

BF7264B+ MIPI M-PHY UFS2.1 方案说明



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概况

此方案仅于 BF7264B+产品提供 MIPI M-PHY UFS2.1 分析仪功能(可解析 UFS3.1 命 令组)。

MIPI M-PHY UFS2.1 方案,规格内容如下:

1. BF7264B+, 32Gb RAM, 搭配 MIPI M-PHY UFS2.1 探头组



2. 完整支持 MIPI M-PHY UFS2.1 以及支持 UFS3.1 命令组 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





3. 可同时显示 Unipro 及 UFS 协议封包数据以表格方式呈现,包含指令解析





- 4. 使用 32Gb RAM 搭配硬盘串流来储存 Unipro, UFS 通讯数据,可完整节录待测物从 PWM Mode 初始化到 High Speed Mode 的流程
- 5. 提供 Data Filter 功能,可将不必要的数据滤除以节省内存
- 6. 提供 Search 数据功能
- 7. 提供 CRC Packet 计算及错误显示
- 8. Unipro, UFS 命令统计功能,包含封包总数、各类别指令数量以及错误数量统计

Navigator			0 🗙	Navigator			0 X
Discription	Txns	Bytes		Discription	Txns By	ytes	
 Unipro SOF AFC TC0 AFC TC1 NAC COF TC0 EOF EVEN EOF ODD L1.5 L1 HIBERN8 STALL SLEEP LINE RESET LINE CONFIG PREPARE Error Packets 	83257 8318 66591 8 0 22 8318 0 1252 310 2 135 19 0 0 154 13			 ✓ UFS SCSI Command UFS Protocol QUERY REQUEST QUERY RESPONSE TASK MANAGEMENT LUN TRANSFER LENGTH RESERVED 	148 655 34 34 0 799 129		
Statistics ▼ AFC TC0 Host Device		1xns 66591 66311 280	Bytes	Statistics NOP OUT NOP IN RESPONSE READ(10) DATA(DATA IN) REQUEST SENSE RESPONSE INQUIRY RESPONSE DATA(D	se data(data in data in)	1xns 2 2 147 496 √) 7 1	bytes
Detail Navigator Hide Items				Detail Navigator Hide Items			
Unip	ro			L	JFS		



9. Unipro, UFS 命令触发功能

- a. 触发参数包含命令与参数资料可依据不同种类封包填入数值,
- b. 涵盖所有 Unipro, UFS Packet,
- c. 可触发 CRC Error, Unknown packet
- d. 可触发 VCC drop, VCCQ2 drop
- e. 可透过 Trigger-Out 接孔同步触发外部的示波器

 Trigger On 			
		Trigger It	em 1/8 Clear All
✓ SCSICC	Any UFS packets ommand Any Command FORMAT UNIT INQUIRY MODE SELECT (10) MODE SELECT (10) PRE-FETCH (10) PRE-FETCH (16) READ (10) READ (16)		
Unknown P	acket	CRC ERR	
VCC Drop		VCCQ2 Drop	

F	READ (6)	6	F		2	0	4		1 -	0	F	4 2	0	4		×
) /	0 D Elan Dit	5 W Elao Dit	4 3 Received	2	1			
0	0		1		01	Ih	_		X	X	X	Xh			íh	
		LUN Task Tag														
2	[XXh XXh]					
[1	ID		Ļ	Command	d Set Typ	e	Ļ			Reserved				
4		Xn Xh XXh														
6	Reserved															
0		EHS Length Reserved									1					
8				X	-engui Kh							XXh				
		Data Segment Length														
10		XXXXh														
[Expected Data Transfer Length														
12		XXXXh														
	Expected Data Transfer Length															
14		20000														
16		OPERATION CODE Reserved LOGICAL BLOCK ADDRESS														
18								XX	XXh							
[TRANSFE	R LENGTH							CONTROL				
20				Х	Kh				I			XXh				
								Res	erved							
22								XX	XXh							
24								Res	XXh							
24								Res	erved							11
26								XX	XXh							
								Res	erved							
28								XX	XXh]
								Res	erved							
30						_		XX	XXh		_					J
																-
Def	ault	ult OK Cancel														



10. 报告区进阶使用方法

a. <u>双报告关联:</u>Unipro 与 UFS 报告互相关联,双击可追踪另一报告区对应资料。 ex: 点击 Unipro 区报告,可关联至 UFS 对应报告。

