



# **FTTH Home Connection Standards & Online Acceptance Guide (Volume 1)**

Document Number :

Controlled Document :

Issue No : 1  
Issue Date : 19/06/2019  
Issued By : DGM/Access Network Projects



## Installation Standards and Online Acceptance

### Guideline for FTTH Home Connection Services

### Accelerated Expansion of Fiber Access Network



*Note: 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 Project Engineer of SLT.*

#### ➤ Instructions

- Summary page including customer T/P no, address, contact no package info & material consumption (new poles, C-hooks, L-hooks & retainers) must be added to the relevant system
- SLT approved online systems are
  - Huawei – Integrated Service Delivery Platform(ISDP)
  - ZTE – Engineering Project Management Systems(EPMS)
  - Nokia – Access Network Trace Optimization & Management System(ANTOMS)
- Uploaded Images should comprise with geotag and time stamp.
- Customer satisfaction is a key factor for SLT services.  
So, every work at customer premises should satisfy his/ her requirements. Get necessary approvals if the customer requirements are not fulfilling SLT standards.

❖ Manual PAT sheet attached as Annex 1

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### Fiber drop wire drawing

- White colored retainers must be used and properly fixed in L-Hooks.
- There shouldn't be fiber drop wire joints between FDP and drop box.
- If the drop wire length exceeds 500m, 15m coil must be kept in every 500.
- Sag of drop wire cannot be exceeded 0.4m for 40 or less pole span, 0.7m for 40-50m pole span.
- Drop wire clearance from foliage must be less than 1m.
- Drop wire bends should comply with G.657A2/ G.652D standard.
- C-Hook must be fixed firmly at a suitable place and drop wire must be covered by flexible conduit/ spiral.
- Permissible fiber drop wire clearance.
  - Along the road: 4.5m
  - At Road Crossings: 5.0m
  - At Power Crossings: 600V- 60cm, 600V~7000V- 120cm, 7000V~15000V - 200cm

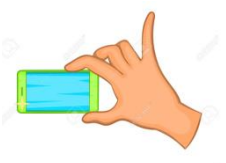


### For online PAT

- ✓ Drop wire label to show the meter reading & standard being used.
- ✓ Each Pole to pole segment (a segment must accommodate the Starting pole, in between two poles & the end pole).

### Terminating into FDP

- Fiber drop wire must be terminated with FAC connector (SC/UPC).
- Adequate drop wire coil must be kept & properly arranged inside FDP.
- Customer phone no must be written in FDP card with relevant port no.
- Customer phone no must be labelled on drop wire using a tag/sticker within FDP.
- Drop wire must be taken out properly through a rubber bush and guided through the NC pipe/ ring.
- Site must be cleaned well after the installation.



### For online PAT

- ✓ FDP label & FAC connected drop wire in a single photo.
- ✓ Updated FDP card.
- ✓ Front view of closed FDP (After completion of the works at FDP).

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## Guideline for FTTH Home Connection Services

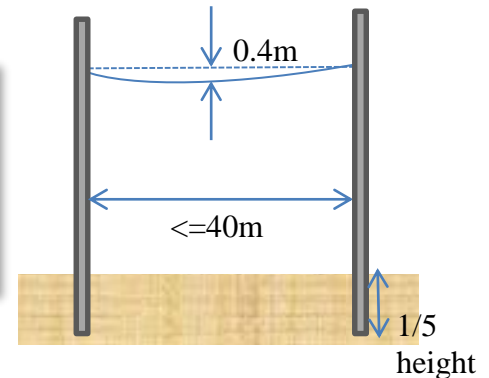
### Accelerated Expansion of Fiber Access Network



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#### Erecting new poles

- Construct new poles with struts and stays where ever required.
- Height of the pole must be decided accordance with SLT standards.
- 1/5th of the pole height must be buried.
- Poles must be erected straightly.

