Optical sation cable loss calibration SOP

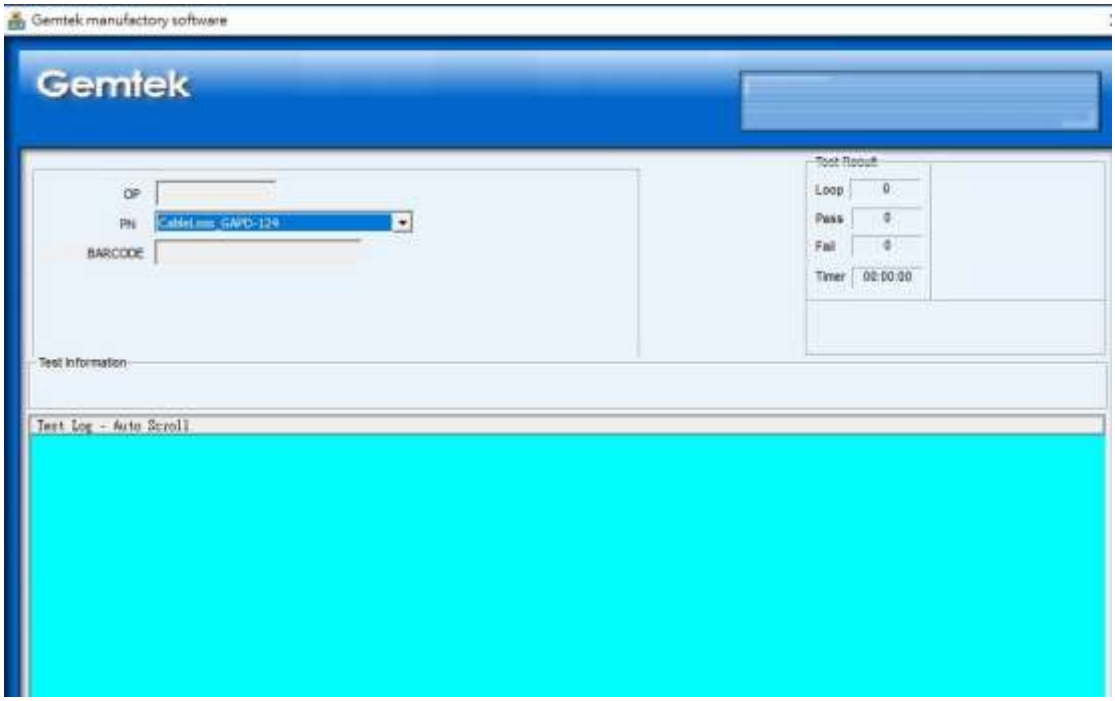
1. 在跑 loss calibration 程序前先將測試站治具 fiber cable/power meter/Golden sample 接觸面使用 Fiber Endface inspector 去檢查是否有髒汙

