Purchase Specification
For Cable Grip Splice

1. Scope

This specification applies to the product named Cable Grip Splice (originally for NTT).

2. Structure and Composition

Table 1 -

	Part Name	Structure	Quantity	Remark
1	Cable grip splice	ASMS1-001B3	1	Table 2
2	Clamp (GMS) VN	ASMS2-090A3	2	-
3	Cable holder	ASMS3-060G3	0.1	1pc/10 products
4	Clamp (GMS) VN	ASMS2-090A3	0.2	2pcs/10 products
5	Simplified stripper (S-P)VN GREEN	AMMS2-146B3	0.1	1pc/ 10 products

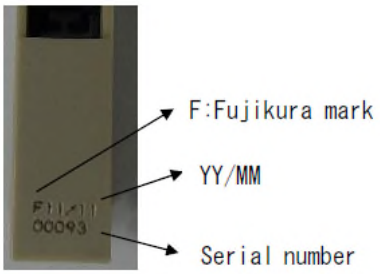
Table 2 – Compositon of Cable Grip Splice

	Part Name	Structure	Quantity	Remark
1	Single Fiber Mechanical Splice [F]	AMSP1-005A3 YX-047-006-A01-01C	1	Table 3
2	LEVER (GMS) VER2 (VN)	ASMS2-089A3	2	-
3	Wedge (GMS)G (VN)	ASMS3-160B3	2	-
4	Housing (GMS)G (VN)	ASMS3-159B3	1	-

Table 3 – Compositon of Single Fiber Mechanical Splice[F]

	Material Name	Drawing No.	Quantity
1	Upper Body MS (M)	AMSP2-004A3 YX-047-A-0014A	1
2	Upper Body MS (L)	AMSP2-002A3 YX-047-A-0016A	1
3	Upper Body MS (R)	AMSP2-003A3 YX-047-A-0015A	1
4	Lower Body MS	AMSP2-001A3-1,2 YX-047-A-0013A-1,2	1
5	Sleeve MS (VN)	AMSP2-017B3	1
6	Silicone Gel	OC 431A-LVP	0.01g

(1) Index matching gel (Silicone Gel OC 431A-LVP) must be applied at the center of Lower body.
(2) Upper Body (L), (M) and (R) set on Lower body.
(3) Insert Sleeve MS to Lower body and Upper body.
(4) Manufacturing Year/Month and Serial Number must be printed on the lever by Laser marking (refer to figure below).



(5) Manufacturing date must be printed on the mechanical splice by ink printing (refer to figure below).
Format: FVYYMMDD

(5) Assemble each parts.
(6) Packaging.

3. Optical Performance Criteria

Product Name	Reference Cord	Wavelength	Insertion Loss	Return Loss
Cable Grip Splice	Drop Cable	1310nm	<0.10	>50dB
		1550nm	<0.10	>50dB

1) Measurement wavelength is at 1310nm and 1550nm.
2) Loss inspection should be measured by Reference cord.

4. Mechanical Performance Criteria

Measurement Procedure : IEC60874-1, JIS C 5961
Measurement wavelength is at 1310nm and 1550nm.

(1) Axial Pull
a. 10.0N load applied to connecting part of Single Fiber Mechanical Splice. Fiber length 1~2m.
b. Loss variation before and after test shall be <0.2dB.
c. No visual evidence of mechanical damage.
d. Measurement wavelength is at 1.31±0.01μm and 1.55±0.01μm.

(2) Flex
a. 0.05N load applied to connecting part of Single Fiber Mechanical Splice. Fiber length 1~2m.
b. Flex the connector about a pivot for 10 cycles.
c. Loss variation before and after test shall be <0.2dB.
d. No visual evidence of mechanical damage.

e. Measurement wavelength is at 1.31±0.01μm and 1.55±0.01μm.

(3) Vibration
a. Sinusoidal vibration with amplitude 1.5mm and frequency sweep 10~55Hz applied in 3 perpendicular axis, 2hrs/axis.
b. Loss variation before, during and after test shall be <0.2dB.
c. No visual evidence of mechanical damage.
d. Measurement wavelength is at 1.31±0.01μm and 1.55±0.01μm.

