



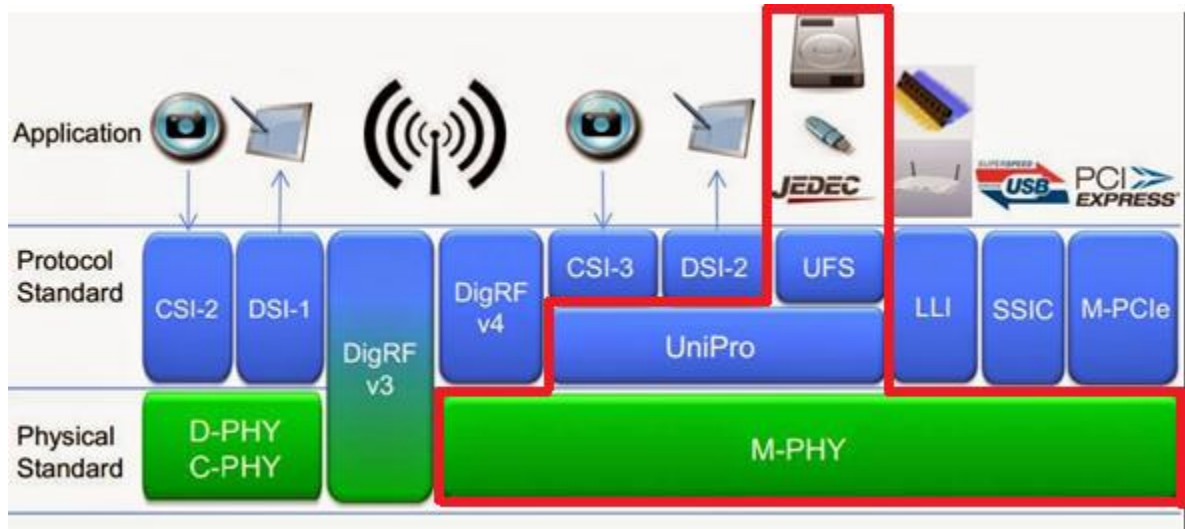
BF7264 系列
MIPI M-PHY UFS2.1
方案說明

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BF6264B	BF7264B	BF7264B+	BF7264 Pro
		●	●

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3. 可同時顯示 Unipro 及 UFS 協定封包資料以表格方式呈現，包含指令解析

TimeCamp (TimeStamp,Device,Seq. No.)

Host

Device

Seq. No.

3504

11:29:31.586.787.079 170.1

Start of Burst

3505

11:29:31.586.787.086 6.66ms

Filler(2x)

3506

11:29:31.586.792.809 5.72us

AFC TCO CReq=0

06

3507

11:29:31.586.798.598 5.78us

Filler(2x)

3508

11:29:31.586.804.347 5.74us

AFC TCO CReq=0

06

3509

11:29:31.586.810.097 5.74us

Filler(2x)

3510

11:29:31.586.815.833 5.73us

AFC TCO CReq=0

06

3511

11:29:31.586.821.609 5.77us

Filler(2x)

3512

11:29:31.586.827.315 5.70us

Data Frame TCO

3513

11:29:31.586.879.120 51.80

EOF EVEN

17

3514

11:29:31.586.884.876 5.75us

End of Burst

3515

11:29:31.586.884.883 6.66ms

Filler(2x)

3516

11:29:31.586.998.931 114.0

PREPARE

3517

11:29:31.587.027.862 28.93

Start of Burst

3518

11:29:31.587.027.868 6.66ms

Filler(4x)

3519

11:29:31.587.032.528 4.65us

AFC TCO CReq=0

17

3520

11:29:31.587.041.770 9.24us

Data Frame TCO

3521

11:29:31.587.051.283 9.51us

STALL

3522

11:29:31.587.106.624 55.34

EOF EVEN

07

3523

11:29:31.587.111.270 4.64us

Data Frame TCO

3524

11:29:31.587.152.959 41.68

EOF EVEN

08

3525

11:29:31.587.157.592 4.63us

Filler(4x)

3526

11:29:31.587.175.584 17.99

PREPARE

3527

11:29:31.587.208.560 32.97

End of Burst

3528

11:29:31.587.208.567 6.66ms

Filler(2x)

3529

11:29:31.587.244.577 36.00

STALL

3530

11:29:31.587.371.111 126.5

Start of Burst

3531

11:29:31.587.371.117 6.66ms

Filler(2x)

3532

11:29:31.587.376.897 5.77us

AFC TCO CReq=0

07

3533

11:29:31.587.382.630 5.73us

Filler(2x)

3534

11:29:31.587.388.379 5.74us

AFC TCO CReq=0

07

3535

11:29:31.587.394.142 5.76us

Filler(2x)

3536

11:29:31.587.399.918 5.77us

AFC TCO CReq=0

07

3537

11:29:31.587.405.654 5.73us

Filler(2x)

3538

11:29:31.587.411.403 5.74us

AFC TCO CReq=0

08

3539

11:29:31.587.417.166 5.76us

Filler(2x)

3540

11:29:31.587.422.942 5.77us

AFC TCO CReq=0

08

3541

11:29:31.587.428.705 5.76us

Data Frame TCO

3542

11:29:31.587.480.510 51.80

EOF EVEN

18

3543

11:29:31.587.486.266 5.75us

Filler(2x)

3544

11:29:31.587.492.002 5.73us

End of Burst

3545

11:29:31.587.492.009 6.66ms

Filler(2x)

3546

11:29:31.587.603.491 111.4

PREPARE

TimeCamp (TimeStamp,Device,Seq. No.)

Host

Device

Seq. No.

237

2.824.603.474 803.56us

QREQ (READ FLAG)

238

2.824.803.614 200.13us

QRESP (READ FLAG)

(Su...

239

2.825.610.440 806.82us

QREQ (READ FLAG)

240

2.825.816.500 206.08us

QRESP (READ FLAG)

(Su...

241

2.826.617.393 800.89us

QREQ (READ FLAG)

242

2.826.817.846 200.45us

QRESP (READ FLAG)

(Su...

243

2.827.624.342 806.49us

QREQ (READ FLAG)

244

2.827.830.785 206.44us

QRESP (READ FLAG)

(Su...

245

2.828.631.309 800.52us

QREQ (READ FLAG)

246

2.828.832.105 200.79us

QRESP (READ FLAG)

(Su...

247

2.829.638.301 806.19us

QREQ (READ FLAG)

248

2.829.845.100 206.79us

QRESP (READ FLAG)

(Su...

249

2.830.645.253 800.15us

QREQ (READ FLAG)

250

2.830.846.353 201.13us

QRESP (READ FLAG)

(Su...

251

2.831.652.216 805.82us

QREQ (READ FLAG)

252

2.831.859.332 207.11us

QRESP (READ FLAG)

(Su...

253

2.832.659.235 799.90us

CMD (TEST UNIT READY)

D

254

2.832.860.692 201.45us

RESPONSE

D

255

2.833.240.377 379.68us

QREQ (READ DESCRIPTOR)

256

2.833.450.076 209.69us

QRESP (READ DESCRIPTO...

257

2.833.827.315 377.23us

CMD (REQUEST SENSE)

D

258

2.834.041.770 214.45us

REQUEST SENSE RESPON...

D

259

2.834.111.270 69.49us

RESPONSE

D

260

2.834.428.705 317.43us

CMD (START STOP UNIT)

D

261

2.834.645.047 216.34us

RESPONSE

D

262

2.835.441.380 796.33us

CMD (INQUIRY)

D

263

2.835.647.220 205.83us

INQUIRY RESPONSE

D

264

2.835.744.483 97.26us

RESPONSE

D

265

2.836.062.902 318.41us

QREQ (READ DESCRIPTOR)

266

2.836.276.064 213.16us

QRESP (READ DESCRIPTO...

