

FTTH HOME CONNECT INSTALLATION GUIDE

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Access Network Projects

Document Control Sheet

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1. STANDARDIZED MATERIAL LIST

1.1. Fiber Drop Wire-Aerial 1 Core


No	Supplier Name	Manufacturer	Brand Name/Model
1	Brantel Lanka (Pvt) Ltd	Corning	Corning-G657A2
2	3OPP Lanka (pvt) Ltd	3D Link	3D Link/3D-Link-9/125(G657A2)
3	C&D International (pvt) Ltd	GL-FIBER	GL-FIBER/GL-FIBER-G657A2
4	Hyperjet Technologies (PVT) Ltd_Option_1	Fibersway	Fibersway/FWGJYXCH-1B6A2 (G657A2)
5	Hyperjet Technologies (PVT) Ltd_Option_2	Yuantong	Yuantong/GJYXCH-(G657A2)
6	Luminex (Pvt) Ltd (Option 2)	ZTT	ZTT/OFC-1G657A2-FDC-S5 (G657A2)
7	Micro Bytech Trading	LASUN	LASUN-GJYXCH-G657A2
8	Sashira International (pvt) Ltd	SAGA	SAGA-GJYXCH-1B6-(G657A2)
9	Sri Lanka Telecom Service Ltd	3D Link	3D Link
10	Siyol International (pvt) Ltd	TW-SCIE	TW-SCIE-GJYXCH-1B6A2 (G657A2)
11	Tealeaftec Consulting	YOFC	YOFC-GJYXC-1B6A2-G657A2
12	Sierra Construction (Pvt) Ltd	BIRLA ERICSSON	BIRLA ERICSSON-G657 A2
13	Lead Lanka Telecom Services	SKYNET	LLT/FDR-A

1.2. Fiber Wall Socket (FWS/Fiber Rosette Box)

No	Supplier Name	Manufacturer	Brand Name/Model
1	Siyol International (pvt) Ltd	FiberHome	FiberHome/FTB-501
2	Luminex (pvt) Ltd	ZTT	ZTT-1322-2Q
3	3OPP Lanka (pvt) Ltd	3OPP	3OPP(M) SDN BHD 230093
4	Sashira International-Option 1	SAGA	Allopto/AO-FCO-02-A
5	Cybertec Enterprises	GRANDWAY	FFS-2-D
6	Lead Lanka Telecom Services Ltd	SKYNET	LLT-FDB-A

1.3. Field Assembly Connectors (FAC)

No	Supplier Name	Manufacturer	Brand Name/Model
1	Daimei SLK (Pvt) Ltd	Sumitomo	Sumitomo/YZS0923160B
2	Sashira International	SAGA	SAGA
3	SAW Engineering (pvt) Ltd	WireNet	WireNet/WT-FCPT-SC-60-V-RB
4	Luminex (pvt) Ltd	ZTT-17-81173	ZTT-17-81173
5	3OPP Lanka (pvt) Ltd	3D Link	3D Link
6	Cybertec Enterprises	GRANDWAY	GRANDWAY


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1.4 Fiber Patch Code

No	Supplier Name	Manufacturer	Brand Name/Model
1	Siyol International (pvt) Ltd	Shenzhen	Shenzhen FH-Net/FHC-8000
2	Luminex (pvt) Ltd	ZTT	ZTT-17-81174
3	C & D International(pvt) Ltd-Option 1	LBTL	LBTL
4	C & D International(pvt) Ltd-Option 2	TAFCOM	TAFCOM
5	Micro Bytech Trading	YHT	YHT
6	Intel (pvt) Ltd - Option 2	GMF	GMF-E2000
7	Sashira International	Kington	Kington