(4) Shock
a. In packing condition, half-sine shock pulses with duration 6ms and peak acceleration 100G applied 3 times in each of 3 perpendicular axis.
b. After (a), measure optical performance must be within the criteria stated in clause 3 – Optical Performance Criteria.
c. No visual evidence of mechanical damage.

5. Environmental Performance Criteria

Measurement Procedure : IEC60874-1, JIS C 5961 (UV rays resistance JIS A 1415)
Measurement wavelength is at 1310nm and 1550nm.

(1) Thermal Cycling
a. Termperature variation -40°C to +70°C for 10 cycles, 6hrs/cycle.
b. Loss variation before, during and after test shall be <0.3dB.

(2) Condensation
a. Termperature variation -40°C to +25°C to +65°C with 95% R.H. at 65°C for 10 cycles, 24hrs/cycle.
b. Loss variation before, during and after test shall be <0.3dB.

(3) Thermal Aging (High Temperature)
a. Termperature at +70°C for 240hrs.
b. Loss variation before, during and after test shall be <0.2dB.

(4) Thermal Aging (Low Temperature)
a. Termperature at -40°C for 240hrs.
b. Loss variation before, during and after test shall be <0.3dB.

(5) Service life test
a. 85°C for 336hrs.
b. +60°C with 95% R.H. for 336hrs.
c. -40°C to +23°C to +70°C for 42 cycles, 8hrs/cycle.
d. Loss variation before, during and after test shall be <0.3dB.

(6) Corrosive Atmosphere
   a. Expose to 5% concentration salt mist environment with temperature maintained at 35°C for 24hrs.
   b. Loss variation before and after test shall be <0.2dB.
   c. No visual evidence of corrosion.

(7) After test (1)~(6), no visual evidence of damage on Cable Grip Splice.

6. Dimension

After assembled with cable, meet the dimension of ASMS1-002A3.

7. Functional Performance Criteria

(1) Cable Holder
   a. Clamp can be set to Cable Holder.
   b. Cover can close.
   c. 0.25mm fiber can be cut at 25 ±0.1mm from the top of cable clamp.
   d. Grey in color.

(2) Cable Clamp
   a. Grip drop cable over 5kg.

(3) The length of fiber bend
   a. Measure the length (L1) from MS holder end to clamp end with the wedge.
   b. Measure the length (L2) from MS holder end to clamp end wthout the wedge.
   c. L1 – L2 = ΔL 0.3mm < ΔL < 0.4mm

8. Inspection Checklist

A. Cable Grip Splice

Test Items		Pre-Shipping	Custom (FOV)	Sample Size	Quality Assessment Criteria
Structure**		○		All	Conform to Section 2
Composition		○		All	Conform to Section 2
Appearance**		○		All	No damage, cracks or breakage
Insertion Loss**	Master	◎		SAMPLE	As specified in Section 3 above; 3 samples/combination of maker lot of each part
Return Loss**	Master	◎		SAMPLE	As specified in Section 3 above; 3 samples/combination of maker lot of each part
Quantity		◎		All	As specified exactly
Dimensions**		◎		SAMPLE	Conform to Section 6; Perform by a combination of lot of each part 3 samples/combination of maker lot of each part
Functional		○		SAMPLE	Conform to Section 7;

Performance				3 samples/combination of maker lot of each part
Thermal Cycling		○	SAMPLE	As specified in Section 5(1) above
Condensation		○	SAMPLE	As specified in Section 5(2) above
Thermal Aging (High)		○	SAMPLE	As specified in Section 5(3) above
Thermal Aging (Low)		○	SAMPLE	As specified in Section 5(4) above
Service life test		○	SAMPLE	As specified in Section 5(5) above
Corrosive Atmosphere		○	SAMPLE	As specified in Section 5(6) above

Note: ○ Pass or Fail
◎ Data → Pass or Fail
Custom test "FOV" items to be performed upon request from FAL.
** These items can be performed as part of the manufacturing process.