267

2.836.810.970 534.90us

QREQ (READ ATTRIBUTE)

268

2.837.023.105 212.13us

QRESP (READ ATTRIBUTE...

269

2.837.829.438 806.33us

QREQ (READ ATTRIBUTE)

270

2.838.034.361 204.92us

QRESP (READ ATTRIBUTE...

271

2.838.836.431 802.06us

QREQ (READ DESCRIPTOR)

272

2.839.038.024 201.59us

QRESP (READ DESCRIPTO...

273

2.839.466.686 448.66us

CMD (TEST UNIT READY)

0

274

2.839.694.728 205.04us

RESPONSE

0

275

2.841.782.943 2.08ms

CMD (REQUEST SENSE)

0

276

2.841.788.047 5.10us

REQUEST SENSE RESPON...

0

277

2.841.788.767 719.92ns

RESPONSE

0

278

2.841.823.555 34.78us

QREQ (READ DESCRIPTOR)

279

2.841.829.351 5.79us

QRESP (READ DESCRIPTO...

Detail

CMD (START STOP UNIT)

7 6 5 4 3 2 1 0

7 6 5 4 3 2 1 0

7 6 5 4 3 2 1 0

7 6 5 4 3 2 1 0

Transaction Code

Task Tag

LUN

Task Tag

0 0 0 0 0 0 0 0

0h 0h 0h 0h 0h 0h 0h 0h

0h 0h 0h 0h 0h 0h 0h 0h

ID

Mand Set

Reserved

Reserved

Reserved

Reserved

4 0h 0h 0h 0h 0h 0h 0h

EHS Length

Reserved

Data Segment Length

0000h

8 0h 0h 0h 0h 0h 0h 0h

Data Transfer Length

Data Transfer Length

Data Transfer Length

Data Transfer Len

12 0h 0h 0h 0h 0h 0h 0h

OPERATION CODE

Reserved

Reserved

Reserved

CONDITION

16 16h 0h 0h 0h 0h 0h 0h

RCOND

16h

CONTROL

Reserved

Reserved

20 1h 0h 0h 0h 0h 0h 0h

1h 0h 0h 0h 0h 0h 0h 0h

1 [6]R Flag Bit= 0

2 [5]W Flag Bit= 0

3 [2]C= 0

4 [1:0]ATTR= Simple (0h)

5 [7:0]LUN= 20h

6 [7:0]Task Tag= 16h

7 [7:4]IID= 0

8 [3:0]Command Set Type= SCSI Command Set (SPC, SBC) (0h)

9 [7:0]EHS Length= 00h

10 [15:0]Data Segment Length= 0000h

11 [31:0]Expected Data Transfer Length= 00000000h

12 [7:0]OPERATION CODE= START STOP UNIT (16h)

13 [0]IMMED= 0h

14 [5:0]POWER CONDITION MODIFIER= 0h

15 [3:0]POWER CONDITION MODIFIER= 0h

16 [7:4]POWER CONDITION= 1h

17 [2]NO_FLUSH= 0h

18 [1]IOE= 0h

19 [0]START= 0h

20 [7:0]CONTROL= 00h

0 1 2 3 4 5 6 7

ASCII

00h 01 00 00 10 00

Unipro

UFS

Detail

4. 使用 32Gb RAM 搭配硬碟串流來儲存 Unipro, UFS 通訊資料，可完整節錄待測物從 PWM Mode 初始化到 High Speed Mode 的流程
5. 提供 Data Filter 功能，可將不必要的資料濾除以節省記憶體
6. 提供 Search 資料功能
7. 提供 CRC Packet 計算及錯誤顯示
8. Unipro, UFS 命令統計功能，包含封包總數、各類別指令數量以及錯誤數量統計

Unipro			UFS		
Navigator			Navigator		
Discription	Txns	Bytes	Discription	Txns	Bytes
▼ Unipro			▼ UFS		
▼ L2	83257		SCSI Command	148	
SOF	8318		UFS Protocol	655	
AFC TC0	66591		QUERY REQUEST	34	
AFC TC1	8		QUERY RESPONSE	34	
NAC	0		TASK MANAGEMENT	0	
COF TC0	22		LUN	799	
EOF EVEN	8318		TRANSFER LENGTH	129	
EOF ODD	0		RESERVED		
▶ L1.5	1252				
▼ L1	310				
HIBERN8	2				
STALL	135				
SLEEP	19				
LINE RESET	0				
LINE CONFIG	0				
PREPARE	154				
▶ Error Packets	13				
Statistics			Statistics		
	Txns	Bytes		Txns	Bytes
▼ AFC TC0	66591		NOP OUT	2	
Host	66311		NOP IN	2	
Device	280		RESPONSE	147	
			READ(10) DATA(DATA IN)	496	
			REQUEST SENSE RESPONSE DATA(DATA IN)	7	
			INQUIRY RESPONSE DATA(DATA IN)	1	

Unipro

UFS

9. Unipro, UFS 命令觸發功能

- a. 觸發參數包含命令與參數資料可依據不同種類封包填入數值,
- b. 涵蓋所有 Unipro, UFS Packet,
- c. 可觸發 CRC Error, Unknown packet
- d. 可觸發 VCC drop, VCCQ2 drop
- e. 可透過 Trigger-Out 接孔同步觸發外部的示波器

☒ Trigger On

Trigger Item 1/8 Clear All

- ☐ Any UFS packets
- ▼ SCSI Command
 - ☐ Any Command
 - ☐ FORMAT UNIT
 - ☐ INQUIRY
 - ☐ MODE SELECT (10)
 - ☐ MODE SENSE (10)
 - ☐ PRE-FETCH (10)
 - ☐ PRE-FETCH (16)
 - ☒ READ (6)
 - ☐ READ (10)
 - ☐ READ (16)
 - ☐ READ BUFFER

☐ Unknown Packet
 ☐ CRC ERR
 ☐ VCC Drop
 ☐ VCCQ2 Drop

	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	
	HD	DD	Transaction Code						Reserved	R Flag Bit	W Flag Bit	Reserved			CP	ATTR	
0	0	0	01h						X	X	X	Xh			X	Xh	
2	LUN XXh								Task Tag XXh								
4	IID Xh				Command Set Type Xh				Reserved XXh								
6	Reserved XXXXh																
8	EHS Length XXh								Reserved XXh								
10	Data Segment Length XXXXh																
12	Expected Data Transfer Length XXXXh																
14	Expected Data Transfer Length XXXXh																
16	OPERATION CODE 08h								Reserved Xh		LOGICAL BLOCK ADDRESS XXh						
18	LOGICAL BLOCK ADDRESS XXXXh																
20	TRANSFER LENGTH XXh								CONTROL XXh								
22	Reserved XXXXh																
24	Reserved XXXXh																
26	Reserved XXXXh																
28	Reserved XXXXh																
30	Reserved XXXXh																