Diam Diam <thdiam< th=""> Diam Diam</thdiam<>											
Bit 1641503.796.342:703 30.59. AC TOO CReePO Description Descript	1280	16:15:03.796.342.673 13.33	Filler(2x)		ГШ	2					
1000 14115007.078.03.202 20.466. RTLIC (2) 4 14115007.078.03.202 20.466. DIP INT 00 0.	1281	16:15:03.796.342.703 29.99	AFC TC0 CReq=0			3	16:15:03.783.717.515 0 (Ma	NOP OUT		00	00 00 00 00
13 14 14 14 14 14 10 0<	1282	16:15:03.796.342.729 26.66	Filler(2x)		t	4	16:15:03.783.938.943 221.4		NOP IN	00	20 00 00 00
Idd 15003 (Prod 2-032 2 Code (Paller (2n)) Piller (2n) Set (Paller (2n)) Set (Paller (2n)	1283	16:15:03.796.342.756 26.66	AFC TCO CReg=0		t	5	16:15:03.792.935.487 8.99ms	CMD (TEST UNIT READY)		01	01 00 B0 0
16:15:03.79:64:23.02 29.95. AC: TO: ChegnO 0 0:00<	1284	16:15:03.796.342.783 26.66	Filler(2x)		t	6	16:15:03.792.940.406 4.91us		RESPONSE	01	21 00 B0 0
16:15:03.778:42.39.2 4.4.C. MC TCO CRept0 000 0	1285	16:15:03.796.342.813 29.99	AFC TCO CReg=0		t	7	16:15:03.793.956.611 1.01ms	CMD (TEST UNIT READY)		02	01 00 B0 0:
1613:00.766:432.000 AVC TOO CReepO 0.000 <	1286	16:15:03.796.342.839 26.66	AFC TCO CReg=0		t II	8	16:15:03.793.960.981 4.36us		RESPONSE	02	21 00 B0 0;
16:15:00.76:43:40:00 10.75.15:00.76:43:40.20 DOTA IN 0.0 20.0000	1287	16:15:03.796.342.893 53.32	AFC TCO CReg=0		t II	9	16:15:03.793.985.555 24.57	CMD (READ (10))		03	01 40 B0 0:
1000 100118003.7964.304.01 20 1.450 PERCONSE 0.0 20.0 100118003.7964.304.01 20 1.460 DEREGNSE 0.0	1288	16:15:03.796.342.906 13.33		EOF EVEN		10	16:15:03.794.209.246 223.6		DATA IN	03	22 00 B0 0:
1000 16:15:03.796:43:0.73 13.3. 0 0 0.4 0 0.0 0 101 16:15:03.796:43:0.75 13.5. 0 0.4 0 0.0 0 0.4 0 0.0 0 101 16:15:03.796:43:0.75 13.5. 0.4 0 0.0 0 0.4 0 0.0 0 0.4 0 0.0 0 102 16:15:03.796:43:0.0 25 1.4.1 0.0 0.0 0 0.4.0 0.0 0 0.4 0 0.0 0 0.4 0 0.0 0 103 16:15:03.796:43:0.0 1.0 0.0 0.0 0 0.4.0 0.0 0 0.4.0 0.0 0 0.0 0.	1289	16:15:03.796.342.919 13.33	AFC TC0 CReq=0			11	16:15:03.794.238.410 29.16		RESPONSE	03	21 00 B0 0:
1201 12112103.796.332.2 Filter(45) 04 20 05 0	1290	16:15:03.796.342.933 13.33		Filler(6x)	T	12	16:15:03.794.310.372 71.96	CMD (READ (10))		04	01 40 B0 0
1000 16151037784.343.005 35.20 APT TOO CReePO 104 16151037784.343.014 95.00 04 2.0 05.00 0.0	1291	16:15:03.796.342.976 43.32	Filler(4x)		t II	13	16:15:03.794.372.383 62.01		DATA IN	04	22 00 B0 0
1030 161:150.377.86:33.066 26.46. Filler(ax) 0.4 0 80 0 105 161:150.377.86:33.066 29.56. Filler(ax) 0.000 0 <	1292	16:15:03.796.343.029 53.32	AFC TC0 CReq=0			14	16:15:03.794.401.543 29.16		RESPONSE	04	21 00 B0 0
124 16:15:03.776:43.006 2.9.5 ATC TOC (Regro 0 <td< th=""><th>1293</th><th>16:15:03.796.343.056 26.66</th><th>Filler(2x)</th><th></th><th>T </th><th>15</th><th>16:15:03.796.251.568 1.85ms</th><th>CMD (READ (10))</th><th></th><th>05</th><th>01 40 B0 0</th></td<>	1293	16:15:03.796.343.056 26.66	Filler(2x)		T	15	16:15:03.796.251.568 1.85ms	CMD (READ (10))		05	01 40 B0 0
161:1503.776:431.102 2.66. Filler(6x) 10 11 161:1503.776:431.692 2.91.6. RESPONSE 0.6 0.1 0.0 80 01 100 161:1503.776:433.002 133.1 ARC TOO CReque 10 161:1503.776:431.912 4.61.8 CMM (KaD) 0.6 0.4 0.8 00 100 161:1503.776:433.002 136.1 CMM (KaD) CMM (KaD) 0.6 0.4 0.8 00 0.0 0.6 0.4 0.8 00 0.0 0.6 0.4 0.8 00 0.0 0.6 0.4 0.8 00 0.0 0.6 0.4 0.8 00 0.	1294	16:15:03.796.343.086 29.99	AFC TCO CReq=0			16	16:15:03.796.313.495 61.92		DATA IN	05	22 00 B0 0
1205 16:15:03.796.433.302 66.6. AFC TOC CReq=0 18 16:15:03.796.433.102 66.6. NT IN 0.6 0.1 40 B0 0 1208 16:15:03.796.433.302 66.6. AFC TOC CReq=0 19 16:15:03.796.433.102 62.02. DATA IN 0.6 21 00 B0 0 1208 16:15:03.796.433.302 66.6. AFC TOC CReq=0 0 16:15:03.796.433.102 2.0.2. DATA IN 0.6 21 00 B0 0 1201 16:15:03.796.433.102 2.0.6.6. AFC TOC CReq=0 0 16:15:03.796.433.102 2.0.2. DATA IN 0.7 22 0.0 B0 0 1201 16:15:03.796.433.102 2.0.10.1.0.6. Bata Frame TOO 20 16:15:03.796.453.100 61.92. DATA IN 0.7 22 00 B0 0 1201 16:15:03.796.433.102 64.91.7 16:15:03.796.453.102 61.92. DATA IN 0.7 20 00 B0 0 1201 16:15:03.796.433.102 63.24 DATA IN 0.7 20 00 B0 0 1201 16:15:03.796.433.102 64.91.7 DATA IN 0.7 20 00 B0 0 1203 16:15:03.796.435.102 61.0.0 DATA IN 0.8 20 00 B0 0 1204 16:15:03.797.46.94.17 35.0.0 DATA IN 0.8 20 00 B0 0 1205	1295	16:15:03.796.343.112 26.66	Filler(6x)			17	16:15:03.796.342.659 29.16		RESPONSE	05	21 00 B0 0
1207 16:15:03.796.433.392 6.6.6. Filler(2x) 04 16:15:03.796.433.592 6.6.6. Filler(2x) 04 04 02 08 0 0 1299 16:15:03.796.433.392 6.6.6. Filler(2x) 0 0 01 <t< th=""><th>1296</th><th>16:15:03.796.343.306 193.3</th><th>AFC TCO CReq=0</th><th></th><th></th><th>18</th><th>16:15:03.796.362.107 19.44</th><th>CMD (READ (10))</th><th></th><th>06</th><th>01 40 B0 0(</th></t<>	1296	16:15:03.796.343.306 193.3	AFC TCO CReq=0			18	16:15:03.796.362.107 19.44	CMD (READ (10))		06	01 40 B0 0(