1.5 Civil Material List

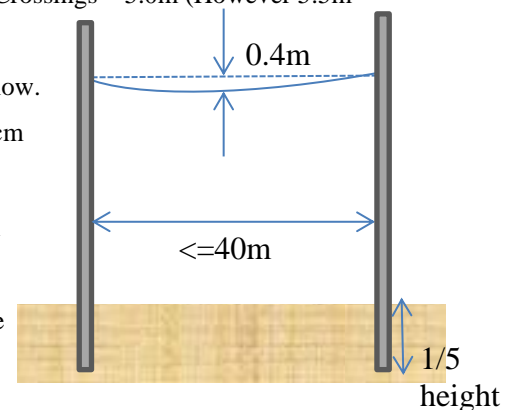
No	Material Name	Standardized Supplier List
1	Poles	NES Constructions
		AGGA Steel
		P&C Constructions
		Industrial Concrete Works
		JD Constructions
		Teshan Engineering
		Isuru Construction
		Geeshawa Civil Engineering
		Sierra Construction (pvt) Ltd
		Browns Engineering
		Comtec Systems (pvt) Ltd
		Treble D Enterprises
		Access Engineering Ltd
		Jayani Constructions
		Pathma Constructions
		USS Engineering
		S L Construction & Builders (pvt) Ltd
		Senaka Zen
2	Retainer-White	Yashiba Trading Company (Pvt) Ltd
		A.S.N Traders Ltd
		Trio Trade and Transport Ltd
		Jayasinghe Industries Ltd
		NICS Pvt Ltd
3	C Hooks	Thilaka Traders & Engineering, Dilushan Iron Works, USS Engineering, Teshan Engineering, Trio Trade & Transport Ltd
4	L Hooks	Thilaka Traders & Engineering, Dilushan Iron Works, USS Engineering, Teshan Engineering, Trio Trade & Transport Ltd
5	Internal Wires	Kelani Cables
6	CAT 5 Cables	Kelani Cables

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2 INSTALLATION STANDARDS


2.1 Pole Erections

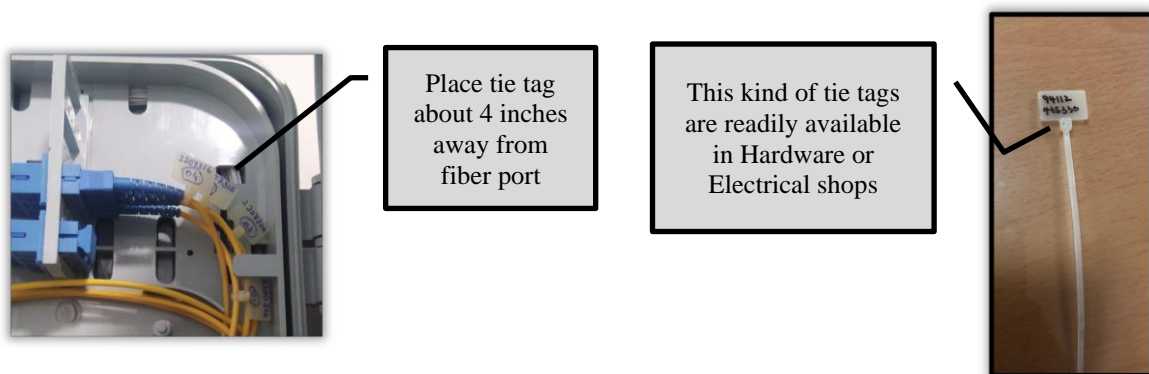
- Buried depth of the pole should be $\frac{1}{5}$ th of the pole height. In case of inability to maintain standard depth, pole base should be concreted.
- Adequate installation practices shall be established to prevent the pole from inclining and sinking.
- Backfill shall be thoroughly compacted to the full depth of the pole hole.
- Corner poles shall be guyed or braced. The bracing shall be allowed only where the guying is not practical.
- Permissible Drop wire Clearance Along the Road – 4.5m and at Road Crossings – 5.0m (However 5.5m
 - clearance should be maintained only at Man Road crossings)
 - & ensure Properly Tensioned Power Crossing as indicated below.
- Installing of top bolt is mandatory.
- 8m height poles will be installed only at places, where required ground clearance cannot be maintained with existing poles. 8m poles will not be installed replacing existing poles at FDPs, if existing pole is suitable for FDP installation.