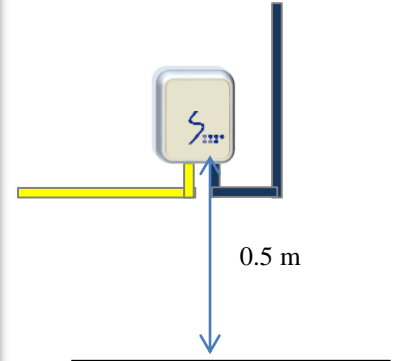


#### For online PAT

- ✓ Pole label of all newly erected poles.
- ✓ Full view of the new pole from three different views (to identify slanted pole erection).

#### Rosette box placing

- Fiber rosette must be properly fixed onto the inner wall at appropriate place (where sufficient safety available and easily reachable) at 0.5m height from floor level.
- FAC properly connected to fiber wire within fiber rosette.
- FAC properly connected to adaptor and fiber wire properly arranged within fiber rosette; adequate fiber coil kept within Fiber Rosette.
- SC/UPC must be placed within fiber rosette.
- No splicing to be accommodated inside rosette.



#### For online PAT

- ✓ Photos to show cable arrangement from C-Hook to Rosette.
- ✓ Full view of fiber rosette showing floor level.
- ✓ Lid opened rosette.
- ✓ Power reading.
- ✓ Drop wire meter reading.

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## ONT & other equipment installation

- ONT must be placed in a proper location where connectivity for the instruments can be obtained easily and less interference from other Wi-Fi signals; Extra patch cord length must be neatly arranged and protected.
- ONT must be fixed 1m from ground level and in a way where the ports of the ONT headed downwards.
- Installations of TP Instrument and STB done properly and neatly.
- Cat-5E cables properly extended from ONT to the place of STB; CAT-5E cables neatly stapled at 30cm intervals horizontally and 40cm vertically.
- Cat-5E cables properly extended from ONT to the place of PC; CAT-5E cables neatly stapled at 30cm intervals horizontally and 40cm vertically.
- Internal TP wires neatly extended from ONT to the place of TP Rosette and TP Rosette must be fixed properly.
- Site cleaning properly done inside customer premises after completion of all internal installations/ testing.



## For online PAT

- ✓ Get the screen shot of the power value while logged in to ONT.
- ✓ ONT with patch code coil arrangement. Photo must be taken from a reasonable distance to show the surroundings.
- ✓ STB with cable arrangement. Photo must be taken from a reasonable distance to show the surroundings.(if installed by Huawei/ ZTE/ Nokia)
- ✓ Telephone instrument with cable arrangement & portable handset. Photo must be taken from a reasonable distance to show the surroundings. (if installed by Huawei/ ZTE/ Nokia)
- ✓ Properly connected TP rosette. (if installed by Huawei/ ZTE/ Nokia)
- ✓ Cat 5/6 & TP cable lengths. (if indoor cabling done by Huawei/ ZTE/ Nokia)
- ✓ Both side of the customer feedback form.

## 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 and use proper tools provided by manufacturer.



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#### Power Testing – Actual (Using Power Meter)

Get the reading (R1) from the proper port at FDP – Set Power Meter to 1490nm

Get the reading (R2) from the Rosette - Set Power Meter to 1490nm

Different between the readings (R1- R2) will be the Actual power loss

#### Power Loss Calculation -Theoretical

Fiber attenuation loss - 0.27 dB per km for 1490nm

Splicing - 0.1 dB

SC/UPC adapter - 0.3 dB

Field Assembly connector (FAC) - 0.5 dB

Using these values theoretical loss must be calculated and compare with actual power loss

**“Theoretical loss must be approximately equals to Actual loss”**



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## ONT Configuration –ZTE F660