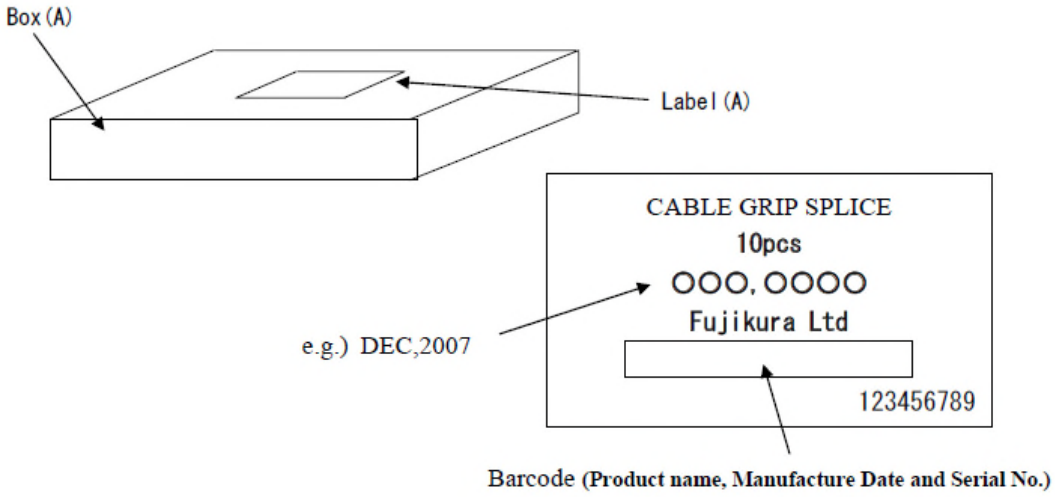
B. Inspection checklist (Jig)

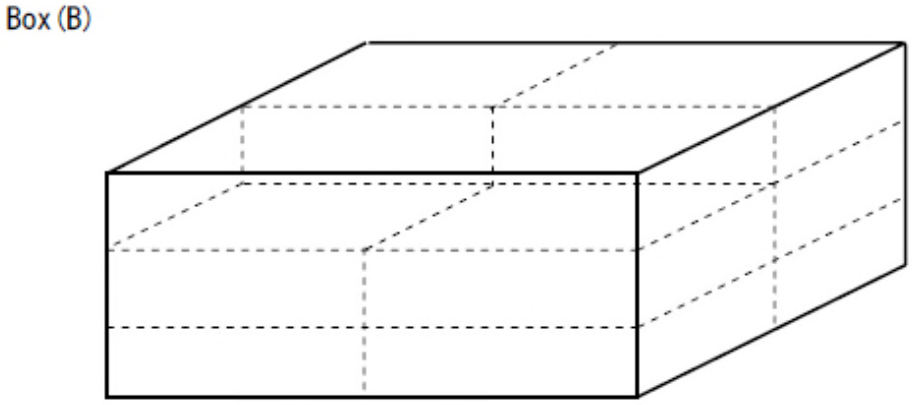
Test Items	Pre-Shipping	Custom (FOV)	Sample Size	Quality Assessment Criteria
Structure**	○		All	Conform to Section 2 and Drawing
Composition	○		All	Conform to Section 2
Function	○	○	All	Conform to Section 7

Note: ○ Pass or Fail
◎ Data → Pass or Fail
Custom test "FOV" items to be performed upon request from FAL.
** These items can be performed as part of the manufacturing process.

9. Packaging

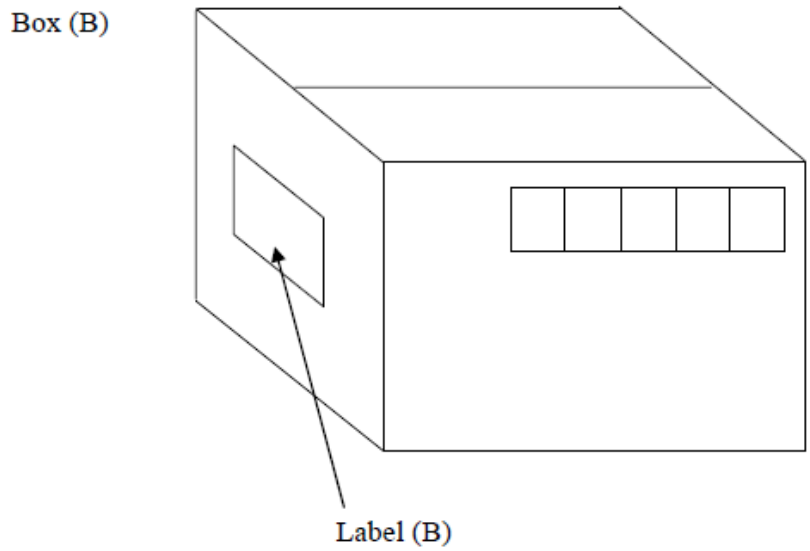
(1) End products (Table-2) are to be packed into PE bag (85x120mm-PLB0035).
(2) One cable holder, two cable clamp are packed into PE bag (60x85mm-PLB0001).
(3) 10 packaged products from (1), one packet of Attachment from (2) and "Assembly manual for Cable Grip Splice-EN/VN (TD-1807-01)" are to be packed into Box A (135x135x35mm CBO0128).
(4) Label (A-LBL0064) shall be pasted on individual box (A-CBO0128).
(5) 10 boxes of (A) from (3) (100 products) are packed into Box B (OD-290x290x159mm/ID-278x278x135mm-CBO0137)
(6) 6 boxes of (B) from (5) (600 products) are to be packed into Box C (OD-604x301x511mm/ID-590x287x483mm-CBO0001).