Power meter check

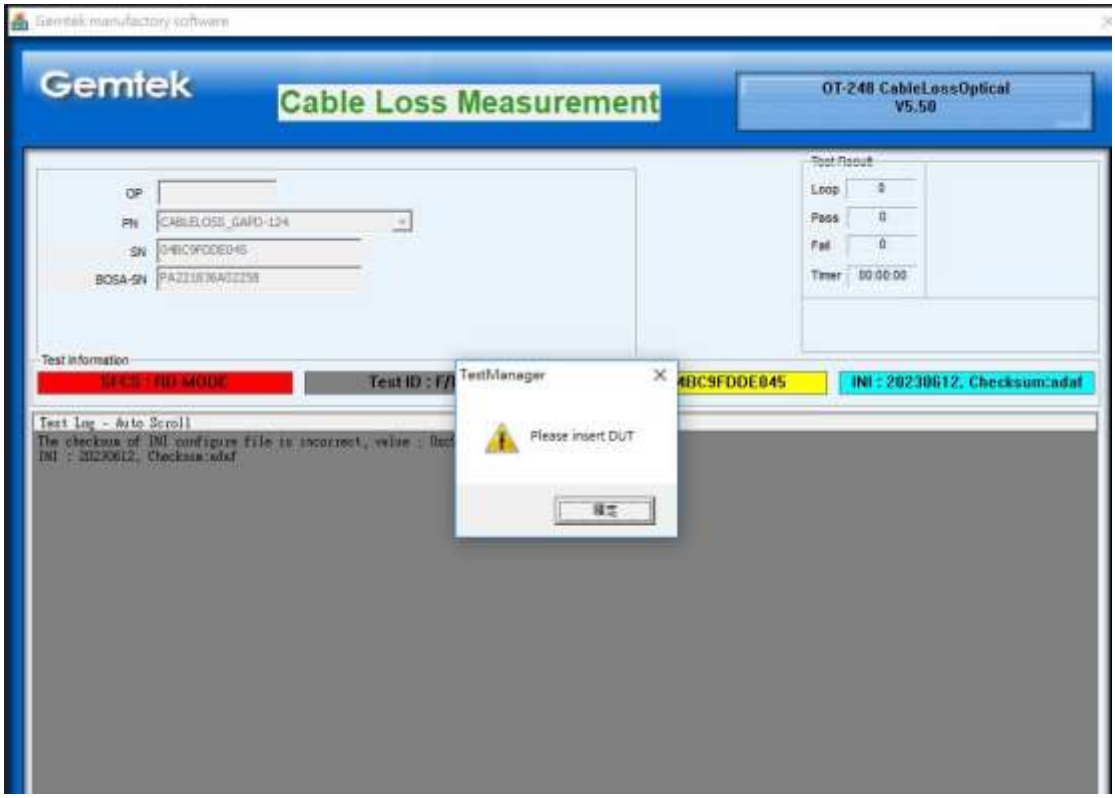
Golden sample check

2. 開啟 PC 桌面程式

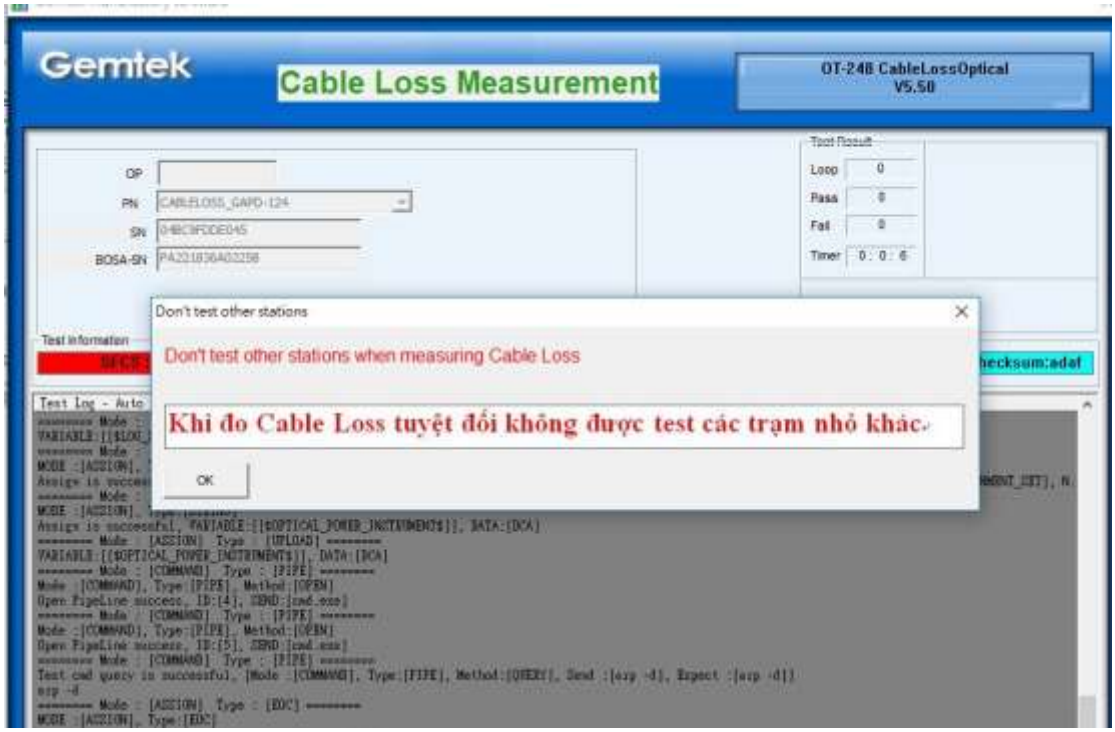