Default OK Cancel

10. 報告區進階使用方法

a. **雙報告關聯**: Unipro 與 UFS 報告互相關聯，雙擊可追蹤另一報告區對應資料。

ex: 點擊 Unipro 區報告，可關聯至 UFS 對應報告。

Timestamp (h:m:s.ms.us.ns dur)	Host	Device	Task Tag Data
16:15:03.796.342.673 13.33.	Filler(2x)		
16:15:03.796.342.703 29.99.	AFC TCO CReq=0		
16:15:03.796.342.729 26.66.	Filler(2x)		
16:15:03.796.342.756 26.66.	AFC TCO CReq=0		
16:15:03.796.342.783 26.66.	Filler(2x)		
16:15:03.796.342.813 29.99.	AFC TCO CReq=0		
16:15:03.796.342.839 26.66.	AFC TCO CReq=0		
16:15:03.796.342.853 53.32.	AFC TCO CReq=0		
16:15:03.796.342.906 13.33.	EOF EVEN		
16:15:03.796.342.919 13.33.	AFC TCO CReq=0		
16:15:03.796.342.933 13.33.	Filler(4x)		
16:15:03.796.342.976 43.32.	Filler(4x)		
16:15:03.796.343.029 53.32.	AFC TCO CReq=0		
16:15:03.796.343.056 26.66.	Filler(2x)		
16:15:03.796.343.086 29.99.	AFC TCO CReq=0		
16:15:03.796.343.112 26.66.	Filler(4x)		
16:15:03.796.343.306 193.3.	AFC TCO CReq=0		
16:15:03.796.343.332 26.66.	Filler(2x)		
16:15:03.796.343.359 26.66.	AFC TCO CReq=0		
16:15:03.796.343.386 26.66.	Filler(2x)		
16:15:03.796.343.412 26.66.	AFC TCO CReq=0		
16:15:03.796.343.442 29.99.	Filler(4x)		
16:15:03.796.342.107 18.66.	Data Frame TCO		
16:15:03.796.342.354 246.6.	EOF EVEN		
16:15:03.796.342.381 26.66.	Filler(4x)		
16:15:03.796.343.270 889.9.	AFC TCO CReq=0		
16:15:03.796.343.324 53.32.	Filler(4x)		
16:15:03.796.343.350 26.66.	AFC TCO CReq=0		
16:15:03.796.343.407 56.66.	Filler(4x)		
16:15:03.796.424.351 60.99.	Data Frame TCO		
16:15:03.796.426.281 1.89us	EOF EVEN		
16:15:03.796.426.307 26.66.	Data Frame TCO		
16:15:03.796.426.681 373.2.	AFC TCO CReq=0		
16:15:03.796.426.707 26.66.	Filler(2x)		
16:15:03.796.426.734 26.66.	AFC TCO CReq=0		
16:15:03.796.426.764 29.99.	Filler(2x)		
16:15:03.796.426.791 26.66.	AFC TCO CReq=0		
16:15:03.796.426.817 26.66.	Filler(2x)		
16:15:03.796.426.844 26.66.	AFC TCO CReq=0		
16:15:03.796.426.871 26.66.	AFC TCO CReq=0		
16:15:03.796.426.927 56.66.	AFC TCO CReq=0		
16:15:03.796.426.954 26.66.	AFC TCO CReq=0		
16:15:03.796.427.011 56.66.	Filler(4x)		
16:15:03.796.428.201 1.19us	EOF EVEN		

b. **統計列表**: 以統計功能快速分類並可追蹤資料位置

開啟統計列表

Timestamp (h:m:s.ms.us.ns dur)	Host	Device	Task Tag Data
11:29:31.596.787.079 170.1.	Start of Burst		
11:29:31.596.787.086 6.66us	Filler(2x)		
11:29:31.596.792.809 5.72us	AFC TCO CReq=0		
11:29:31.596.794.598 5.79us	Filler(2x)		
11:29:31.596.804.887 5.79us	AFC TCO CReq=0		
11:29:31.596.810.897 5.79us	Filler(2x)		
11:29:31.596.815.893 5.79us	AFC TCO CReq=0		
11:29:31.596.821.609 5.77us	Filler(2x)		
11:29:31.596.827.315 5.79us	Data Frame TCO		
11:29:31.596.879.120 51.40.	EOF EVEN		
11:29:31.596.884.876 5.79us	End of Burst		
11:29:31.596.884.883 6.66us	Filler(2x)		
11:29:31.596.898.931 114.0.	PREPARE		
11:29:31.597.027.842 20.93.	Start of Burst		
11:29:31.597.027.868 6.66us	Filler(4x)		
11:29:31.597.032.528 4.65us	AFC TCO CReq=0		
11:29:31.597.041.770 9.24us	Data Frame TCO		
11:29:31.597.051.253 9.51us	STALL		
11:29:31.597.106.624 45.34.	EOF EVEN		
11:29:31.597.111.270 4.64us	Data Frame TCO		
11:29:31.597.152.959 41.68.	EOF EVEN		
11:29:31.597.157.892 4.63us	Filler(4x)		
11:29:31.597.175.554 17.39.	PREPARE		
11:29:31.597.208.560 32.97.	End of Burst		
11:29:31.597.208.567 6.66us	Filler(2x)		
11:29:31.597.244.577 36.00.	STALL		

Line No.	Timestamp	Host	Device	LUN	Task Tag	sh Segment L	Logical Block Addr	Transfer Length	End
257	2.833.627.313 9	CMD (REQUEST SENSE)		00	17	0000	01 40 00 17 00 00 00.		
275	2.841.782.943 7.59us	CMD (REQUEST SENSE)		00	1F	0000	01 40 00 1F 00 00 00.		
293	2.843.335.161 1.55us	CMD (REQUEST SENSE)		01	26	0000	01 40 01 26 00 00 00.		
311	2.844.730.049 1.39us	CMD (REQUEST SENSE)		02	2D	0000	01 40 02 2D 00 00 00.		
329	2.846.085.928 1.39us	CMD (REQUEST SENSE)		03	34	0000	01 40 03 34 00 00 00.		

Acute BufFinder (Ver1.5.57, Demo mode)

The screenshot displays the Acute BufFinder interface with the following components:

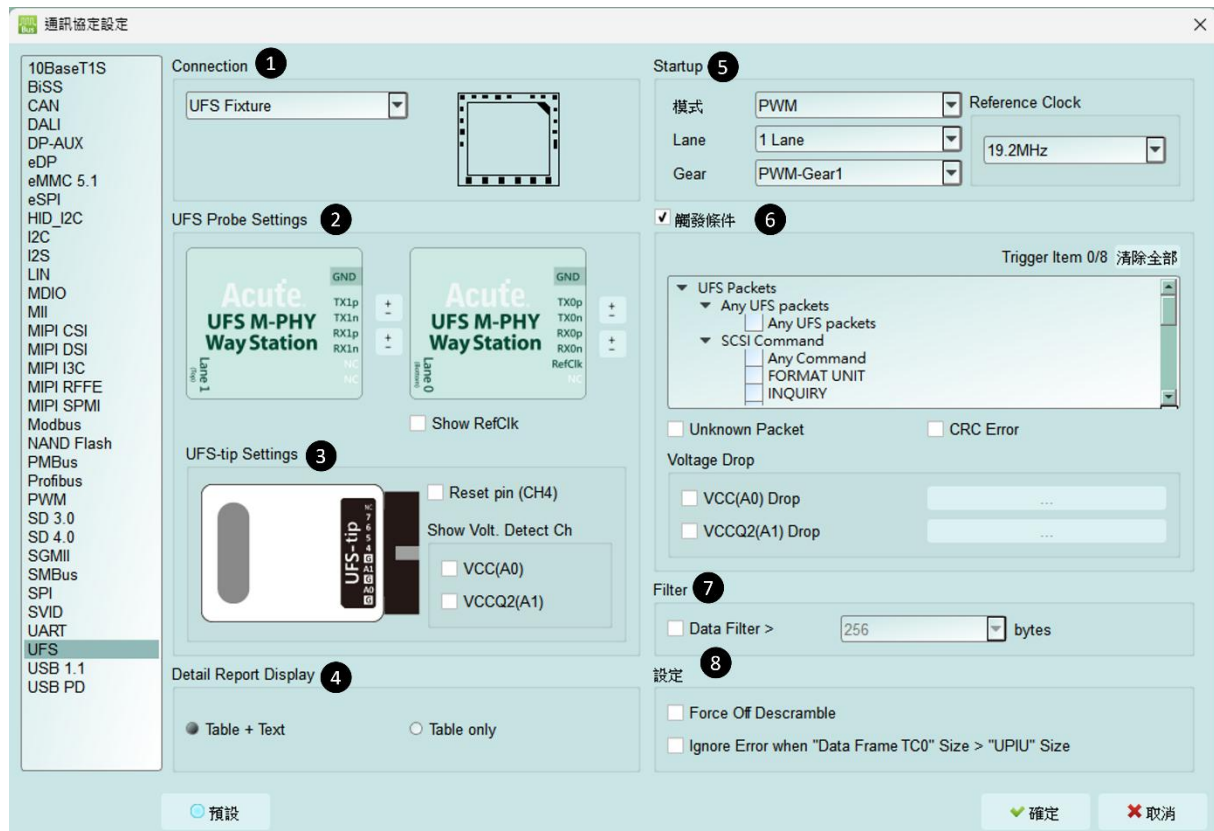
- Main Log:** A table with columns: Timestamp, Host, Device, LUN, Task Tag, Data Segment Len, Logical Block Addr, Transfer Length, and Data. It lists various SCSI commands like REQUEST SENSE, INQUIRY, and READ.
- Navigator:** A panel on the right showing a tree view of SCSI commands and their corresponding data segments.
- Statistics:** A panel on the right showing a summary of command counts and data sizes.
- Packet 145104 (00):** A detailed view of a specific data packet at the bottom.