2.2 Terminating into FDP

- Fiber Drop Wire must be terminated with FAC connector (SC/UPC). Guard wire to be removed at the insertion point inside FDP and apply a gripper or a tape to stop tearing off. It should be terminated in provided location inside FDP. If certain locations not provided inside FDP, terminate the guard wire with keeping a piece about 1 inch length.
- Fiber drop wire coiling length inside the FDP should be limited to one turn around the grooves/clips provided.
- Customers' phone number must be properly written in FDP card with relevant port number.
- Place a Tie tag which the respective TP number is written on and locate about 4 inches from port on fiber drop cable inside the FDP. Make sure that not to tighten too hard which may bend the fiber wire but should not be movable as well. Telephone number should be written clearly by using a narrow tip permanent marker pen. (See images below)
- FDP port power to be measured when providing new connection and check whether it is in the acceptable range.


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2.3 Drop wire Drawing

- Sag of Drop wire should not exceed 0.4m for 40m or less pole span, sag of 0.7m between 40-50m pole span. Separate fiber drop wire route should be constructed under the existing copper drop wire route to ensure new route for fiber drop wire.
- No joints allowed throughout the fiber drop wire path.
- White colored Retainers must be used and properly fixed into L-Hooks
- C-hook to be fixed firmly at suitable place and drop wire to be covered by flexible conduit or spiral. Guard wire to be removed around 0.5m portion at this point. In order to stop tearing off grippers to be applied at C Hook. C hook to be installed vertically. Refer illustration below.
- Drop wire clearance from foliage must be not less than 1m.
- Drop wire bends should comply with G.657A2.
- Fiber drop wire coils for maintenance purposes are allowed in accordance with the details specified in below table.

OH distance	Instructions related to implementing Drop wire coil
Drop wire length less than 200m from FDP to Customer premises	No drop wire coils allowed
Drop wire length more than 200m from FDP to Customer premises.	<ol style="list-style-type: none"> 1. Only one 2m length cable coil is allowed for cable routes along the road. Cable coil should be kept at most suitable pole in pole route except FDP Pole and last pole near customer premise. 2. Only two 2m length cable coils are allowed for cable routes with road crossings. Cable coils should be kept at poles of road crossings.

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2.4 Internal Wire

- Fiber wire properly taken from outside to inside of house over the wall within a protective casing/conduit.
- Internal Wiring neatly done inside house within a protective casing/with an appropriate protection/using a Self-adhesive fiber wire, according to the customer awareness/agreement.
- Internal wire must comply with G.657.A2 standard.
- Appropriate Spiral or flexible conduit must use for covering the bends.
- If customer do not allow to draw the internal wire through casings on outer walls only it is allowed to draw internal wire through conduits above ceilings subjected to that they are fully protected appropriately.

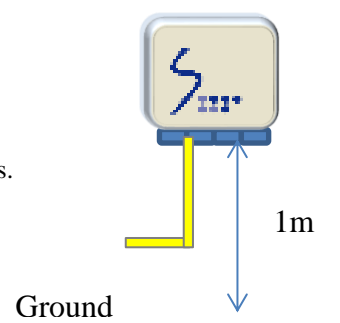
2.5 FAC Connector Assembly


- SC/UPC connector must be used.
- Connector /Adapter must be Blue in Color.
- Fiber insertion loss < 0.5dB.
- FAC connector used inside the FDP to terminate the Outdoor drop wire
- FAC connector used inside the Rosette to terminate Indoor drop wire.
- Should follow the instruction manual, proper tools provided by manufacturer.



2.6 ONT Placement

- ONT must be placed in a proper location on wall where connectivity for the instruments can obtained easily and less interference from other Wi-Fi signals.
- ONT must be fixed 1m from ground level
- Patch code neatly arranged and protected.



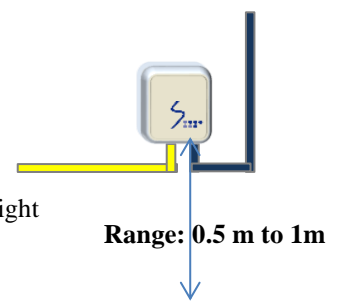
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- ONT must be fixed in a way where the ports of the ONT headed downwards.
- Wi Fi signal strengths to be measured at different distances from ONT.