3. 請選擇 cable_loss ini



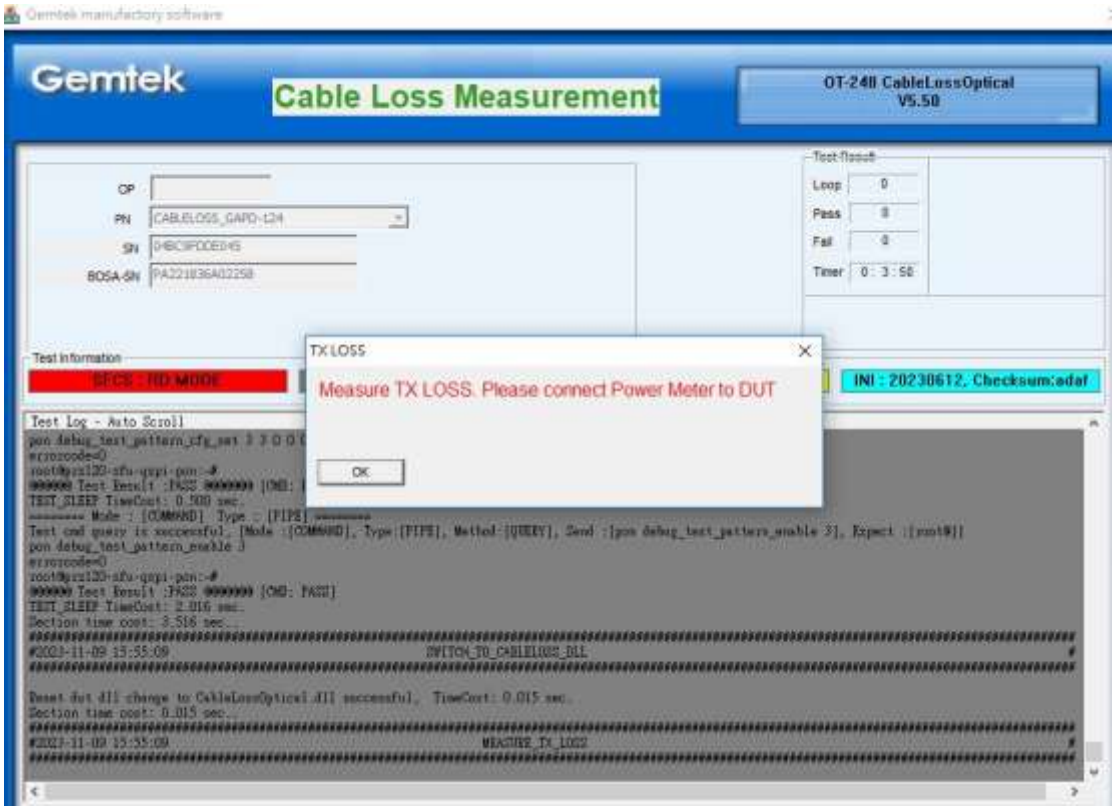
4. 請輸入 Golden sample 對應 MAC 及 BOSA 並按下確定



5. 按下確定鈕後程式會跳出其他小站請勿跑測試(此項為針對 1 托 4 架構)