Red annotations highlight the process of tracing data from the UFS statistics back to the original Unipro data:

- A red box highlights the **Navigator** and **Statistics** panels.
- A red arrow points from the **Statistics** panel to the **Navigator** panel.
- A red box highlights a specific data row in the main log, with a red arrow pointing to it from the **Navigator** panel.

從UFS的統計資料追尋至Unipro原始資料的過程

11. UFS Settings



1. **Connection:** 需選擇 BF7264B+/Pro 與待測物的連接方式
2. **UFS Probe Settings:** 可交換同一 Lane 之 p / n; 可選擇是否要顯示 RefClk 量測數據
3. **UFS-tip Settings:**
 - a. 可開啟 UFS Reset pin 之判斷，需接上 reset pin 於 UFS probe 之 LA tip CH4 位置。當協定分析收到 Reset 訊號時，就會重置 Power mode 回到 PWM mode.
 - b. 打開電壓偵測之後，當電壓有變化時會顯示所偵測到的電壓值
4. **Detail Report Display:** 可選擇是否需要文字描述的解析方式
5. **Startup:** 需設定於擷取當下，待測物所運行之模式；必須設定 Reference Clock，可選擇 19.2 / 26 / 38.4 / 52 MHz 選項（無論 RefClk 訊號是否有接上，此數值都必須正確設定，不然訊號分析可能會出現錯誤）
6. **Trigger On:** 可設定 Unipro/UFS packets，共 8 組，以及 Unknown Packet, CRC Error 觸發選項，另加入兩組電壓偵測可使用
7. **Filter:** 開啟後將會濾除大於設定值之封包後方資料
8. **設定:**
 - **Force Off Descramble:** 勾選時，不進行解擾(Descramble)，只呈現擾碼(Scramble)的結果。

- **Ignore Error when “Data Frame TC0” Size > “UPIU” Size:** 勾選時，當“Data Frame TC0”的大小大於“UPIU”的大小時，忽略錯誤。

FAQ

1. 支援 UFS 第幾版的規格，是否有 Differential 對數或 port 數限制呢？

A：MIPI M-PHY 3.0, Up to 5.8Gbps (Gear 3, Rate A / B), 2 Lanes
MIPI Unipro 1.8
JEDEC UFS 2.1
JEDEC UFS 3.1 commands

2. 量測時是否會影響訊號品質？

A：外接的儀器量測必然會有部分的負載效應影響，我們採用 SMPM Coaxial Cable 的连接方式來降低對待測物干擾並提升訊號品質。

3. 是否有支援訊號發送 (Tx) 功能？

A：不支援訊號發送功能

4. 量測時須注意的事項

a. 接線問題判斷與排除方法：

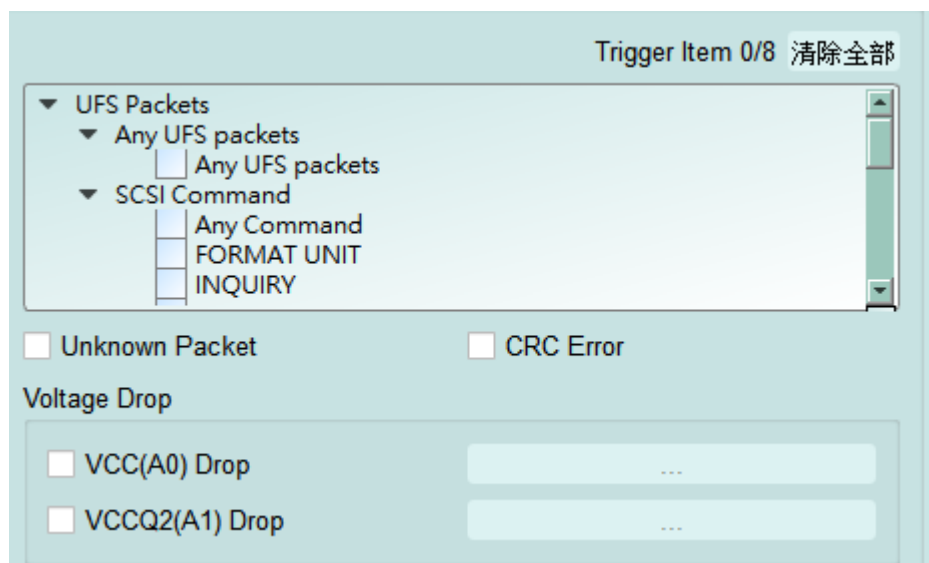
請確實按手冊探棒與待測物連接方式進行連接。若量測起來 PWM 正常，但無法看到任何 HS data 或只能上 1 Lane 而無法上 2 Lane 時，就應先檢查接線是否有錯誤。

b. Reference clock 設定方式：

在 Settings 有提供 Ref Clk 19.2MHz(default) / 26MHz / 38.4MHz / 52MHz 四個選項。若不清楚所使用的 Ref clk 為何時，可按下列方式做判斷。若 PWM 正常，但 HS Data 都是錯誤的，請嘗試調整 Ref Clk 為其他頻率再抓一次。

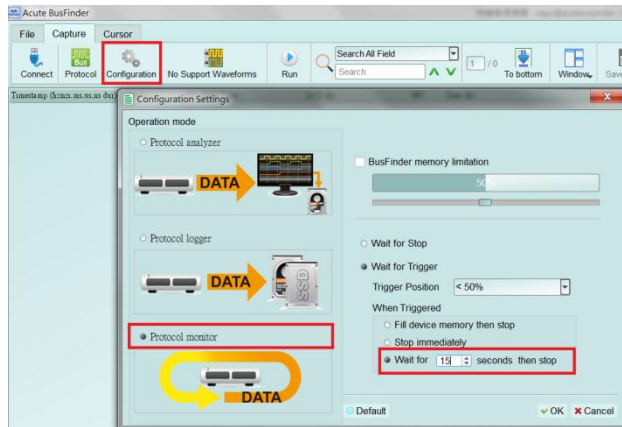
5. 有指定某個 Unipro, UFS packet 做為 trigger 點的功能嗎？