Image of the form to be uploaded to Contractor web portal. Image of maximum Wi Fi speed to be captured.

2.7 Rosette Box Placement

- Fiber Rosette properly fixed onto the inner wall at the appropriate place (where sufficient safety available and easily reachable) at a range between 0.5m to 1m height from floor level.
- FAC properly connected to fiber wire within Fiber Rosette.
- Fiber wire should be properly arranged inside the Fiber Rosette with two turns of drop wire.
- SC/UPC Adaptor must be placed within fiber Rosette.
- No splicing to be accommodated inside Rosette.
- Drop wire should inserted from one of provided inlets and not allowed to pierce a hole elsewhere and insert the wire.



2.8 Acceptable Optical power levels


- Optical power level at FDP port should be $>-22\text{dB}$.
- Optical power level at ONT port should be $>-25\text{dB}$.

2.9 Instructions for PSTN-FTTH Migrations

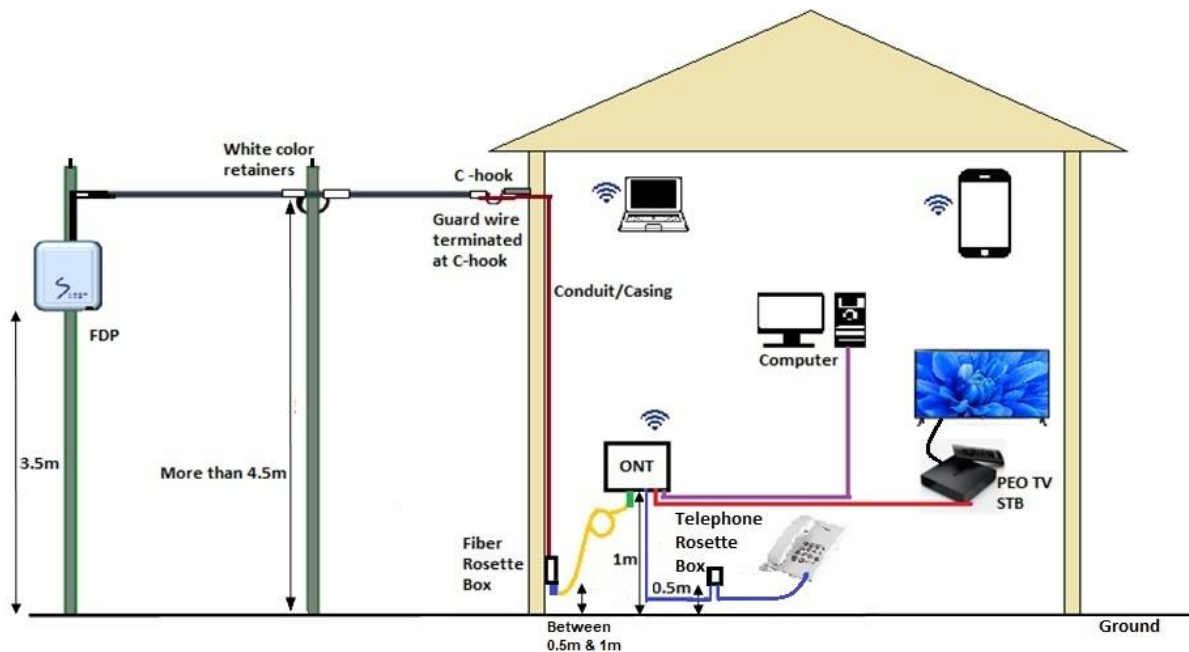
- Last span of existing Copper wire to be cut and removed, properly coiled, and returned to OPMC. Recovered retainers in last span also to be removed and returned to OPMC.
- Use of existing PSTN internal wires are not allowed and all required internal wiring to be newly installed.