6. 請將 DUT WAN 端口以 SC/APC to SC/APC cable 接於 Power meter **ONT** 端口,完成後請按下 OK 按鈕

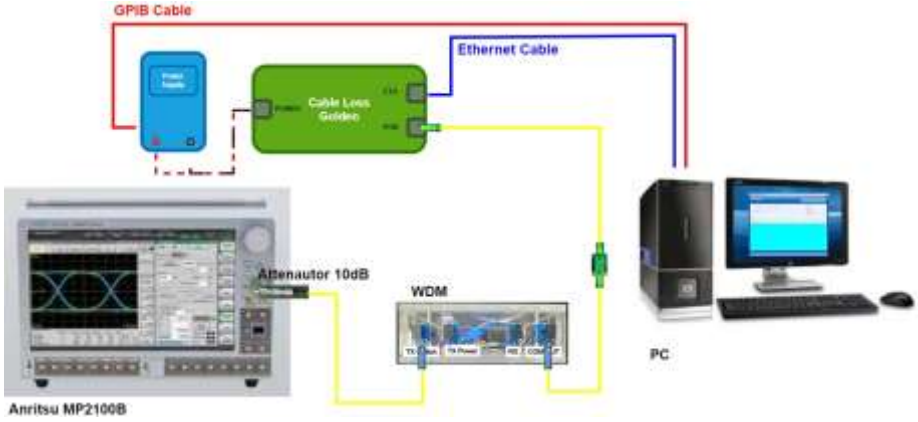


Block Diagram (TX Loss 量測) OLP-87 Power Meter 當參考數值

Criteria:

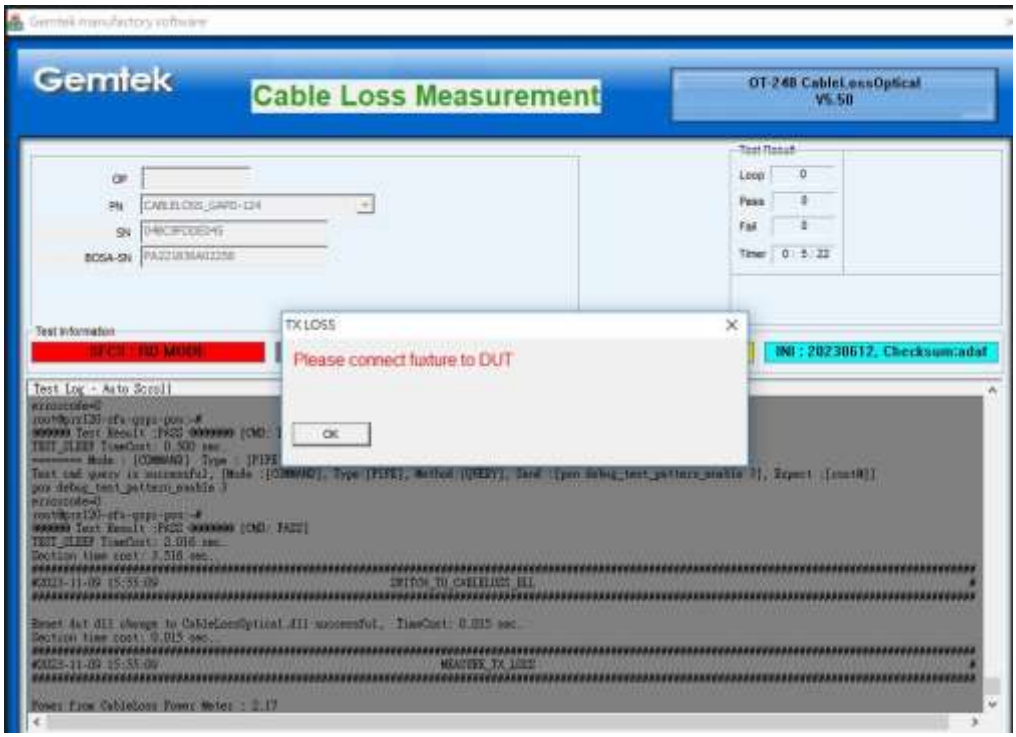
TX_POWER_MIN = 4

TX_POWER_MAX = 8




VIAVI
PON ONT
1310 nm
+02.14 dBm
PON OLT
1490 nm
LOW dBm
XGPON ONT
1270 nm
-39.24 dBm
XGPON OLT
1578 nm
LOW