A：可以指定特定的 Unipro, UFS packet 或是 Error 進行觸發。



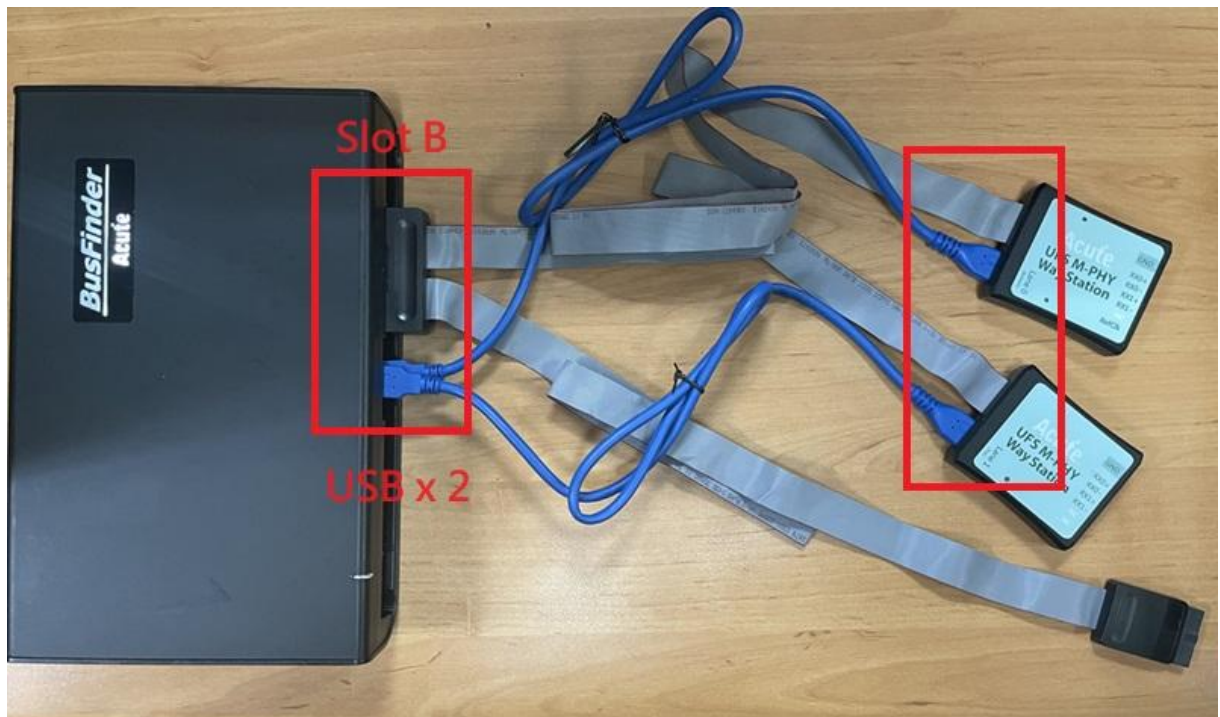
6. 是否可以自行設定一個 Unipro, UFS 起始點，指定抓取多少時間內的 Data?

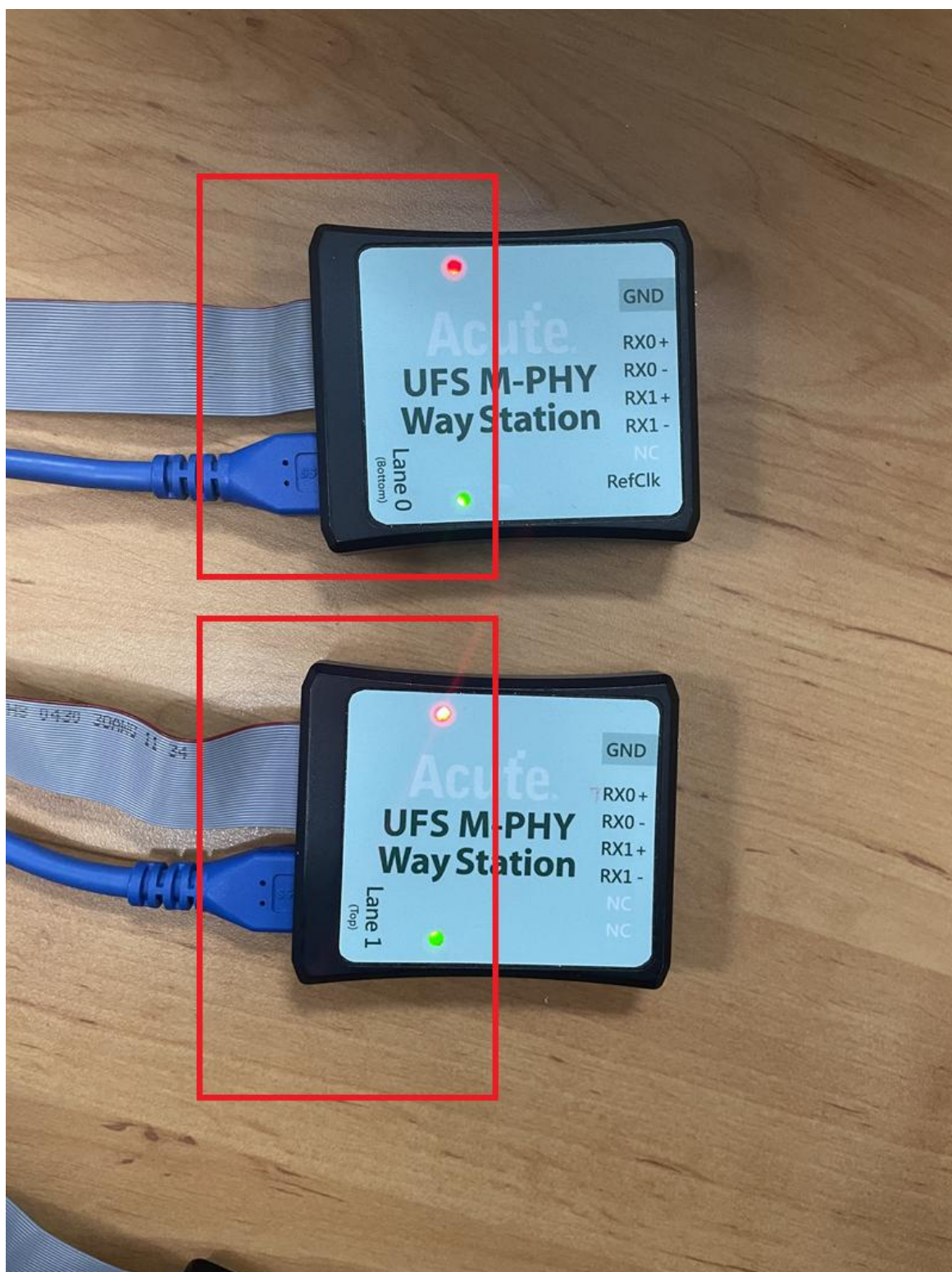
A: 可以將起始條件設定在觸發項目後，到工作模式選單內調整為資料監控儀模式，並指定擷取時間長度。



主機與探棒連接方式

主機僅能使用 Slot B 作為探棒連接槽，並注意主機前端的兩個 USB 插槽也需要連接至 Way Station 上，且上方 USB 對應 Top Way Station，下方 USB 對應 Bottom Way Station，不可接錯，否則將無法量測。連接後請注意兩個 Way Station 燈號是否皆有亮起紅燈跟綠燈各一。