1200 16:15:03.796.433.392 64.64. AFC TOO CReq=0 0 16:15:03.796.433.392 64.64. AFC TOO CReq=0 0 16:15:03.796.433.122 64.01 0 0 0 0 16:15:03.796.433.122 64.01 0 <	1297	16:15:03.796.343.332 26.66	Filler(2x)			19	16:15:03.796.424.391 62.28		DATA IN	06	22 00 B0 0(
1299 16:15:03.796:431.342 66:64 Filler(2x) 01 0	1298	16:15:03.796.343.359 26.66	AFC TCO CReg=0			20	16:15:03.796.453.551 29.16		RESPONSE	06	21 00 B0 0
1300 16:15:03.796.433.412 26.64. AFC TOO CReemO 12:15:03.796.458.200 25.16. DATA IN 07 2:0 0.80 0 107 16:15:03.796.43.412 25.95. Data Frame TOO 16:15:03.796.458.202 25.16. DATA IN 08 01:0 0.80 0 108 16:15:03.796.432.107 15.66. Data Frame TOO 16:15:03.796.458.202 25.16. DATA IN 08 01:0 0.80 0 109 16:15:03.796.432.207 15.66. Data Frame TOO 16:15:03.796.458.126 25.16. DATA IN 09 01:0 0.80 0 1005 16:15:03.796.438.302 05.66. Filler(4x) AFC TOO CReemO 20 16:15:03.797.450.427 7.83. DATA IN 09 2:0 0.80 0 1005 16:15:03.796.483.200 56.66. Filler(4x) 20 16:15:03.797.450.427 7.83. DATA IN 09 2:0 0.80 0 1016 16:15:03.796.484.278 29.16. DATA IN 09 2:0 0.80 0 0 <th>1299</th> <th>16:15:03.796.343.386 26.66</th> <th>Filler(2x)</th> <th></th> <th></th> <th>21</th> <th>16:15:03.796.491.171 37.61</th> <th>CMD (READ (10))</th> <th></th> <th>07</th> <th>01 40 B0 0'</th>	1299	16:15:03.796.343.386 26.66	Filler(2x)			21	16:15:03.796.491.171 37.61	CMD (READ (10))		07	01 40 B0 0'
1301 16:15:03.796.383.442 29.59. Filier(s) Pilie (s) Pi	1300	16:15:03.796.343.412 26.66	AFC TC0 CReg=0			22	16:15:03.796.553.098 61.92		DATA IN	07	22 00 B0 0'
100 161:15103.796.432.107 18.66. Data Frame TCO 100 161:15103.796.453.100 000	1301	16:15:03.796.343.442 29.99	Filler(6x)			23	16:15:03.796.582.262 29.16		RESPONSE	07	21 00 B0 0'
1300 161:1510.75%.322.382.66.6.107 EVEN DATA IN 00 20 0 80 0 1304 161:1510.75%.362.382.66.6.107 EVEN DATA IN 00 20 0 80 0 1305 161:1510.75%.362.382.66.2 Filizer(x) 00 161:1510.75%.362.642.72 25.16. ESCONSE 00 01 00 80 0 1305 161:1510.75%.363.226 0.326.64. AFC TOO CREED 7 161:1510.75%.664.27 25.16. DATA IN 05 20 0 80 0 1307 161:1510.75%.463.326 0.326.64. AFC TOO CREED AFC TOO CREED 01 161:1510.75%.45.31 DATA IN 05 20 0 80 0 1308 161:1510.75%.463.326 0.326.64. DATA Fame TOO 30 161:1510.75%.450.31 DATA IN 05 22 00 80 0 1310 161:1510.75%.426.31 DATA IN 05 22 00 80 0 01 01 02 00 80 0 01 01 02 00 80 0 01 01 02 00 80 0 01 01 02 00 80 0 01 01 01 02 00 80 0 01 01 01 02 00 80 0 01 01 01 02 00 80 0 01 01 01 01 01 01 01 <t< th=""><th>1302</th><th>16:15:03.796.362.107 18.66</th><th>Data Frame TCO</th><th></th><th></th><th>24</th><th>16:15:03.796.592.558 10.29</th><th>CMD (READ (10))</th><th></th><th>08</th><th>01 40 B0 0</th></t<>	1302	16:15:03.796.362.107 18.66	Data Frame TCO			24	16:15:03.796.592.558 10.29	CMD (READ (10))		08	01 40 B0 0
1944 16:15:03.796.432.982.26.66. Filler(x) AC TO C Reqro 16:15:03.797.453.432 08.0 10.0 80.0 10	1303	16:15:03.796.362.354 246.6	EOF EVEN			25	16:15:03.796.655.115 62.55		DATA IN	08	22 00 B0 08
1305 16:15:03.796.433.297 0.899.9. AFC TOO CREEMO []	1304	16:15:03.796.362.381 26.66	Filler(4x)		ΓIJ	26	16:15:03.796.684.275 29.16		RESPONSE	08	21 00 B0 08
1305 16:15:03.796.433.392 6.66. N°C TOC GRegro 16:15:03.797.460.042 75.63. DATA IN 09 20 08 00 1308 16:15:03.796.433.392 6.66. N°C TOC GRegro 16:15:03.797.460.042 75.63. DATA IN 09 20 08 00 1309 16:15:03.796.433.392 6.66. Filler(%) 30 16:15:03.797.460.042 75.66. DATA IN 09 20 08 00 1309 16:15:03.796.426.301 766.426.01 DATA IN 09 20 08 00 20 08 00 1311 16:15:03.796.426.00 736.42 DATA Frame TOO 30 16:15:03.797.455.142 9.16. DATA IN 09 22 00 80 01 1313 16:15:03.796.426.00 736.64 Filler(X) 31 16:15:03.797.455.142 9.16. DATA IN 09 22 00 80 01 1314 16:15:03.797.455.142 9.16. DATA IN 09 22 00 80 01 1315 16:15:03.797.455.142 9.16. DATA IN 09 22 00 80 01 1316 16:15:03.797.465.142 9.16. DATA IN 09 22 00 80 01 1317 16:15:03.797.462.412 6.66. FILler(2x) 16:15:03.797.714.50 4.91.66. DATA IN 09 22 00 80 01 1318 16:15:03.79	1305	16:15:03.796.363.270 889.9		AFC TCO CReq=0		27	16:15:03.797.375.309 691.0	CMD (READ (10))		09	01 40 B0 0
1977 16:15:03.796.433.392 26.66. AFC TOO CReevO 9 16:15:03.797.405.00 29.16. DATA IN 09 2 0 0 B 0 0 1309 16:15:03.796.433.095 26.66. FILLE(4x) 16:15:03.797.450.00 29.16. DATA IN 09 2 0 0 B 0 0 1309 16:15:03.796.434.91 0.99. Data Frame TOO 16:15:03.797.597.592.92.16. DATA IN 09 2 0 0 B 0 0 1311 16:15:03.796.426.007 26.66. Data Frame TOO 10:15:03.797.625.91.69.16. DATA IN 09 2 0 0 B 0 0 1312 16:15:03.796.426.007 26.66. PEVEN 30 16:15:03.797.625.91.92.16. DATA IN 09 2 0 0 B 0 0 1314 16:15:03.796.426.007 26.66. FULLe(X) 16:15:03.797.625.91.92.16. DATA IN 09 2 0 0 B 0 0 1315 16:15:03.796.426.701 26.66. FULLe(X) 16:15:03.797.71.557.952.92.16. DATA IN 09 2 0 0 B 0 0 1316 16:15:03.796.426.701 26.66. FULLe(X) 16:15:03.797.71.31.052.91.6. DATA IN 09 2 0 0 B 0 0 1317 16:15:03.796.426.701 26.66. AFC TOO CReevO 16:15:03.797.71.31.052.91.6. DATA IN 09 2 0 0 B 0 0 16:15:03.797.71.31.052.91.	1306	16:15:03.796.363.324 53.32		Filler(6x)		28	16:15:03.797.450.942 75.63		DATA IN	09	22 00 B0 0