7. Power meter 量測完後程式會出現請移除 Golden sample fiber cable 並將測試站 cable 接至 Golden WAN 端口,按下 OK 後程式會開始計算 TX loss



Block Diagram (TX Loss 量測)

Anritsu 量測 Power 數值相減 [Power Meter 參考數值] 即為 TX Loss

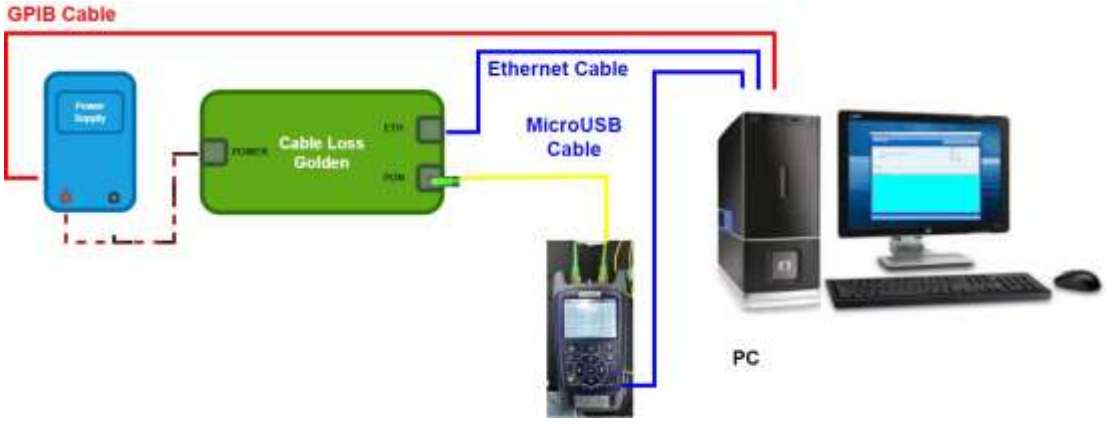
Criteria:

DCA_INPUT_POWER_MIN = -9

DCA_INPUT_POWER_MAX = -6

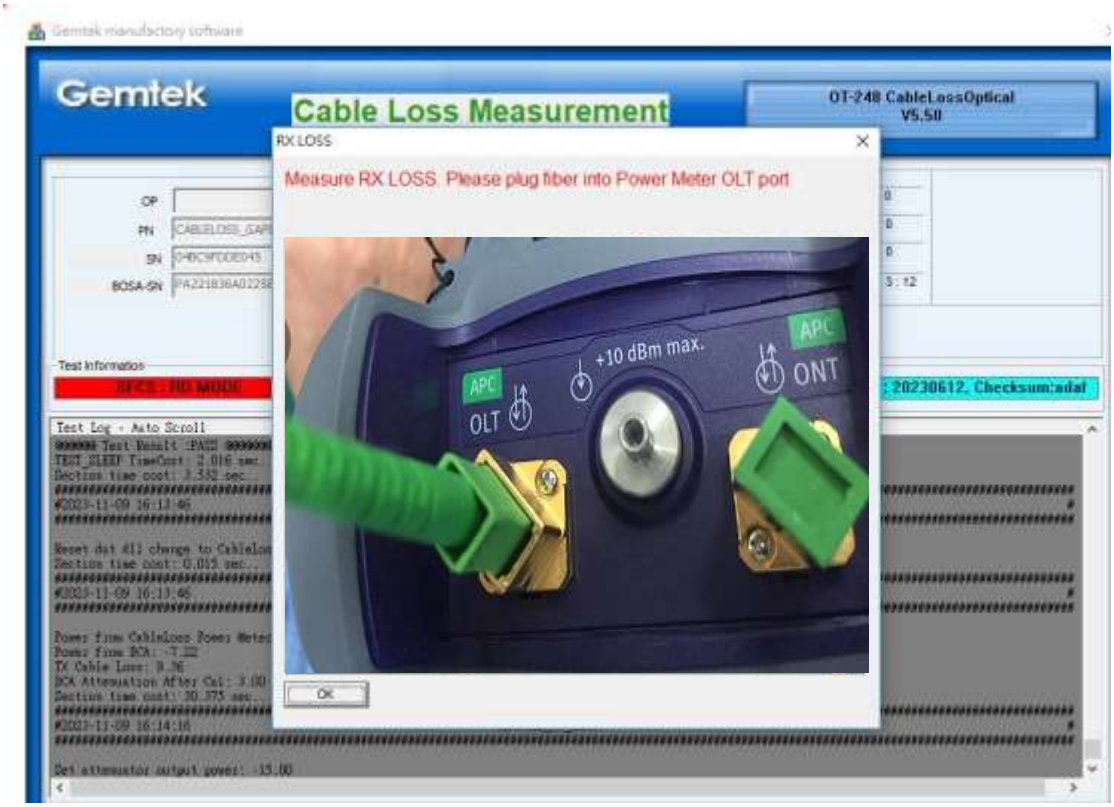
TX_LOSS_DCA_MIN = 10

TX_LOSS_DCA_MAX = 13




PHONE

8. TX loss 量測完畢後程式會跳出將測試站 fiber 線接至 Power meter **OLT** 端口，按下 OK 後則會開始進行 RX loss 量測

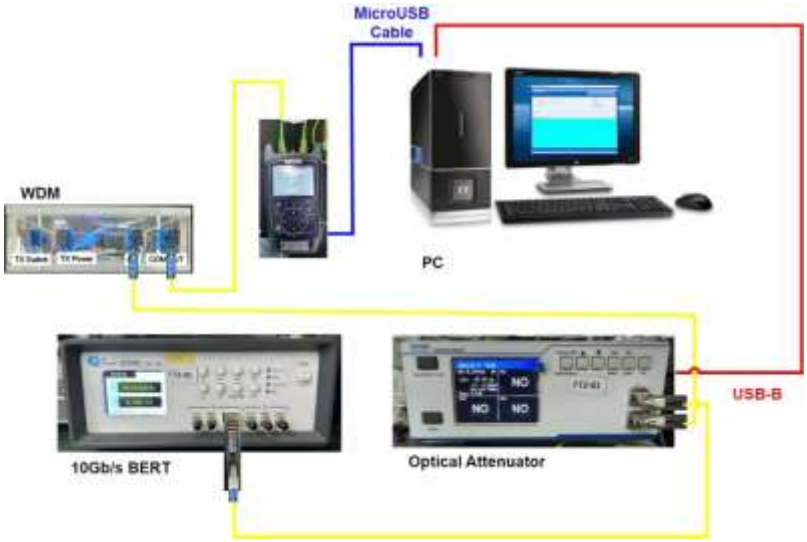


Block Diagram (RX loss 量測)

Criteria:

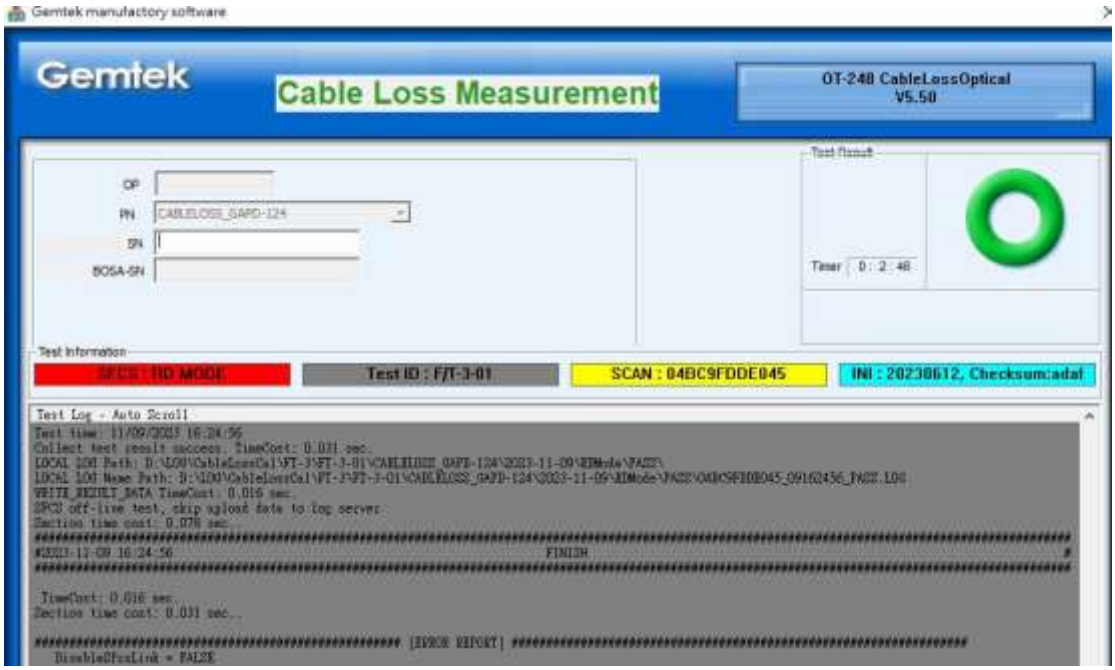
RX_LOSS_MIN = 0

RX_LOSS_MAX = 2

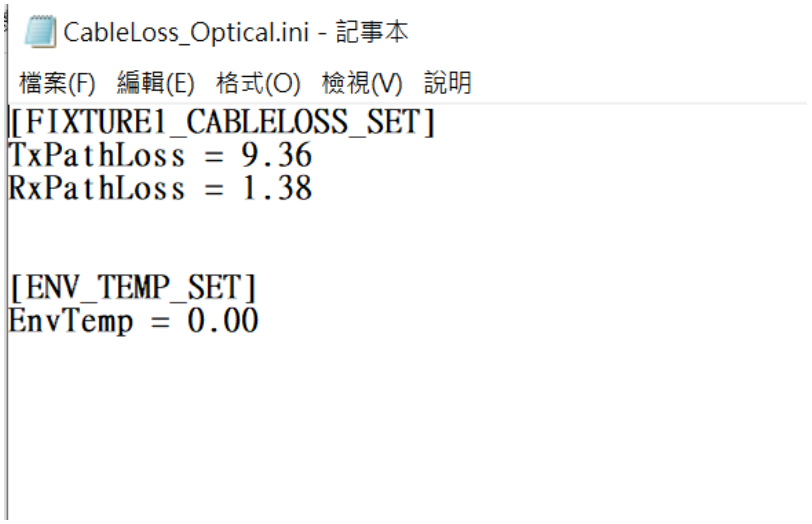



PON ONT
1310 nm
LOW dBm
PON OLT
1490 nm
-16.39 dBm
XGPON ONT
1270 nm
LOW dBm
XGPON OLT
1578 nm
LOW

9. Loss 量測完畢後程式則會跳出 PASS 之訊息



10. 量測完之 cable loss 則會自動存於 D:\TestProgramEnvSet\CableLoss_Optical.ini, 此內容請勿任意修改以避免造成無法 ONLINE 測試



11. Verify Cable Loss

TX Loss Calibration 跑完後請直接拿線上待測 DUT 離線跑 Calibration 測試, 測試完後請將此台 DUT Reboot, 在此台開完機後手動下 TX Power 指令並接上 Power Meter 確認此台 DUT 的 Power 與程式 Calibration Power 的誤差是否在±0.2dBm 內, 如超過此範圍請確認環境設備/cable/Golden 是否有異常並重新跑 TX Loss Calibration 程序

下圖為 GRTE-169 範例:

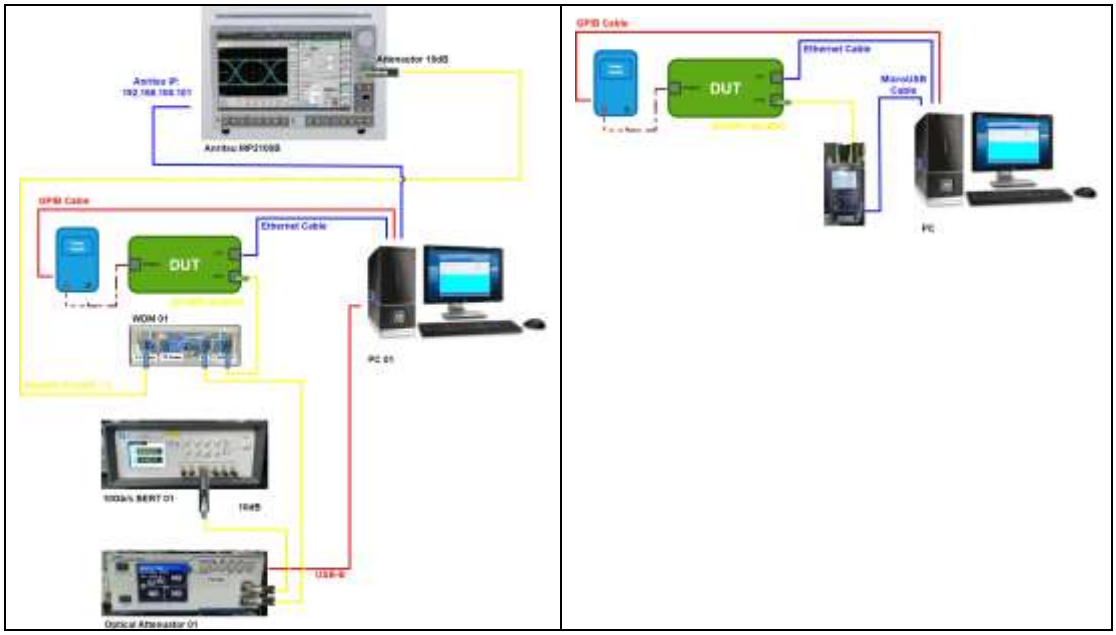

```
Sun Oct 24 11:48:25 2021 kern.warn kernel: [    71.322534] Date code = 2023-07-03
Sun Oct 24 11:48:25 2021 kern.warn kernel: [    71.326537] Driver Ver = 39
Sun Oct 24 11:48:25 2021 kern.warn kernel: [    71.331647] LOS = 1        TX_DIS = 0       BEN = 1
Sun Oct 24 11:48:25 2021 kern.warn kernel: [    71.336067] Temp = 46.750'C
Sun Oct 24 11:48:25 2021 kern.warn kernel: [    71.339539] VccT = 3.36V
Sun Oct 24 11:48:25 2021 kern.warn kernel: [    71.342749] Ibias = 18.7 mA
Sun Oct 24 11:48:25 2021 kern.warn kernel: [    71.346223] Imod = 24.3 mA
Sun Oct 24 11:48:25 2021 kern.warn kernel: [    71.349599] TxPwr = 2.44 dBm
Sun Oct 24 11:48:25 2021 kern.warn kernel: [    71.353166] RxPwr = -40.00 dBm
root@OpenWrt:~#
== bob_info end ==

CMD:echo apc_done >/proc/lddla/debug;usleep 10000
RSP:echo apc_done >/proc/lddla/debug;usleep 10000
root@OpenWrt:~#
Final Power: 6.380000
DCA input power: -6.460000
Section time cost: 14.407 sec..
```

Block Diagram (Verify loss 量測)

Criteria:

The OLP-87 measurement value needs to be different from the Final Power value of the optical program less than +-0.2

DUT 離線跑 Calibration 測試	手動下 X Power 指令 # echo tx_pattern 1 2 1 >/proc/pon_phy/debug



12. 在確認完 DUT Power 與程式相符後代表此次所量 cable loss 是正確的,所以請務必以此方式去量測 TX loss 並做 Verify,以避免有 TX Power 不準問題