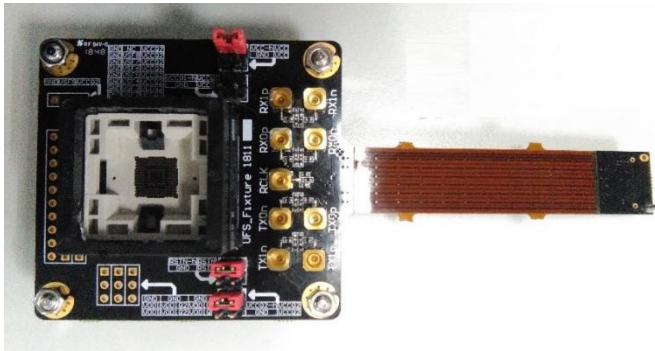
探棒與待測物連接方式

a. 使用 UFS Fixture (連接器)方式連接

使用時機：

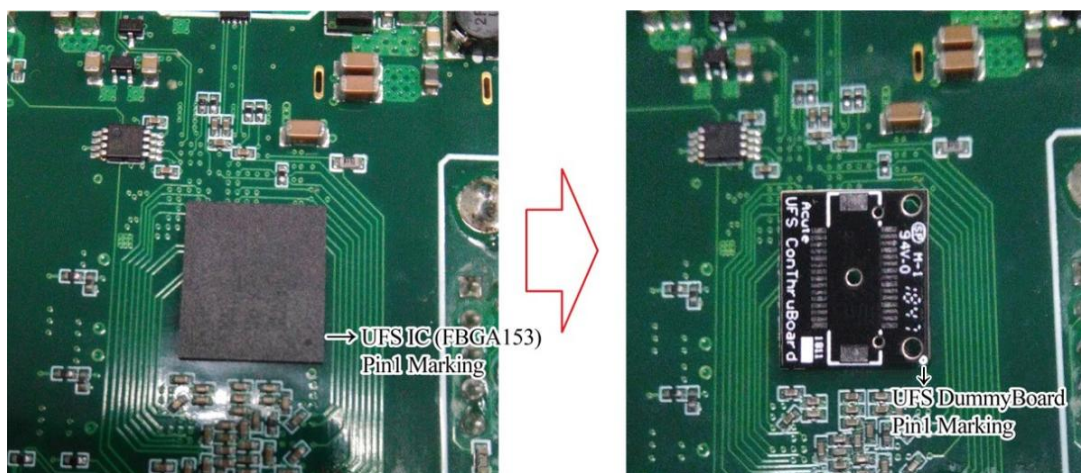
若 Host 有多套時可用連接器的方式，方便更換 Host 與 UFS Chip，以及不需要跳線直接使用 SMPM Cable 連接 Way Station。

由於連接器使用軟排線延伸訊號，只適合應用於 UFS Chip 周邊元件不干涉的情況。

零件列表	
1. 連接器主板(Con Fixture)	
2. 連接器小板(Con Dummy Board)	 背面需植 0.3mm 錫球
3. 連接器 DF17-30DS-0.5V (HiRose Connector)	

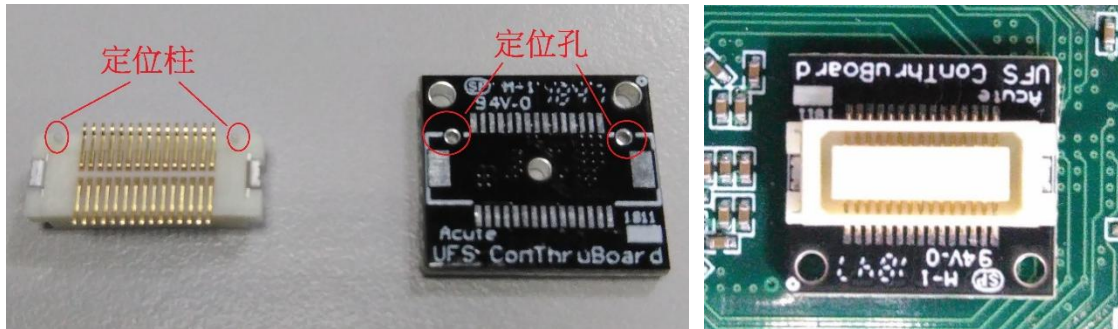
Step1: 將待測物上的 UFS Chip 拔起，拔起來的 UFS Chip 需重新植錫球。