1938 16:13:03.796.436.407 56.66. Filler(1%) 0 16:13:03.797.583.40 29.16. DATA IN 09 2 0 0 B 0 0 1310 16:15:03.796.426.43.916 0.98. Data Frame TCO 1 16:15:03.797.583.40 29.16. DATA IN 09 2 0 0 B 0 0 1311 16:15:03.796.426.037 26.66. Data Frame TCO 3 16:15:03.797.583.40 29.16. DATA IN 09 2 0 0 B 0 0 1313 16:15:03.796.426.037 26.66. Filler(1%) Data Frame TCO 3 16:15:03.797.625.412.91.6. DATA IN 09 2 0 0 B 0 0 1313 16:15:03.796.426.01 29.6.6. Filler(1%) 04 16:15:03.797.625.412.91.6. DATA IN 09 2 0 0 B 0 0 1314 16:15:03.797.642.642 29.16. DATA IN 09 2 0 0 B 0 0 16:15:03.797.643.42 29.16. DATA IN 09 2 0 0 B 0 0 1315 16:15:03.797.642.42 29.16. DATA IN 09 2 0 0 B 0 0 16:15:03.797.742.564 29.16. DATA IN 09 2 0 0 B 0 0 1315 16:15:03.797.742.564 29.16. DATA IN 09 2 0 0 B 0 0 16:15:03.797.742.564 29.16. DATA IN 09 2 0 0 B 0 0 16:15:03.797.742.564 29.16.	1307	16:15:03.796.363.350 26.66		AFC TCO CReq=0		29	16:15:03.797.480.105 29.16		DATA IN	09	22 00 B0 0
1309 16:15:03.796.424.391.60.98. Data Frame TCO 1 16:15:03.797.436.392.5.6. DATA IN 09 20 00 B0 01 1311 16:15:03.796.426.2021.68.02 Data Frame TCO 2 16:15:03.797.567.592.591.6. DATA IN 09 22 00 B0 01 1312 16:15:03.796.426.027.66.42.037.526.42 DATA IN 09 22 00 B0 01 1313 16:15:03.796.426.027.26.64.01 Failer(2x) DATA IN 09 22 00 B0 01 1314 16:15:03.796.426.0172.26.42 Failer(2x) DATA IN 09 22 00 B0 01 1315 16:15:03.796.426.707 26.64.01 Failer(2x) DATA IN 09 22 00 B0 01 1316 16:15:03.796.426.707 26.64.01 Failer(2x) DATA IN 09 22 00 B0 01 1316 16:15:03.796.426.701 26.64.01 Failer(2x) DATA IN 09 22 00 B0 01 1317 16:15:03.796.426.701 26.64.01 Failer(2x) DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.701 26.64.01 Failer(2x) DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.701 26.64.01 AFC TCO CReqPO DATA IN 09 22 00 B0 01 1319 16:15:03.796.426.712.66.24.712.66.01 AFC TCO CReqPO DATA IN 09 22 00 B0 01 <th>1308</th> <th>16:15:03.796.363.407 56.66</th> <th></th> <th>Filler(4x)</th> <th></th> <th>30</th> <th>16:15:03.797.509.266 29.16</th> <th></th> <th>DATA IN</th> <th>09</th> <th>22 00 B0 01</th>	1308	16:15:03.796.363.407 56.66		Filler(4x)		30	16:15:03.797.509.266 29.16		DATA IN	09	22 00 B0 01
1310 16:13:03.796.426.281.09 46.64 DATA IN 09 20 08 00 1311 16:15:03.796.426.097 26.64 DATA IN 09 20 08 00 1312 16:15:03.796.426.097 26.64 DATA IN 09 20 08 00 1313 16:15:03.796.426.097 26.64 AFC TOC Cheqr0 16:15:03.797.66.748 29.16. DATA IN 09 22 00 80 01 1313 16:15:03.796.426.097 26.64. AFC TOC Cheqr0 16:15:03.797.66.748 29.16. DATA IN 09 22 00 80 01 1314 16:15:03.796.426.797 26.64. AFC TOC Cheqr0 16:15:03.797.68.748 29.16. DATA IN 09 22 00 80 01 1315 16:15:03.796.426.797 26.64. AFC TOC Cheqr0 16:15:03.797.68.748 29.16. DATA IN 09 22 00 80 01 1316 16:15:03.796.426.797 26.64. AFC TOC Cheqr0 16:15:03.797.712.566 29.16. DATA IN 09 22 00 80 01 1317 16:15:03.796.426.497 26.66. AFC TOC Cheqr0 16:15:03.797.712.566 29.16. DATA IN 09 22 00 80 01 1318 16:15:03.796.426.497 26.66. AFC TOC Cheqr0 16:15:03.797.712.566 29.16. DATA IN 09 22 00 80 01 1319 <t< th=""><th>1309</th><th>16:15:03.796.424.391 60.98</th><th></th><th>Data Frame TCO</th><th></th><th>31</th><th>16:15:03.797.538.430 29.16</th><th></th><th>DATA IN</th><th>09</th><th>22 00 B0 0</th></t<>	1309	16:15:03.796.424.391 60.98		Data Frame TCO		31	16:15:03.797.538.430 29.16		DATA IN	09	22 00 B0 0
1311 16:13:03.796.426.007 26.66. Data Frame TCO 33 16:13:03.796.426.007 26.66. DATA IN 09 2 00 B0 01 1312 16:15:03.796.426.007 32.66. Filler(2x) DATA IN 09 2 00 B0 01 1313 16:15:03.796.426.007 32.66. Filler(2x) DATA IN 09 2 00 B0 01 1314 16:15:03.796.426.007 32.66. Filler(2x) DATA IN 09 2 00 B0 01 1315 16:15:03.796.426.797 46.5.001 29.16. DATA IN 09 2 00 B0 01 1316 16:15:03.796.426.792 46.64. Filler(2x) 08 01 1317 16:15:03.796.426.792 46.64. DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.792 46.64. DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.792 46.64. DATA IN 09 22 00 B0 01 1319 16:15:03.796.426.792 16.64. DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.792 16.64. DATA IN 09 22 00 B0 01 1320 16:15:03.796.426.792 16.64. DATA IN 09 22 00 B0 01 1320 16:15:03.797.777.300.693 29.	1310	16:15:03.796.426.281 1.88us		EOF EVEN		32	16:15:03.797.567.593 29.16		DATA IN	09	22 00 B0 0
