Acute®
PC-based T&M Instruments

BF7264 Series
eMMC5.1 analyzer

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Index

Feature:

Supported Models:

BF6264B	BF7264B	BF7264B+	BF7264 Pro
●	●	●	●

BF7264B/B+/Pro has two USB holes at the front.

Specifications:

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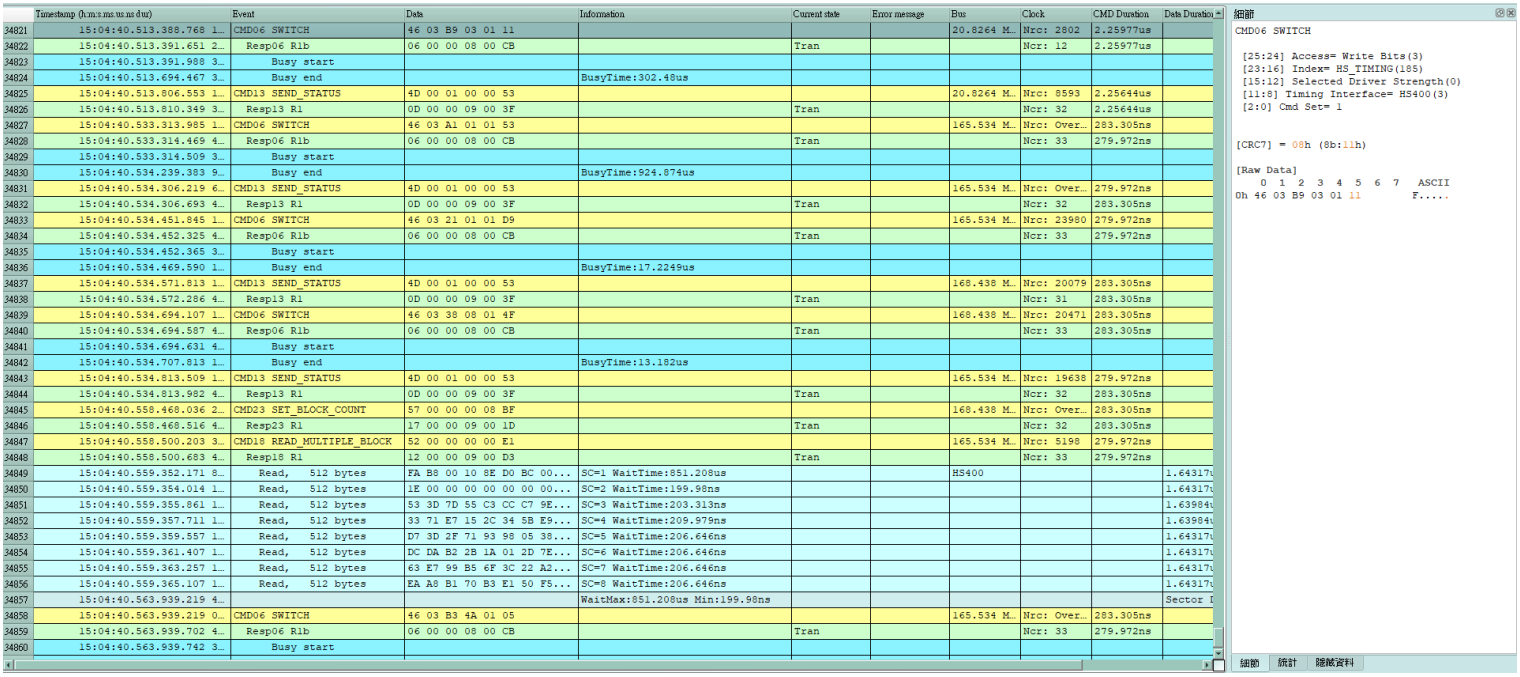
1. BF7264B/B+/Pro，32Gb RAM，eMMC 5.1 probes

2. Supports eMMC 5.1

Up to eMMC 5.1 HS400

Standard*	Introduced	Sequential Read (MB/s)	Sequential Write (MB/s)	Random Read (IO/s)	Random Write (IOPS)
eMMC 5.1	2015	250	125	11,000	13,000
eMMC 5.0	2013	250	90	7,000	13,000
eMMC 4.5	2012	140	50	7,000	2,000