Step2: 將連接器小板，焊在已拆下 UFS Chip 位置。



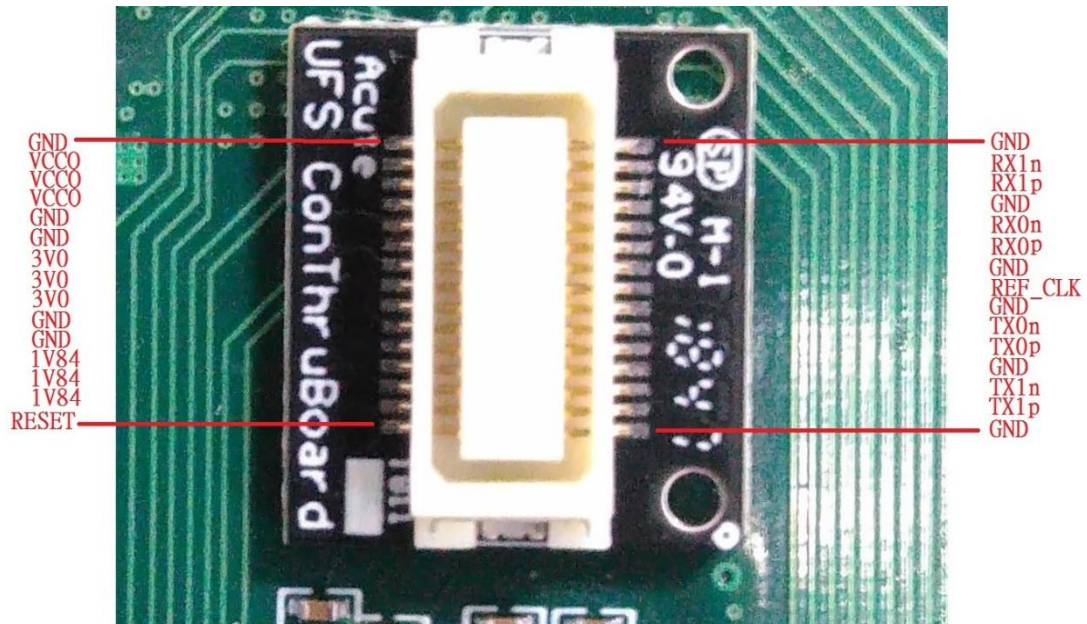
焊接連接器小板時請注意 Pin1 方向

Step3: 將連接器(DF17-30DS-0.5V)放在連接器小板上，在焊接之前請先注意連接器背後定位柱方向與小板定位孔位置

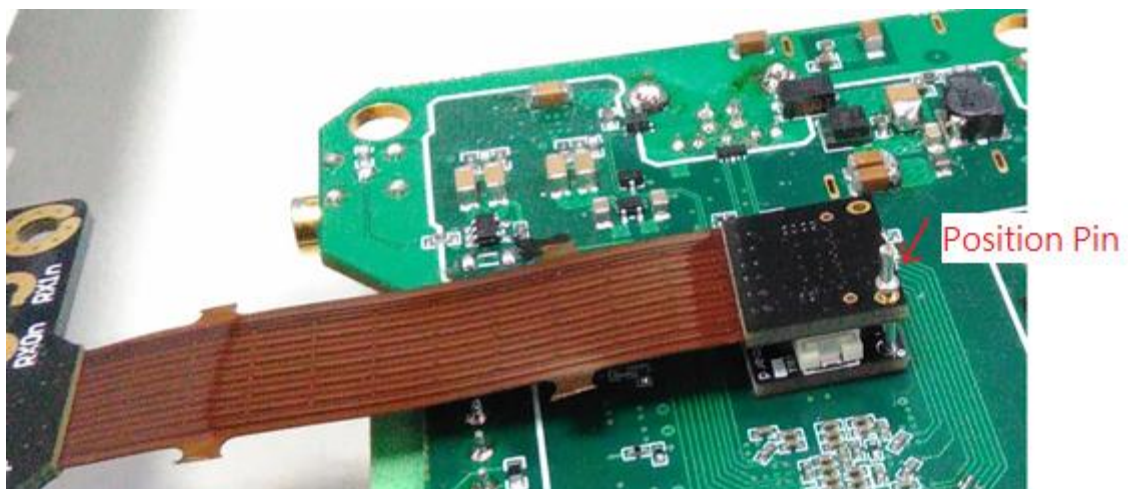


Step4: 連接器放置小板確認完成開始焊接，焊接完成後確認 pin 腳之間有無短路。

Pin 腳名稱如下圖



Step5: 連接主板，連接前請先注意主板連接器上定位針與小板定位孔位置

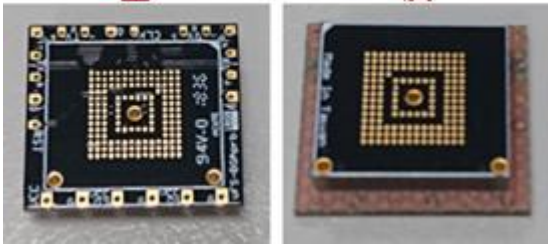
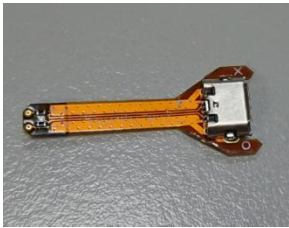
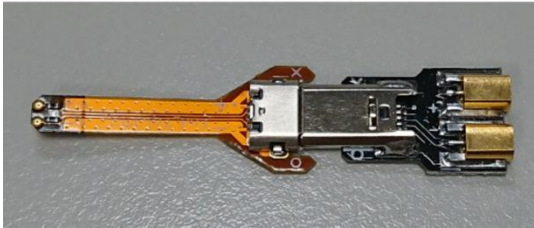
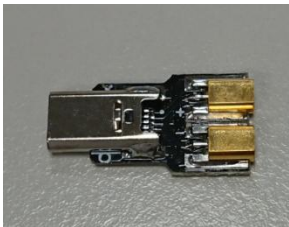


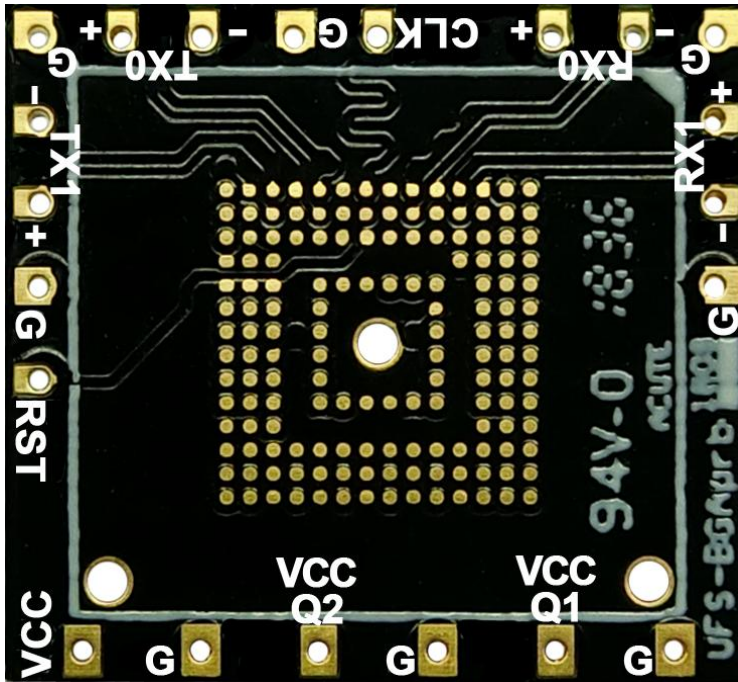
Step6: 將拔起來的 UFS Chip 放進連接器主板 UFS Socket (FBGA153 Socket) ,
完成。

b. 使用增高板搭配 End-tip 方式連接

使用時機：

若原 UFS Chip 周邊元件干涉，無法使用 UFS Fixture 時以及 UFS Chip 周邊沒有測試點(Test point)可進行跳線時，就需拔除原 UFS Chip，以增高板墊高之後再從測試點接上 End-tip 後再使用 SMPM Cable 連接 Way Station。

零件列表		
增高板	正 反 	
End-tip 軟板		組合完成 
End-tip 軟板連接器		



增高板腳位圖

c. 使用 End-tip 方式連接

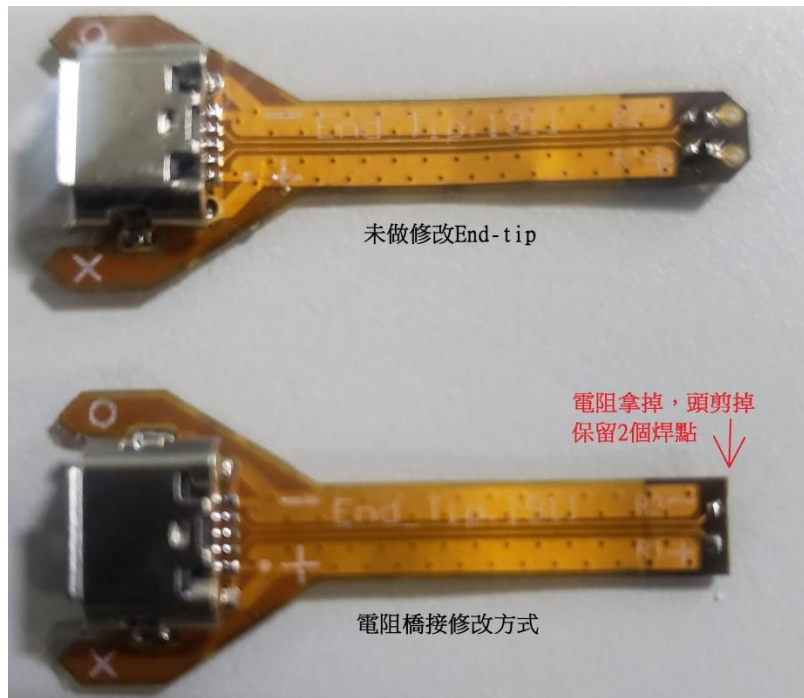
若待測板已留有測試點(Test point)可進行跳線時，可直接使用 End-tip 接上測試，就不需使用增高板。