1312 16:15:03.796.426.691 379.2. AFC TOC CReq=0 14 16:15:03.797.655.012 29.16. DATA IN 09 22 00 B0 01 1314 16:15:03.796.426.079 26.66. AFC TOC CReq=0 5 16:15:03.797.655.012 29.16. DATA IN 09 22 00 B0 01 1314 16:15:03.796.426.794 26.66. AFC TOC CReq=0 5 16:15:03.797.655.012 29.16. DATA IN 09 22 00 B0 01 1315 16:15:03.796.426.794 26.66. AFC TOC CReq=0 5 16:15:03.797.7455.001 29.16. DATA IN 09 22 00 B0 01 1316 16:15:03.796.426.791 26.66. AFC TOC CReq=0 8 16:15:03.797.7455.001 29.16. DATA IN 09 22 00 B0 01 1317 16:15:03.796.426.012 26.66. AFC TOC CReq=0 9 16:15:03.797.712.566 29.16. DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.012 26.66. AFC TOC CReq=0 41 16:15:03.797.712.566 29.16. DATA IN 09 22 00 B0 01 1319 16:15:03.796.426.012 26.66. AFC TOC CReq=0 41 16:15:03.797.783.054 29.16. DATA IN 09 22 00 B0 01 1320 16:15:03.796.426.012 26.66. AFC TOC CReq=0 <	1311	16:15:03.796.426.307 26.66		Data Frame TCO		33	16:15:03.797.596.754 29.16		DATA IN	09	22 00 B0 0
1313 16:15:03.796.426.072 66.6 Filler(2x) DATA IN 09 22 00 B0 01 1314 16:15:03.796.426.072 66.6 AFC TOO CReq® DATA IN 09 22 00 B0 01 1315 16:15:03.796.426.072 66.6 AFC TOO CReq® DATA IN 09 22 00 B0 01 1315 16:15:03.796.426.072 66.6 AFC TOO CReq® DATA IN 09 22 00 B0 01 1316 16:15:03.796.426.072 66.6 AFC TOO CReq® DATA IN 09 22 00 B0 01 1317 16:15:03.796.426.012 26.66 Filler(2x) DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.012 26.66 AFC TOO CReq® DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.012 26.66 AFC TOO CReq® 40 16:15:03.797.71.73 02:16. DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.012 26.66 AFC TOO CReq® 41 16:15:03.797.71.73 02:16. DATA IN 09 22 00 B0 01 1320 16:15:03.796.426.912 66.66 AFC TOO CReq® 41 16:15:03.797.785.312 9.16. DATA IN 09 22 00 B0 01 1321 16:15:03.796.427.012 56.66. F11er	1312	16:15:03.796.426.681 373.2	AFC TCO CReg=0			34	16:15:03.797.625.918 29.16		DATA IN	09	22 00 B0 0
1314 16:13:03.796.426.794 5.66. AFC TOC CReemO 8 16:13:03.797.434.225.16. DATA IN 09 20 00 00 1315 16:15:03.796.426.794 5.95.9 Filier(2x) 7 16:13:03.797.434.225.16. DATA IN 09 20 00 80 01 1316 16:15:03.796.426.794 5.95.9 Filier(2x) 7 16:15:03.797.434.225.16. DATA IN 09 22 00 80 01 1317 16:15:03.796.426.792 5.66. AFC TOC CReemO 9 16:15:03.797.743.266 23.16. DATA IN 09 22 00 80 01 1318 16:15:03.796.426.792 5.66. AFC TOC CReemO 9 16:15:03.797.743.266 23.16. DATA IN 09 22 00 80 01 1319 16:15:03.796.426.827 5.66. AFC TOC CReemO 9 16:15:03.797.797.800.058 29.16. DATA IN 09 22 00 80 01 1320 16:15:03.796.426.827 56.64. AFC TOC CReemO 40 16:15:03.797.800.058 29.16. DATA IN 09 22 00 80 01 1321 16:15:03.796.426.827 56.64. AFC TOC CReemO 42 16:15:03.797.808.058 29.16. DATA IN 09 22 00 80 01 1321 16:15:03.797.407.427.428.20.16. DATA IN 09 22 00	1313	16:15:03.796.426.707 26.66	Filler(2x)			35	16:15:03.797.655.081 29.16		DATA IN	09	22 00 B0 0
1315 16:15:03.796.426.796.429.99. Filler(2x) 97 16:15:03.797.43.666 29.16. DATA IN 09 22 00 B0 01 1316 16:15:03.796.426.791.266.6. AFC TOO CRegmo 16:15:03.797.743.566 29.16. DATA IN 09 22 00 B0 01 1317 16:15:03.796.426.817.266.6. AFC TOO CRegmo 16:15:03.797.743.566 29.16. DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.817.266.6. AFC TOO CRegmo 16:15:03.797.743.566 29.16. DATA IN 09 22 00 B0 01 1319 16:15:03.796.426.817.266.6. AFC TOO CRegmo 41 16:15:03.797.800.689 29.16. DATA IN 09 22 00 B0 01 1320 16:15:03.796.426.891.266.6. AFC TOO CRegmo 41 16:15:03.797.800.689 29.16. DATA IN 09 22 00 B0 01 1321 16:15:03.796.426.891.266.6. AFC TOO CRegmo 42 16:15:03.797.800.812 9.16. DATA IN 09 22 00 B0 01 1322 16:15:03.796.426.891.266.6. Filler(4x) 20 16:15:03.797.801.812 9.16. DATA IN 09 22 00 B0 01 1322 16:15:03.796.428.201.1180 20 20 20 20 20 00 01 1323 16:15:03.796.428.201.1180 EVERW 45 16:15:03.797.917.954.20 DATA I	1314	16:15:03.796.426.734 26.66	AFC TCO CReg=0			36	16:15:03.797.684.242 29.16		DATA IN	09	22 00 B0 01
1316 16:15:03.796.426.092 26:6. AFC TOO CReemo 80 16:15:03.797.742.566 29.16. DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.092 26:6. AFC TOO CReemo 90 16:15:03.797.797.701.30 293.16. DATA IN 09 22 00 B0 01 1318 16:15:03.796.426.092 26:6. AFC TOO CReemo 90 16:15:03.797.701.30 293.16. DATA IN 09 22 00 B0 01 1319 16:15:03.796.426.092 26:6. AFC TOO CReemo 0 16:15:03.797.80.034 29.16. DATA IN 09 22 00 B0 01 1320 16:15:03.796.426.092 56:6. AFC TOO CReemo 0 16:15:03.797.80.034 29.16. DATA IN 09 22 00 B0 01 1321 16:15:03.796.426.092 56:6. AFC TOO CReemo 0 16:15:03.797.80.034 29.16. DATA IN 09 22 00 B0 01 1321 16:15:03.796.427.012 56:6. AFC TOO CReemo 0 16:15:03.797.91.742 29.16. DATA IN 09 22 00 B0 01 1332 16:15:03.797.6427.012 56:6. FILLE(KA) EOF EVEN 45 16:15:03.797.91.742 29.16. DATA IN 09 22 00 B0 01 1333 16:15:03.797.6428.021 1.101 60 EOF EVEN 45 16:15:03.797.946.702 29.16. DATA IN 09 22 00 B0 01 1333 16:15:0	1315	16:15:03.796.426.764 29.99	Filler(2x)			37	16:15:03.797.713.405 29.16		DATA IN	09	22 00 B0 01
