-04-0A-2-2" & "C-09-1062-0A (without ferrule)".</p> <p>Page 4: Added UV adhesive length 3~4mm.</p> <p>Added picture of yellow tape for shuffling area</p> <p>Page 8: Added drawing of ID check master plug.</p>	<p>For cost reduction. JEHE-58-19-0001</p> <p>To improve fiber break problem. JEHE-58-19-0002</p> <p>To make clear for the structure.</p> <p>To make clear for the structure of ID check master plug.</p>	Kanno	Shida	Fujiwara
D	2019 Feb.21	<p>Page 3: Changed LC ferrule P/N to "C-01-3287-0A-2".</p> <p>Page 4: Added Super X application to the end of MT boot.</p> <p>Page 6: Changed the packing picture.</p>	<p>Adamant issued the official P/N.</p> <p>To prevent a fiber break. JEHE-53-19-0007</p> <p>The long pink sponge is not necessary.</p>	Shida	Uenoyama	Sawada

Rev.	Date	History	Reason	Issued	Checked	Approved
E	2019 25-Oct	Fujikura spec No revised to Rev. 2 customer Dwg Rev009 Page 1. No.20 Check reflect change to Need Page 3 Changed components MPO housing, Spring Push, Pin clamp, Spring, Premier Pin PNJHY-0010-71-98→184 PNJHY-0010-71-89→185 PNJHY-0010-71-88→186 PNJHY-0010-71-13→187 PNJHY-0010-71-180→158 Change fiber length Fig1-1 (PNJHE-1321-64-12 Rev.2) Change shuffle area tubing method Packing label customer product name REV005 → REV009	Customer request mistake apply to actual FOV process Design change of MPO housing preventive action for fiber damage JDHY-22-19-4018 JDHY-22-19-4033A customer request customer request tube dia should be less than 3mm for wiring in module.	Araki	Sawada	Hanya
F	2019 11. Nov	Changed drawing Customer Dwg REV009 → REV010 FJK Dwg Rev2 → Rev3	LC fiber length changed to 700mm. mistake design by customer.	Araki	Sawada	Hanya
G	2020 27. Apr	Changed drawing Customer Dwg REV010 → REV011 FJK Dwg Rev3 → Rev4 changed components kapton tapem, 3M yellow tape	Customer request changing Fiber length, shuffle area length fix ribbon fiber by kapton tape	Araki	Sawada	Hanya
(1) H	2020 3. Sep	Changed drawing Customer Dwg REV011 → REV012 FJK Dwg Rev4 → Rev5 Fig 1-3 added Additional work slit yellow tube Fig.2 review the packaging photo Changed TR format delete S/N , changed IL tabel	Customer request changing Fiber length, shuffle area length fix ribbon fiber by kapton tape Customer request align with current packing method FOV request align with current packing method	Araki	Sawada	Hanya
(2) I	2022 11.Feb	1/11 working instruction detail No.3 Drawing No -Rev5 No.4 added customer doc No.for appearance added OBL3 DOC No. No.28 added 4M change No.29 added traceability 3/11 component update FOV material code changed LC housing 4/11 Fig1-1 added minimize fiber tangle 7/11 label added to use spiral tube	correction make clear the spec apply to OBL3 action for customer claim customer request correction and update EOL by supplier 4M change approved by JEHE-58-19-0003 customer request make clear the actual	Araki	Sawada	Hishikawa
(3) J	2022 13.Apr.	Component chart Item1 FAU added comment to using for repair of fiber damage Fig 2 changed packing tray	Make clear the using of repairable FAU changed packing tray for reduce fiber damage. Customer approved 4M change No.JE-58-21-1142	Araki	Sawada	Hishikawa

Rev.	Date	History	Reason	Issued	Checked	Approved
(4) K	2023 9.Oct	<p>[1] Added Hytrel tube color NA in P3 BOM No.18.</p> <p>[2]The OBL specification number is also listed in the cited specification.</p> <p>[3]In P3 BOM NO.1,it clearly states permission to use any color decolorized fiber.</p>	<p>[1] Since BL has become EOL, NA will be switched as soon as stock of BL runs out. (JE-58-22-1172)</p> <p>[2]To trace eaiser.</p> <p>[3]For Approval by the customer</p>	Nakane	Araki	Hishikawa