UFS 標配的 End-tip 軟板上面的電阻為 250ohm，一般的情況下可直接使用。

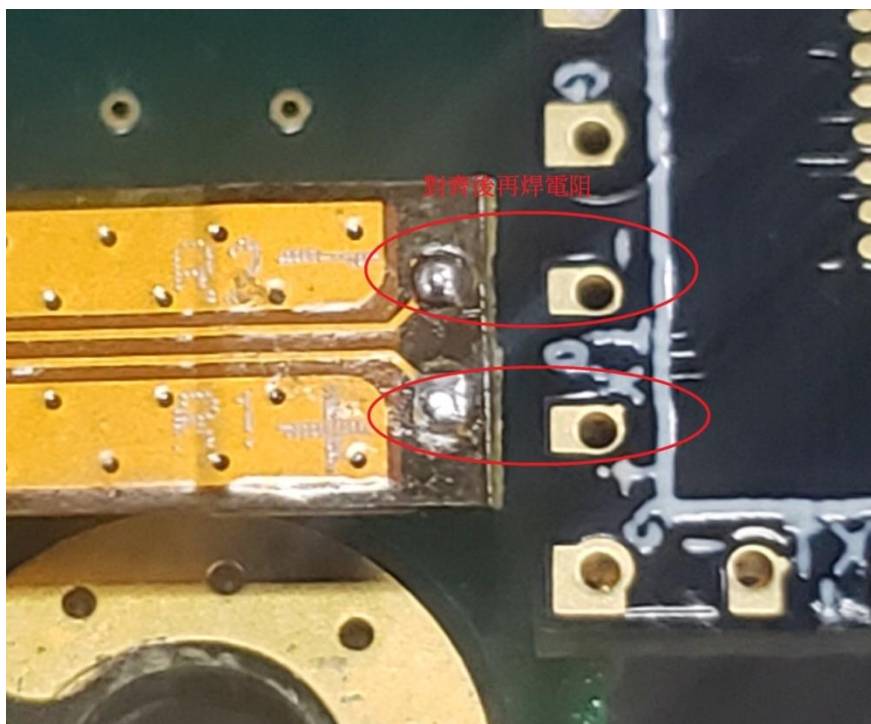
若希望縮短跳線距離以提升訊號品質，可按照下列方式以電阻橋接方式(如下圖)，End-tip 要做修改。

修改流程：

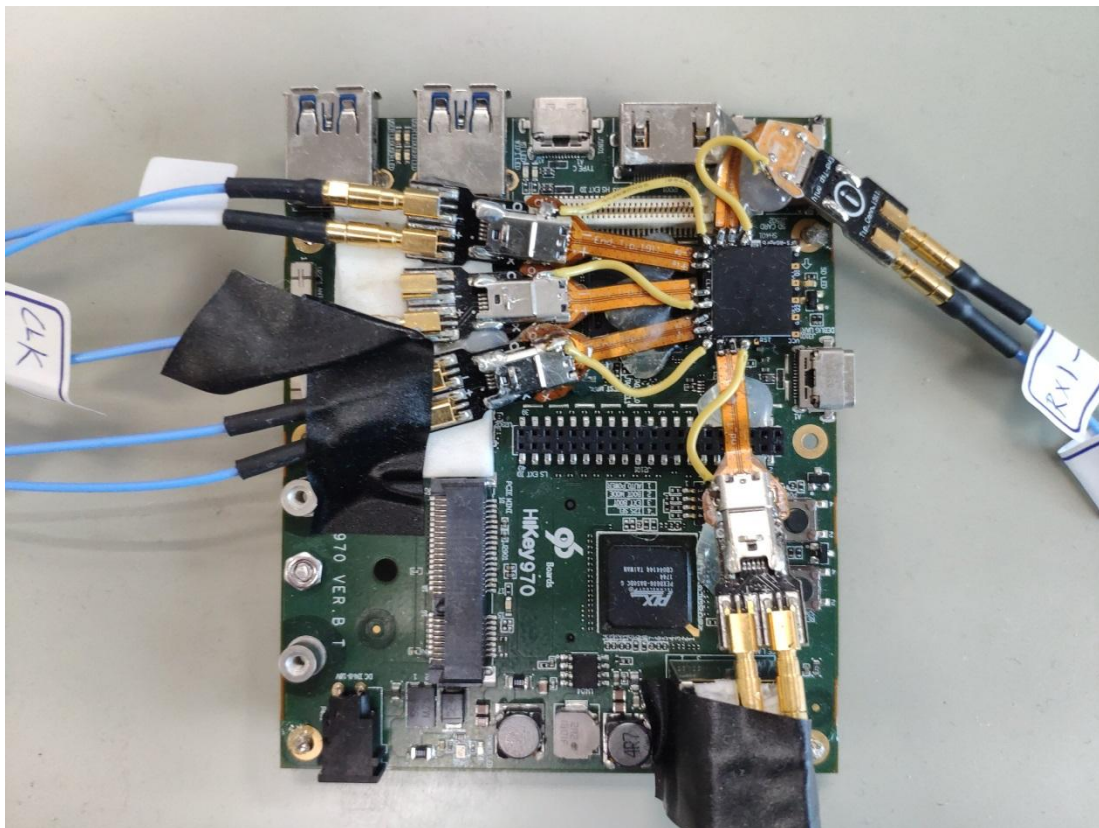
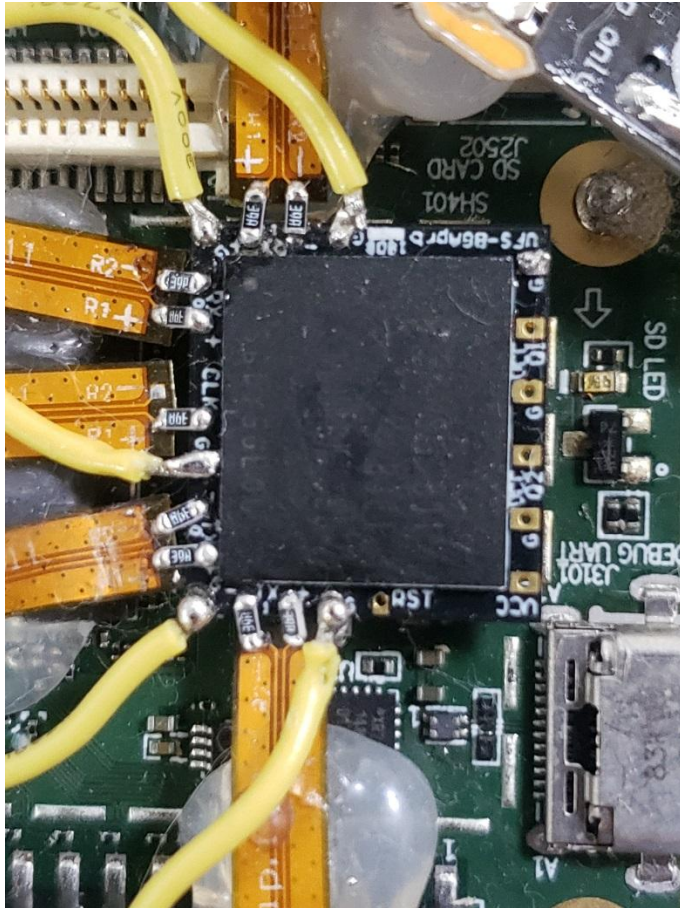
Step1: 電阻拿掉，頭剪掉，保留 2 個焊點。



Step2: 改完後 End-tip 上面的 P/N 焊點與增高板的 P/N 焊點對齊，對齊後再將電阻 250ohm 焊上去，4 組 data +1 條 clk 焊完後再焊接地線。



完成示意圖。此種方式因距離最短使得訊號品質會比 End-tip 跳線連接的方式來的好。



Way Station 連接方式

1. UFS Probe 請安裝於 BusFinder 7264B+/Pro 的 Slot B 插槽
2. Way Station 轉接盒各有一個 USB Type B 插孔，請使用對應之 USB Cable 安裝於主機正面插孔。安裝時，請按照 Way Station 銘板標示之 Top/Botom 安裝即可。