1317 16:15:03.796.426.017 26.66. Filler(x) 09 16:15:03.797.171.730 25.16. DATA IN 09 2 2 0 0 0 0 1318 16:15:03.796.426.091 26.66. ART CTO CReg=0 0 16:15:03.797.780.092 29.16. DATA IN 09 2 2 0 0 0 0 1319 16:15:03.796.426.091 26.66. ART CTO CReg=0 0 16:15:03.797.800.092 29.16. DATA IN 09 2 2 0 0 0 0 1310 16:15:03.796.426.091 26.66. ART CTO CReg=0 0 16:15:03.797.800.092 29.16. DATA IN 09 2 2 0 0 0 0 1312 16:15:03.796.426.991 26.66. FLIC TO CReg=0 0 16:15:03.797.800.312 29.16. DATA IN 09 2 0 0 0 0 1320 16:15:03.796.427.015 56.66. FLIC TO CReg=0 0 16:15:03.797.800.312 29.16. DATA IN 09 2 0 0 0 0 1321 16:15:03.796.427.015 56.66. FLIC TO CReg=0 0 16:15:03.797.91.51.20 29.16. DATA IN 09 2 0 0 0 0 1322 16:15:03.796.427.015 56.66. FLIC TO CREg=0 0 16:15:03.797.91.51.20 29.16. DATA IN 09 2 0 0 00 0 1323 16:15:03.796.428.201 1.1000 EOF EVEN 4 16:15:03.797.946.705 29.16. DATA IN 09 2 0 0 00 0 1323 16:15:03.797.946.705 29.16. DATA I	1316	16:15:03.796.426.791 26.66	AFC TCO CReg=0			38	16:15:03.797.742.566 29.16		DATA IN	09	22 00 B0 0
1318 16:15:03.796.426.041 26:66. APC TCO CReq=0 0 16:15:03.797.100.098 25.16. DATA IN 09 22 00 B0 01 1319 16:15:03.796.426.071 26:66. APC TCO CReq=0 41 16:15:03.797.800.048 25.16. DATA IN 09 22 00 B0 01 1320 16:15:03.796.426.071 26:66. APC TCO CReq=0 41 16:15:03.797.800.048 25.16. DATA IN 09 22 00 B0 01 1320 16:15:03.796.426.027 26:66. APC TCO CReq=0 42 16:15:03.797.805.048 25.16. DATA IN 09 22 00 B0 01 1321 16:15:03.796.427.011 56.66. Filter(4x) 64 16:15:03.797.805.81 25.16. DATA IN 09 22 00 B0 01 1323 16:15:03.796.427.011 56.66. Filter(4x) 64 16:15:03.797.91.542 29.16. DATA IN 09 22 00 B0 01 1323 16:15:03.797.64.28.001 1.1500 EOF EVEN 45 16:15:03.797.91.542 29.16. DATA IN 09 22 00 B0 01 1324 16:15:03.797.91.542 29.16. DATA IN 09 22 00 B0 01 00 00 00 00 00 00 00 00 00 00 00 00 <t< th=""><th>1317</th><th>16:15:03.796.426.817 26.66</th><th>Filler(2x)</th><th></th><th></th><th>39</th><th>16:15:03.797.771.730 29.16</th><th></th><th>DATA IN</th><th>09</th><th>22 00 B0 0</th></t<>	1317	16:15:03.796.426.817 26.66	Filler(2x)			39	16:15:03.797.771.730 29.16		DATA IN	09	22 00 B0 0
1319 16:15:03.796.426.097 26.66. AFC TCO CReq=0 141 16:15:03.797.859.205 29.16. DATA IN 09 22 00 B0 01 1320 16:15:03.796.426.097 56.66. AFC TCO CReq=0 142 16:15:03.797.859.218 29.16. DATA IN 09 22 00 B0 01 1321 16:15:03.796.426.095 26.66. AFC TCO CReq=0 143 16:15:03.797.859.218 29.16. DATA IN 09 22 00 B0 01 1322 16:15:03.796.426.095 26.66. AFC TCO CReq=0 43 16:15:03.797.91.757.91.00 DATA IN 09 22 00 B0 01 1323 16:15:03.796.426.095 20.11.10us EOF EVEN 44 16:15:03.797.946.705 29.16. DATA IN 09 22 00 B0 01 1323 16:15:03.796.428.201 1.10us EOF EVEN 41 16:15:03.797.946.705 29.16. DATA IN 09 22 00 B0 01	1318	16:15:03.796.426.844 26.66	AFC TCO CReg=0			40	16:15:03.797.800.893 29.16		DATA IN	09	22 00 B0 0
1320 16:15:03.796.426.927.86.64. AFC TCO CReq=0 42 16:15:03.797.859.312.82.16. DATA IN 09 2.0 0.80 0 1321 16:15:03.796.426.994.26.64. AFC TCO CReq=0 43 16:15:03.797.859.312.82.16. DATA IN 09 2.0 0.80 0 1322 16:15:03.797.457.385.312.82.16. DATA IN 09 2.0 0.80 0 1323 16:15:03.797.457.385.312.82.16. DATA IN 09 2.0 0.80 0 1323 16:15:03.797.457.385.312.82.16. DATA IN 09 2.0 0.80 0 1323 16:15:03.797.457.385.312.91.6. DATA IN 09 2.0 0.80 0 1323 16:15:03.797.457.859.312.91.6. DATA IN 09 2.0 0.80 0 1323 16:15:03.797.457.951.917.542.29.16. DATA IN 09 2.0 0.80 0 1323 16:15:03.797.947.957.917.542.29.16. DATA IN 09 2.0 0.80 0 1323 16:15:03.797.947.957.917.542.29.16. DATA IN 09 2.0 0.80 0 1323 16:15:03.797.947.957.917.947.92.916. DATA IN 09 2.0 0.80 0 1324 16:15:03.797.947.957.917.947.997.917.947.947.947.947.947.947.947.947.947.94	1319	16:15:03.796.426.871 26.66	AFC TCO CReg=0			41	16:15:03.797.830.054 29.16		DATA IN	09	22 00 B0 0
1321 16:15:03.796.426.954 26.66. AFC TCO CReq=0 43 16:15:03.797.883.381 29.16. DATA IN 09 22 00 B0 0 1322 16:15:03.796.427.011 56.66. Filler(4x) 44 16:15:03.797.91.7542 29.16. DATA IN 09 22 00 B0 0 1333 16:15:03.796.428.201 1.19us EOF EVEN 4 16:15:03.797.946.705 29.16. DATA IN 09 22 00 B0 0	1320	16:15:03.796.426.927 56.66	AFC TCO CReq=0			42	16:15:03.797.859.218 29.16		DATA IN	09	22 00 B0 0
1322 16:15:03.796.427.011 56.66. Filler(sk) 44 16:15:03.797.917.954 29.16. DATA IN 09 22 00 B0 0 1323 16:15:03.796.420.201 1.18us EOF EVEN 4 16:15:03.797.946.705 29.16. DATA IN 09 22 00 B0 0 1 <th>1321</th> <th>16:15:03.796.426.954 26.66</th> <th>AFC TCO CReq=0</th> <th></th> <th></th> <th>43</th> <th>16:15:03.797.888.381 29.16</th> <th></th> <th>DATA IN</th> <th>09</th> <th>22 00 B0 0</th>	1321	16:15:03.796.426.954 26.66	AFC TCO CReq=0			43	16:15:03.797.888.381 29.16		DATA IN	09	22 00 B0 0
1323 16:15:03.796.428.201 1.18us EOF EVEN 45 16:15:03.797.946.705 29.16 DATA IN 09 22 00 B0 0	1322	16:15:03.796.427.011 56.66	Filler(4x)			44	16:15:03.797.917.542 29.16		DATA IN	09	22 00 B0 0
	1323	16:15:03.796.428.201 1.18us		EOF EVEN	Ţ	45	16:15:03.797.946.705 29.16		DATA IN	09	22 00 B0 0
	•					•					