2.10 Testing and Confirmation of Services

- Installation staff should be equipped with a test phone to test voice service.
- Voice testing to be carried out through Auto test procedure. 1248 Short code allocated for this test.
- Installation staff should aware and show all services Voice, Internet and PEO TV to customer and ensure that they are properly working.
- Installation team should aware customer that FTTH ONT is not working without commercial power.

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2.11 FTTH Connection Installation Diagram



3 TOOLS AND ACCESSORIES

3.1 Mandatory Tools

- Fiber Drop cable stripper
- Plier
- No.5 Nipper
- Screwdriver
- Power Meter
- Power Drill
- Cleaver
- Fiber stripper
- Strip Length Template
- Lint-Free Cloth wipes
- Fiber Preparation fluid (Alcohol)
- Test Phone

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3.2 Other tools required during installation

- Power Drill
- Visual Light Source
- Power Source
- Safety Helmet
- Safety Jacket
- Safety Belt
- Safety Cone
- Kevlar Scissors (For FAC installation)
- Installation Instructions (For FAC installation)
- Laptop
- Tool Bag
- Step Ladder
- Rung Ladder

4 PAT Image Guide

4.1 List of Images

- Drop wire meter reading / standard
- Drop wire label/marketing image
- Updated FDP card FAC connector drop wire with number tag
- FDP port power measurement
- Front view of closed FDP with pole
- C-hook to rosette cable arrangement
- Full view of Fiber rosette showing floor level
- Lid open rosette
- Power reading at rosette
- ONT with cable arrangement
- STB with cable arrangement (if PEO TV provided)
- PEO TV Diagnostic screen image
- Overhead wiring pole to pole excluding FDP pole – Hop to Hop

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- New pole installation (2 photos per each)
- Sketch of pole path
- Image of customer feedback form
- Wi Fi strength measurement – Best value near ONT
- Customer Feedback form

All installation images should include GEO tags and other meta data.

Contractor have to provide image proofs for all materials you claim (Eg: L Hooks..etc) if they are not covered through above image list.

4.2 Drop wire meter readings-at FDP side and at C Hook

FDP side

- Meter reading should be clearly visible.
- Image should be taken after the installation of FAC connector at FDP.
- FDP should be visible at background fully or partially.
- Telephone number tag to be clearly visible.



At C Hook


- Meter reading should be clearly visible.
- Image should be taken after the installation.
- Background should show either C hook or Surrounding information near C hook.



4.3 Drop wire label/marketing image

- Material supplier name and type to be clearly visible.
- Should be taken for each FTTH NC.
- Ensure use of SLT standardized fiber drop wire.

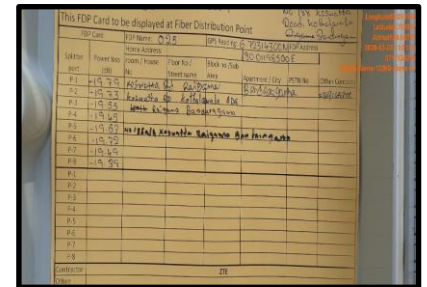


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4.4 Images to be taken inside FDP

FDP Card

- Installed TP number should be written and clearly visible in image.
- Other respective details such as power measurement to be clearly visible.



Wiring inside FDP

- TP number tags should be clearly shown.
- Drop wire drawn path around provided grooves/clips should be viewable.
- Should clearly show whether drop wire has passed through the bush in outlet.

FDP Port Power

- FDP port power measurement to be taken. Should be in acceptable range.



4.5 FDP Closed


- FDP number should be clearly visible.
- FDP door lock to be visible.
- Cable arrangement through outlets to be clearly visible.



4.6 C Hook



- C Hook fixing method to be visible properly.
- White color retainer should be properly identified
- Casing arrangement to be viewable.
- Gripper arrangement should be clearly viewable.
- C Hook to be installed vertically without an angle.

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4.7 Fiber Rosette Box

Lid Open Fiber rosette view

- Fiber drop wire coil placed inside.
- FAC connector whether properly placed.
- Arrangement and use of inlets and outlets properly.



Lid Closed Fiber rosette view



- Height of installation comparatively with floor.
- Outer cable arrangement.
- Patch code arrangement.