10. Labelling

a. Label B (75x158mm-LBL0075) are to be pasted on Box B(CBO0137).
b. Contents of Label B shall include
- Product Name
- P/O No. Please indicate FAL P/O number.
- Quantity (eg. 100)
- Manufacturing date (eg. Mar/2017)
- Box No. (*). In the event where products with the same order number are packed into several boxes and shipped together, 1/3; 2/3; 3/3 (eg. 3 boxes) shall be used to label the individual outer boxes.



c. The following items are to be labelled on the packaging of jumbo box (CBO0001).
   - Product Name
   - P/O No. FAL P/O No. (eg. ALPO24060011) and End customer P/O No. (eg. 02. FUJIKURA.NDC.2024). P/O information will be indicated in the REMARKS of FAL P/O to FOV.
   - Quantity (eg. 200)
   - Manufacturing date (eg. Mar/2017)
   - Box No. (*). In the event where products with the same order number are packed into several boxes and shipped together, 1/3; 2/3; 3/3 (eg. 3 boxes) shall be used to label the individual outer boxes.

11. General Specification on Substance Control Requirements

When the component voluntarily selected (include attached assembly manual and packing materials) is used, they shall be complied with General Specification on Substance Control Requirements, PNJAA-0068-25-01 (latest version).

12. Documentation

a. Test Report and Certification of quality/quantity

- Test reports shall be provided in Excel format via email to PIC in FAL." **(for FAL when requested)**
- Results of inspection checklist, Product name, Lot/Serial number and shipping date shall be included in the test report.
- Certification of quality/quantity(COQ) for all PO shipment/shipments

b. QC Plan
   a. To be submitted before first article inspection.

c. Test Report of Custom test (FOV)
   a. To be submitted within 1 month after first shipment.

13. Traceability

Establish control method such as check sheet to trace back and identify all materials, components and manufacturing history associated with each shipping lot. Records shall be maintained for a period of 5 years after the date of manufacturing.

REVISION HISTORY			
Rev	Description of changes	Change by	Date
-	Initial release.	Kathleen Peh	19 July 2018
A	i. Add new point #5 in Section 2 to include marking of serial number on mechanical splice. ii. Add in new section #11 - General Specification on Substance Control Requirements.	Kathleen Peh	5 Dec 2019
B	i. Add in photo of Mechanical Splice to show manufacturing date code and serial number. ii. Revised return loss from >40dB to >45dB. iii. Revised Insertion loss from <0.3dB to average <0.1dB.	Kathleen Peh	16 May 2020
C	i. Revise laser marking of Mechanical Splice ii. Revised Insertion loss from average <0.1dB to <0.15. iii. Revised Return loss from >45dB to >50dB. iv. Revise performing in inspection checklist	Kathleen Peh	2 Jun 2020
D	i. Revised Insertion loss from <0.15dB to <0.10dB.	Kathleen Peh	16 Jun 2020
E	Change index matching gel from SC 107 to Silicone gel OC 431A-LVP.	Kathleen Peh	14 Feb 2022
F	Update material specification Simplified Stripper from Black to Green color	Kathleen Peh	10 May 2024
G	Add P/O details to packaging box (B) and jumbo box labelling requirements	Chen Yu-Hung	24 Jun 2024
H	Update 10. Documentation according to FOV's current process flow	Chen Yu-Hung	23 Sep 2024