b. 统计列表: 以统计功能快速分类并可追踪数据位置





11:29:31.594.24 11:29:31.594.78 11:29:31.594.78 11:29:31.594.78 11:29:31.594.78 11:29:31.594.78 11:29:31.594.78 11:29:31.594.78 11:29:31.594.78	0.624 52.21 0.634 52.21 2.936 542.2. 2.943 6.66ns 1 2.952 8.88ns 1 3.003 51.11 3.003 51.11 3.304 314.4 3.326 2.21ns 3.337 11.11 3.359 22.21	Start of Burst Nata Frame TCO Filler(2x) NOF EVEN Filler(4x)	Start of Burst TILLEL(UM) Filler(4M) Filler(4M)	259 259 260 261 262 263 264 265		2.834.041.770 214.45us 2.834.111.270 66.49us 2.834.428.705 317.43us 2.834.645.047 216.34us 2.835.441.380 796.33us 2.835.647.220 205.83us 2.835.644.82 87 20m	CMD (START STOP UNIT) CMD (INQUIRY)	RESPONSE RESPONSE RESPONSE INCUTRY_RESPONSE	D0 D0 D0 D0 D0 D0 D0	Discription UFS SCSI Command UFS Protocol QUERY REQUEST QUERY RESPONSE TASK MANAGEMENT LUN	Txns 148 655 34 34 0 799	Bytes	
1129131.594.78 11229131.594.79 11229131.594.78 11229131.594.78 11229131.594.78 11229131.594.78 11229131.594.78 11229131.594.78 11229131.594.78 11229131.594.78	0.624 52.21 0.635 10.34 2.936 542.2 2.943 6.66ns 1 2.952 8.88ns 1 3.003 51.11. 1 3.009 6.66ns 1 3.324 314.4 3.326 2.21ns 3.337 11.11. 3.359 22.21	Start of Burst Nata Frame TCO Filler(2X) NOF EVEN Filler(4X)	Filler(4x)	258 259 260 261 263 263 264 265		2.834.041.770 69.4948 2.634.111.270 69.4948 2.634.428.705 317.4348 2.634.645.047 216.3448 2.635.441.380 796.3348 2.635.647.220 205.6348 2.635.644.620 77 2048	CMD (START STOP UNIT) CMD (INQUIRY)	REQUEST_SENSE_RESPON. RESPONSE RESPONSE INQUIRY_RESPONSE	00 00 00 00 00 00	UFS SCSI Command UFS Protocol QUERY REQUEST QUERY RESPONSE TASK MANAGEMENT LUN	148 655 34 34 0 799		
11:29:31.594.70 11:29:31.594.70 11:29:31.594.70 11:29:31.594.70 11:29:31.594.70 11:29:31.594.70 11:29:31.594.70 11:29:31.594.70 11:29:31.594.70 11:29:31.594.70	2.936 542.2. 1 2.943 6.66ns 1 2.952 8.88ns 1 3.003 51.11 1 3.009 6.66ns 1 3.324 314.4. 3.326 2.21ns 3.337 11.11	Start of Burst Data Frame TCO Filler(2x) COF EVEN Filler(4x)	Filler(4x)	259 260 261 262 263 264 265		2.034.111.270 09.4943 2.834.428.705 317.4348 2.834.645.047 216.3448 2.835.441.380 796.3348 2.835.647.220 205.8348 2.835.647.220 205.8348	CMD (START STOP UNIT) CMD (INQUIRY)	RESPONSE INCUIRY_RESPONSE	D0 D0 D0 D0	UES Protocol QUERY REQUEST QUERY RESPONSE TASK MANAGEMENT LUN	655 34 34 0 799		
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11:29:31.594.78 11:29:31.594.78 11:29:31.594.78	3.337 11.11			266		2 036 276 064 212 1614	CREW (READ DESCRIPTOR)	OPEGD (PEAD DESCRIPTO					
11:29:31.594.78 11:29:31.594.78	3.359 22.21		AFC TCO CReq=0	200	-	2 995 910 670 534 6004	OBEO (BEAD ATTRIBUTE)	Where (RERD DESCRIPTO.					
11:29:31.594.78			Filler(fr)	207		2 897 022 105 212 1214	CREW(READ ATTRIBUTE)	OPEGD (DEAD ATTRIBUTE	-				
11.29.31.394.70	0.047 4 59114		Data Evano TCO	200	-	2 027 025 420 006 2216	OBEO (BEAD ATTRIBUTE)	Where (Read All Read of La					
11:20:21 504 70	0.047 4.0008		FOR FUEN	209		2 020 024 261 204 62116	CREG(READ ATTRIBUTE)	OPEGD (DEAD ATTRIBUTE					
11:20:31 504 70	0.147 £ 550e		EVI STER	270	-	2 020 025 421 002 0514	OBEO (BEAD, DESCRIPTOR)	Where (Read All Read of La					
11:20:21 504 70	0.117 0.00118	EC TCO CReamO	ETTTEL (48)	271		2 836 038 034 201 5614	CREW (READ DESCRIPTOR)	OPEGD (PEAD DESCRIPTO					
11:29:31 594 78	8 252 13 33 3	AFC TCO CReq=0		272		2 839 486 686 448 66119	CMD (TEST INIT READY)		00			-	-
11:29:21 594 79	0 261 0 00ne 1	Filler/2w		274	_	2 939 694 729 209 0414	CHE (LEDT ONLY PERDY)	PESDONSE	00	Statistics		Txns	By
11.20.21 504 70	0.201 0.00ms	TALLEL (OR)		174		2 941 792 642 2 09mg	CMD (BROTTEST SPHER)	RESPONSE	00	CMD (TEST UNIT READY)		10	
11:20:01 504 70	0.200 4.40ma	filler(2x)		276	_	2 041 700 047 5 10ma	(RECOLDI DENDE)	DECHECT CENCE DECDON	00	CMD (REQUEST SENSE)		7	
11.20.21 504 70	0.200 10 20 1	Filler (Sw)		10		2.041.700.047 3.1008		DECOUST SERVE RESPON.	00	CMD (START STOP UNIT)		1	
11:20:21 504 70	0 767 470 0	TITEL (ON)	Data Exame TCO	220		2 841 822 555 24 7814	OREO (READ, DESCRIPTOR)			CMD (INQUIRY)		1	
11.20.21 504 70	8 837 56 00		POP FUEN	12		2 841 826 251 5 7648	GREG (RERD DESCRIPTOR)	OBESD (BESD DES/DIETO	- L				
11-20-21 504 70	0.027 09.99		EVE EVEN	279		2.041.029.331 3.7948		URESP (READ DESCRIPTO.	<u>н т</u>				
11:29:31.594.70	0.033 0.00Hs	PC TCO CReamo	FILLET (6X)	280	-	2.041.007.511 30.1508	GREG (READ DESCRIPTOR)	OBESD (BEND, DESCRIPTO)					
11-20-21 504 70	0.949 00.00	APC TCO CREQ-0		201	-	2.041.072.424 4.9108	CHD (2000) (10))	URESP (READ DESCRIPTO.	00				
11-20-21 504 70	0.041 2 2100 1	Riller(fr)		204	-	2 842 212 420 255 2504	(RERD (10))	0520	00				
11:20:21 504 70	0.061 10 00 1	Filler(6x)		20.5		2 042 224 722 7 20ma		DECONSE	00				
11:29:31.594.70	0.961 19.99	TILLEL (CX)		284		2.092.229.725 7.2948	CMD (BEAD (10))	RESPONSE	00				
11-20-21 504 02	0.000 01.09	ACA FIAME ICO		20.5	-	2.042.270.017 43.2948	CRD (RERD (10))	0730	00				
11:29:31.394.02	3.613 59.99	LOF EVEN		290		2.042.375.741 105.7208		READ	00				
11:29:31.594.02	3.622 6.66ns	(TTTEL(AX)	T()) and (Cor)	287		2.842.383.034 7.2908	CHE (101)	RESPONSE	00				
11:29:31.394.02	3.943 321.0		FILLET (CX)	288		2.042.440.363 65.3248	CRD (READ (10))	1					