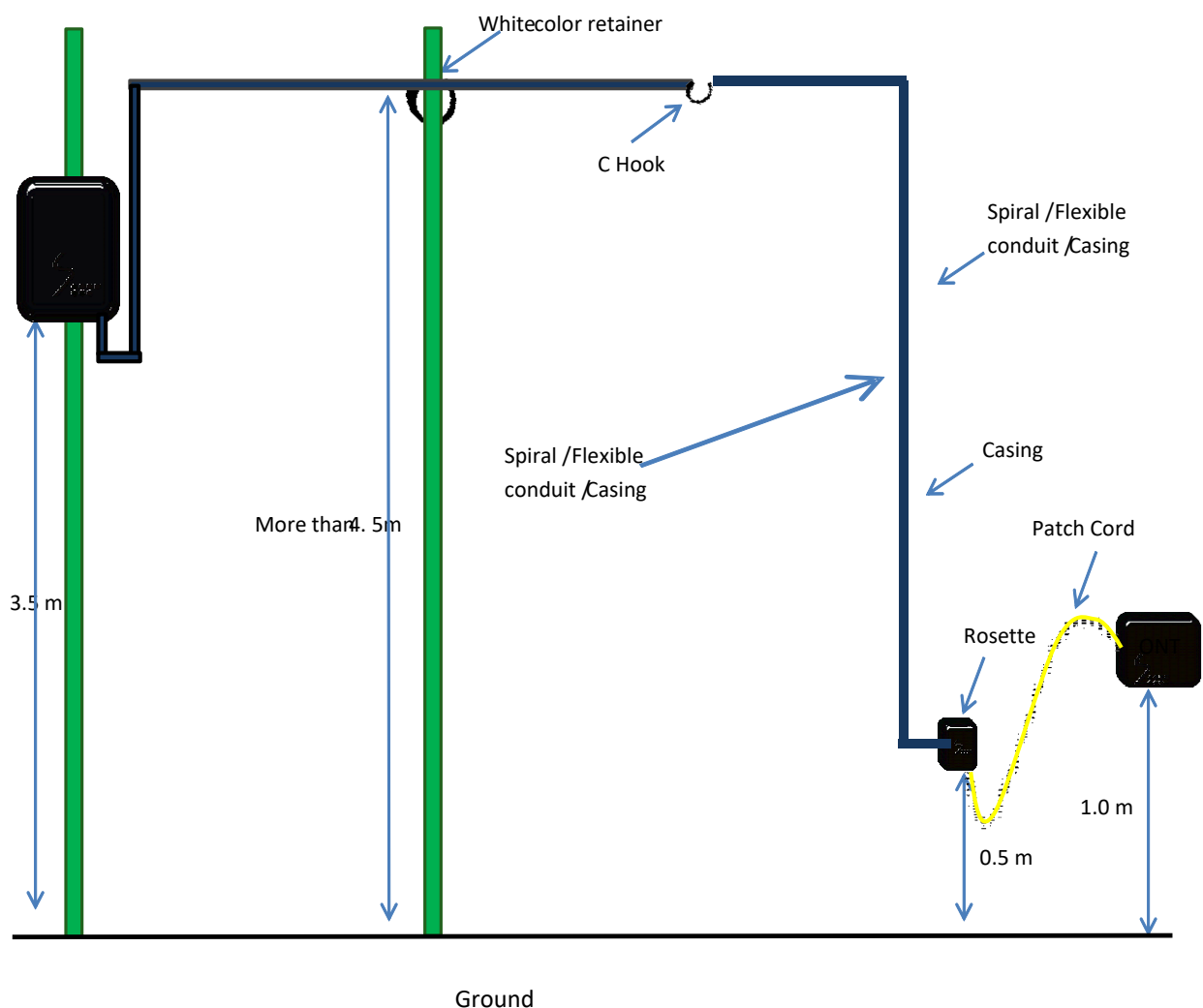
- 01) Login as Administration to bind the ONT with network
  - a. Connect to ONT to laptop
  - b. Type 192.168.1.1 in browser
  - c. Enter administrator password→Login
  - d. Network→PON→SN
  - e. 10 digit phone number entered as password
- 02) Login as user - Username: user , Password: user IP: 192.168.1.1
  - a. Configure internet using BB Username & Password
    - i. Go to 'quick Setup'
    - ii. Add PPPoE username and password
  - b. Configure Wi-Fi SSID and Password
    - i. Go to 'Next'
    - ii. Enable SSID→Enter SSID (Wi-Fi U/N)
    - iii. Enter pre shared key (Wi-Fi P/W)→save→Detail Setup
  - c. Set the proper Wi-Fi channel to reduce the interference
    - i. WiFi Channel Monitoring - using "InSSIDer Home"
    - ii. Network→WLAN→Basic
    - iii. Channel→Select Channel manually→Submit
  - d. Check the ONT power receiving level and make sure > -28dB
    - i. Status Network Interface→PON information