4.8 Power Measurement

- Meter reading should be clearly visible.
- Patch code setup between rosette and power meter
- Should be properly shown.



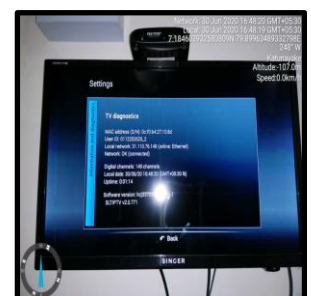
4.9 ONT Placement & Cable arrangement


- Height of placement can be viewed comparatively.
- Cable and connectivity arrangement.
- Whether all indicators are green and line is active.
- If placed on a surface, cable arrangement to be viewable.



4.10 STB & PEO TV Diagnostic Images

- Rear side cable set up to be clearly shown.
- Surrounding details to be captured.
- PEO TV Diagnostic screen image including configuration details to be captured.



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4.11 Pole Installations

Pole Upper

- Shows upper half of the pole.
- Installation of top bolt to be viewable.
- Cable wiring setup including retainers, L Hooks and accessories should be clearly visible.
- Route clearance should be properly visible.

Pole Lower

- Pole number and other embossed details should be clearly visible.
- Pole buried depth and related markings.
- If pole base is concreted, basement details to be viewable.

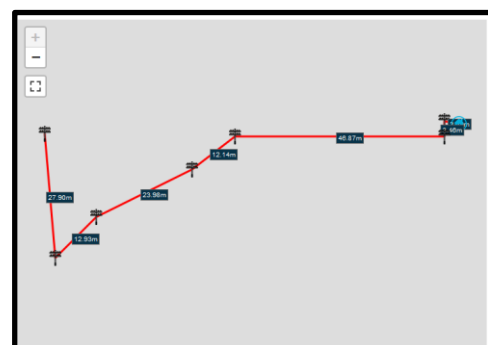
Pole paths hop to hop


- Pole installation and cable path of all spans to be viewable.



4.12 Sketch of pole route

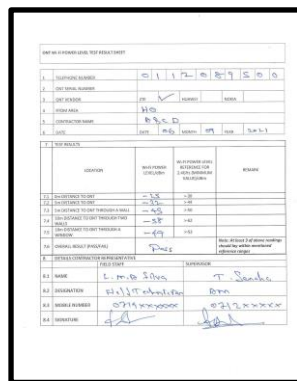
- Designed sketch drawn using maps to be prepared and Image same to be captured.



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4.13 Wi Fi Speed and Strength

- Image of Wi Fi strength measurement form to be uploaded to Contractor web portal. It should be filled with details of 5 different locations in customer residence as per specified distances.
- Image of Wi Fi speed near ONT (Maximum) to be captured.

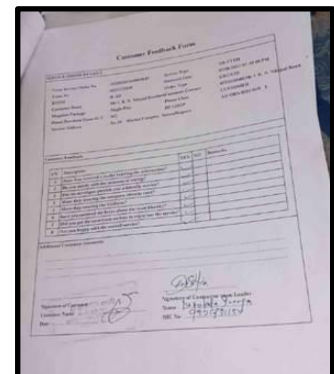


A form titled 'Wi-Fi STRENGTH MEASUREMENT FORM' with sections for customer details, location, and a table for recording signal strength at five different locations. The form is partially filled with handwritten data.



4.14 Customer Feedback Form

- Image of customer feedback form. (Web portal format)



A photograph of a printed 'Customer Feedback Form' with various sections for customer information, service details, and feedback comments. It includes checkboxes for service quality and a space for a signature.

5 SPECIAL INSTRUCTIONS

- All installation standards mentioned should be strictly adhered. However, due to practical surrounding situations or special customer requests provisioning team can adopt minor changes with the written approval of respective SF Engineer of SLT OPMC.
- Always wear company identity card and hand over your team staff identification letter to Customer.
- Always wear Co-branded uniform designed by SLT. Uniform includes a T-shirt and a Jacket.
- If standard deviations happened due to customer special requests, it should be mentioned in Customer Feedback form.