从UFS的统计数据追寻至Unipro原始数据的过程



11. UFS Settings

Protocol Settings					×
eMMC 5.1 MIPI CSI MIPI DSI NAND Flash MIPI RFFE RS232 SD 3.0	Connection UFS Fixture		Startup Mode Lane Gear	PWM 1 Lane PWM-Gear1	Reference Clock
SD 4.0 SGMII SPI UFS	UFS Probe Settings 2	Active UFS M-PHY Way Station RefCik Show RefCik Reset pin (CH4) Show Volt. Detect Ch VCC(A0) VCCQ2(A1)	Trigger Or UFS Pa An SC UFS Pa SC Unknov Voltage Dr VCC(VCCC	An Solution of the second seco	Trigger Item 0/8 Clear All
	Detail Report Display		Filter		
	Table + Text Default	• Table only	_ Data Fi	lter > 256	✓ bytes

- 1. Connection: 需选择 BF7264B+与待测物的连接方式
- 2. UFS Probe Settings: 可交换同一 Lane 之 p/n; 可选择是否要显示 RefClk 量测数据
- 3. UFS-tip Settings:
 - a. 可开启 UFS Reset pin 之判断,需接上 reset pin 于 UFS probe 之 LA tip CH4 位置. 当协议分析收到 Reset 信号时,就会重置 Power mode 回到 PWM mode.
 - b. 打开电压侦测之后,当电压有变化时会显示所侦测到的电压值
- 4. Detail Report Display: 可选择是否需要文字描述的解析方式
- 5. Startup: 需设定于撷取当下,待测物所运行之模式; 必须设定 Reference Clock, 可选择 19.2/26/38.4/52 MHz 选项 (无论 RefClk 信号是否有接上,此数值都必须正确 设定,不然信号分析可能会出现错误)
- Trigger On: 可设定 Unipro/UFS packets, 共 8 组,以及 Unknown Packet, CRC Error 触发选项,另加入两组电压侦测可使用
- 7. Filter: 开启后将会滤除大于设定值之封包后方数据



FAQ

1. 支持 UFS 第几版的规格,是否有 Differential 对数或 port 数限制呢?

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. 量测时是否会影响讯号质量?

A:外接的仪器量测必然会有部分的负载效应影响,我们采用 SMPM Coaxial Cable 的连接方式来降低对待测物干扰并提升讯号质量。

3. 是否有支持讯号发送 (Tx) 功能?

A:不支持讯号发送功能

- 4. 量测时须注意的事项
 - a. 接线问题判断与排除方法:

请确实按手册<u>探头与待测物连接方式</u>进行连接。若量测起来 PWM 正常,但无法看 到任何 HS data 或只能上 1 Lane 而无法上 2 Lane 时,就应先检查接线是否有错误。 b. Reference clock 设定方式:

在 Settings 有提供 Ref Clk 19.2MHz(default) / 26MHz / 38.4MHz / 52MHz 四个选项。 若不清楚所使用的 Ref clk 为何时,可按下列方式做判断。若 PWM 正常,但 HS Data 都是错误的,请尝试调整 Ref Clk 为其他速率再抓一次。

- 5. 有指定某个 Unipro, UFS packet 做为 trigger 点的功能吗?
- A:可以指定特定的 Unipro, UFS packet 或是 Error 进行触发。





- 6. 是否可以自行设定一个 Unipro, UFS 起始点,指定抓取多少时间内的 Data?
 - A:可以将起始条件设定在触发项目后,到工作模式选单内调整为数据监控仪模式, 并指定撷取时间长度。





探头与待测物连接方式

a. 使用 UFS Fixture (连接器)方式连接

使用时机:

若 Host 有多套时可用连接器的方式,方便更换 Host 与 UFS Chip,以及不需要 跳线直接使用 SMPM Cable 连接 Way Station。

由于连接器使用软扁平电缆延伸讯号,只适合应用于 UFS Chip 周边组件不干涉的情况。

零件列表	
1. 连接器主板(Con Fixture)	
2. 连接器小板(Con Dummy Board)	f 面 需 植 0.3mm 锡球
3. 连接器 DF17-30DS-0.5V (HiRose Connector)	

Step1: 将待测物上的 UFS Chip 拔起,拔起来的 UFS Chip 需重新植钖球。

Step2: 将连接器小板,焊在已拆下 UFS Chip 位置。

焊接连接器小板时请注意 Pin1 方向



Step3: 将连接器(DF17-30DS-0.5V)放在连接器小板上,在焊接之前请先注意连接器 背后定位柱方向与小板定位孔位置



Step4: 连接器放置小板确认完成开始焊接,焊接完成后确认 pin 脚之间有无短路。 Pin 脚名称如下图



Step5: 连接主板,连接前请先注意主板连接器上定位针与小板定位孔位置



Step6: 将拔起来的 UFS Chip 放进连接器主板 UFS Socket (FBGA153 Socket),完成。



b. 使用增高板搭配 End-tip 方式连接

使用时机:

若原 UFS Chip 周边组件干涉,无法使用 UFS Fixture 时以及 UFS Chip 周边没有测试点(Test point)可进行跳线时,就需拔除原 UFS Chip,以增高板垫高之后再从测试点接上 End-tip 后再使用 SMPM Cable 连接 Way Station。





增高板脚位图



c. 使用 End-tip 方式连接

使用时机:

若待测板已留有测试点(Test point)可进行跳线时,可直接使用 End-tip 接上测试,就不需使用增高板。

UFS 标配的 End-tip 软板上面的电阻为 2500hm,一般的情况下可直接使用。 若希望缩短跳线距离以提升讯号质量,可按照下列方式以电阻桥接的方式处理即可。 若要不跳线利用电阻桥接方式(如下图),End-tip 就要做修改。

修改流程:

Step1: 电阻拿掉,头剪掉,保留2个焊点。



<u>Step2</u>: 改完后 End-tip 上面的 P/N 焊点与增高板的 P/N 焊点对齐,对齐后再将电阻 2500hm 焊上去,4 组 data +1 条 clk 焊完后再焊接地线。





完成示意图。此种方式因距离最短使得讯号质量会比 End-tip 跳线连接的方式来的好。









Way Station 连接

- 1. UFS Probe 请安装于 BusFinder 7264B+ 的 Slot B 插槽
- Way Station 转接盒各有一个 USB Type B 插孔,请使用对应之 USB Cable 安装于 主机正面插孔。安装时,请按照 Way Station 铭板标示之 Top/Botom 安装即可。