## ONT Configuration –HUAWEI HG8254H

- 01) Login as Administration to bind the ONT with network
  - a. Connect to ONT to laptop
  - b. Type 192.168.1.1 in browser
  - c. Enter administrator password→Login
  - d. System tools → ONT authentication →password (use 10 digit telephone number of the user) and click <Apply>
- 02) Login as user - Username: user , Password: user IP: 192.168.1.1
  - a. Quick Setup → Type internet user name and password and click <Next>
  - b. Quick Setup → Configure WiFi SSID and WiFi password and click <Next>
  - c. WiFi Channel Monitoring
    - i. using "InSSIDer Home"
  - d. To change WiFi Channel manually
    - i. Go to: WLAN→WLAN Advance Configuration→Channel  
Select channel Manually
  - e. Check the ONT power receiving level and make sure > -28dB
    - i. Go to: Status→Optical Information



## FTTH New Connection Installation Diagram



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## Annex 1

Service Delivery Confirmation of FTTH New Connection (Outdoor Category) (V1.5) (To be filled by Developer during installation)																																																																																																																							
Project Name: FTTH Project (Phase-1)				Customer Name:		To be filled by SLT Staff during PAT																																																																																																																	
Project No: 142702				Customer Address:																																																																																																																			
Developer/Contractor Name/ST: 30PP LANKA (PVT) LTD				Telephone No (provided):																																																																																																																			
Date Service Provided:				PSN TP No (if already available):		Date:																																																																																																																	
S/N	Segment	Check item	Yes	No	Remarks	Developer Confirmation	SLT Confirmation	Remarks																																																																																																															
1	Within FDP	FAC properly connected to outdoor Fiber Drop Wire within FDP				OK	Not OK																																																																																																																
2	FDP	FAC properly connected to Adaptor and Fiber Drop Wire properly arranged within FDP																																																																																																																					
3	Customer	Customer T/P Number properly indicated on Fiber Drop Wire using a Tag/Slider within FDP																																																																																																																					
4	Between FDP and Customer Premises	Buried depth of newly erected poles: 1/3 of pole height																																																																																																																					
5	FDP and Customer Premises	Fiber Drop Wire Clearance- Along the Road: 4.5m, At Road Crossings: 5.0m, At Power Crossings: 600V- 60cm, 600V-7000V- 120cm, 7000V-15000V - 200cm																																																																																																																					
6	Clearance from foliage	Not less than 1m																																																																																																																					
7	Fiber Drop Wire	Fiber Drop Wire line properly constructed between FDP and Customer Premises; While Color retainers used; Retainers properly fixed into L-hooks																																																																																																																					
8	Applicable for	Site cleaning properly done between FDP and Customer Premises after completion of installations																																																																																																																					
9	External Fiber	C-Hook properly fixed to the roof/wall and Fiber Drop Wire properly hanged by the Hook																																																																																																																					
10	Wiring in Customer House	External Fiber Wires (to and from Drop Box) neatly installed within a protective casing/With an appropriate protection on the outer wall																																																																																																																					
11	Outdoor (6.5520) and Indoor (6.557A2)	Fiber wires properly spliced and arranged within Drop Box Same Outdoor Fiber wire (G.557A2) used as Indoor Fiber wire and																																																																																																																					
12	House	Fiber wire properly taken from outside to inside of house over the wall within a protective casing/conduit																																																																																																																					
13	Applicable for Outdoor	Site cleaning properly done outside the house after completion of above external installations																																																																																																																					
14	Internal	Internal Wiring neatly done inside house within a protective casing/with an appropriate protection/using a self adhesive fiber wire, according to the customer																																																																																																																					
15	Fiber	Fiber Rosette properly fixed onto the inner wall at the appropriate place (where sufficient safety available and easily reachable) at 0.5m height from floor level																																																																																																																					
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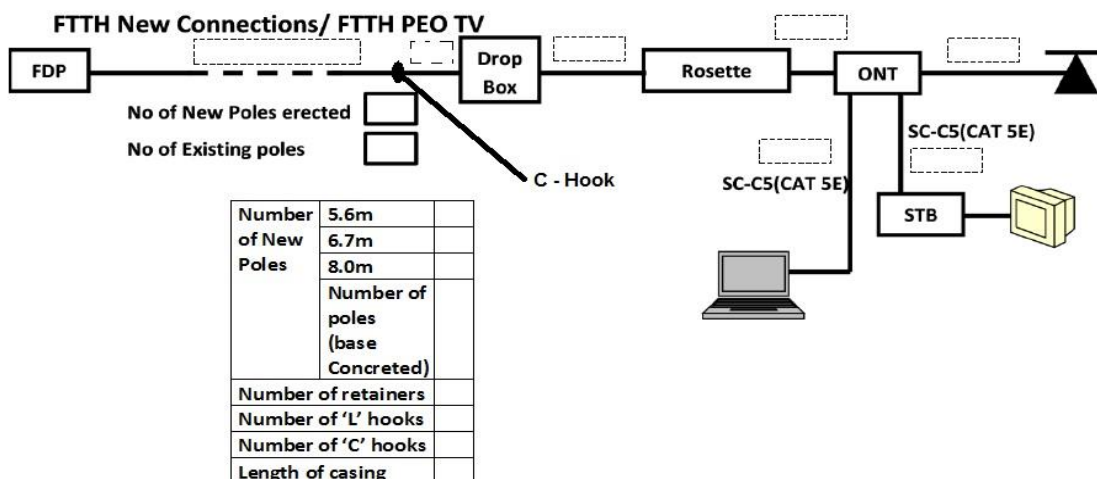
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## Annex 1

### බෙදුම් කණුවේ සිට නිවස දක්වා දළ රූ සටහන(FTTH සේවා සඳහා) Free Line Sketch of FTTH Connections from FDP to Residence Telephone Number/ දුරකථන අංකය: .....

බෙදුම් කණුවේ සිට පාරිභෝගික නිවස දක්වා විස්තර සහිත දළ රූ සටහනක් පහත කොටුව තුළ අඳින්න. පවිත්රයක් පැහැදිලි කර හැසිරීම සඳහා පහත උපදෙස්වලට බලන්න. එහි සඳහන් මිනුම් උපදෙස්වලට සඳහා පමණක් බවත් සම්මත මිනුම් ගොවිත බවත් සලකන්න. දත්ත සටහන් කිරීමේදී ඉතා පැහැදිලිවත් කිරවන්නට වඩාත් පහසුවෙන් තේරුම් ගත හැකි ආකාරයටත් දැක්විය යුතු බව සරුණාවෙන් සලකන්න.  
Place a rough sketch inside the box, for the location where service provided from FDP to residence including DP and pole details. Please refer the example for more clarification. The mentioned dimensions are not standard and just shown as example. Also note that figures entered should be clear and easily readable.

සැ.ය. නාවිතා කරන අමුද්‍රව්‍ය වල ප්‍රමාණ (දිග, ප්‍රමාණ) සපයා ඇති කොටු තුළ ලියන්න.  
Note: Please write quantities/lengths of material inside given cages.



Sketched By/සටහන් කළේ:

Name/නම: .....

Signature/අත්සන : .....

Certified By/සහතික කළේ:

Name/නම: .....

Signature/අත්සන : .....

#### Symbols – සංකේත



#### Example – උදාහරණය