3. Can display eMMC protocol packet data in tabular form, including command



	Timestamp (h:m:s.ms:us:ns dur)	Event	Data	Information	Current state	Error message	Bus	Clock	CMD Duration	Data Duration
34821	15:04:40.513.388.768 1...	CMD06 SWITCH	46 03 B9 03 01 11				20.8264 M...	Nrc: 2802	2.25977us	
34822	15:04:40.513.391.651 2...	Resp06 R1b	06 00 00 08 00 CB		Tran			Ncr: 12	2.25977us	
34823	15:04:40.513.391.988 3...	Busy start								
34824	15:04:40.513.694.467 3...	Busy end		BusyTime:302.48us						
34825	15:04:40.513.806.553 1...	CMD13 SEND_STATUS	4D 00 01 00 00 53				20.8264 M...	Nrc: 8593	2.25644us	
34826	15:04:40.513.810.349 3...	Resp13 R1	0D 00 00 09 00 3F		Tran			Ncr: 32	2.25644us	
34827	15:04:40.533.313.985 1...	CMD06 SWITCH	46 03 A1 01 01 53				165.534 M...	Nrc: Over...	283.305ns	
34828	15:04:40.533.314.469 4...	Resp06 R1b	06 00 00 08 00 CB		Tran			Ncr: 33	279.972ns	
34829	15:04:40.533.314.509 3...	Busy start								
34830	15:04:40.534.239.383 9...	Busy end		BusyTime:924.874us						
34831	15:04:40.534.306.219 6...	CMD13 SEND_STATUS	4D 00 01 00 00 53				165.534 M...	Nrc: Over...	279.972ns	
34832	15:04:40.534.306.693 4...	Resp13 R1	0D 00 00 09 00 3F		Tran			Ncr: 32	283.305ns	
34833	15:04:40.534.451.845 1...	CMD06 SWITCH	46 03 21 01 01 D9				165.534 M...	Nrc: 23980	279.972ns	
34834	15:04:40.534.452.325 4...	Resp06 R1b	06 00 00 08 00 CB		Tran			Ncr: 33	279.972ns	
34835	15:04:40.534.452.365 3...	Busy start								
34836	15:04:40.534.469.590 1...	Busy end		BusyTime:17.2249us						
34837	15:04:40.534.571.813 1...	CMD13 SEND_STATUS	4D 00 01 00 00 53				168.438 M...	Nrc: 20079	283.305ns	
34838	15:04:40.534.572.286 4...	Resp13 R1	0D 00 00 09 00 3F		Tran			Ncr: 31	283.305ns	
34839	15:04:40.534.694.107 1...	CMD06 SWITCH	46 03 38 08 01 4F				168.438 M...	Nrc: 20471	283.305ns	
34840	15:04:40.534.694.587 4...	Resp06 R1b	06 00 00 08 00 CB		Tran			Ncr: 33	283.305ns	
34841	15:04:40.534.694.631 4...	Busy start								
34842	15:04:40.534.707.813 1...	Busy end		BusyTime:13.182us						
34843	15:04:40.534.813.509 1...	CMD13 SEND_STATUS	4D 00 01 00 00 53				165.534 M...	Nrc: 19638	279.972ns	
34844	15:04:40.534.813.982 4...	Resp13 R1	0D 00 00 09 00 3F		Tran			Ncr: 32	283.305ns	
34845	15:04:40.558.468.036 2...	CMD23 SET_BLOCK_COUNT	57 00 00 00 08 BF				168.438 M...	Nrc: Over...	283.305ns	
34846	15:04:40.558.468.516 4...	Resp23 R1	17 00 00 09 00 1D		Tran			Ncr: 32	283.305ns	
34847	15:04:40.558.500.203 3...	CMD18 READ_MULTIPLE_BLOCK	52 00 00 00 00 E1				165.534 M...	Nrc: 5198	279.972ns	
34848	15:04:40.558.500.683 4...	Resp18 R1	12 00 00 09 00 D3		Tran			Ncr: 33	279.972ns	
34849	15:04:40.559.352.171 8...	Read, 512 bytes	FA B8 00 10 8E D0 BC 00...	SC=1 WaitTime:851.208us			HS400			1.64317u
34850	15:04:40.559.354.014 1...	Read, 512 bytes	1E 00 00 00 00 00 00 00...	SC=2 WaitTime:199.98ns						1.64317u
34851	15:04:40.559.355.861 1...	Read, 512 bytes	53 3D 7D 55 C3 CC C7 9E...	SC=3 WaitTime:203.313ns						1.63984u
34852	15:04:40.559.357.711 1...	Read, 512 bytes	33 71 E7 15 2C 34 5B E9...	SC=4 WaitTime:209.979ns						1.63984u
34853	15:04:40.559.359.557 1...	Read, 512 bytes	D7 3D 2F 71 93 98 05 38...	SC=5 WaitTime:206.646ns						1.64317u
34854	15:04:40.559.361.407 1...	Read, 512 bytes	DC DA B2 2B 1A 01 2D 7E...	SC=6 WaitTime:206.646ns						1.64317u
34855	15:04:40.559.363.257 1...	Read, 512 bytes	63 E7 99 B5 6F 3C 22 A2...	SC=7 WaitTime:206.646ns						1.64317u
34856	15:04:40.559.365.107 1...	Read, 512 bytes	EA A8 B1 70 B3 E1 50 F5...	SC=8 WaitTime:206.646ns						1.64317u
34857	15:04:40.563.939.219 4...			WaitMax:851.208us Min:199.98ns						Sector I
34858	15:04:40.563.939.219 0...	CMD06 SWITCH	46 03 B3 4A 01 05				165.534 M...	Nrc: Over...	283.305ns	
34859	15:04:40.563.939.702 4...	Resp06 R1b	06 00 00 08 00 CB		Tran			Ncr: 33	279.972ns	
34860	15:04:40.563.939.742 3...	Busy start								

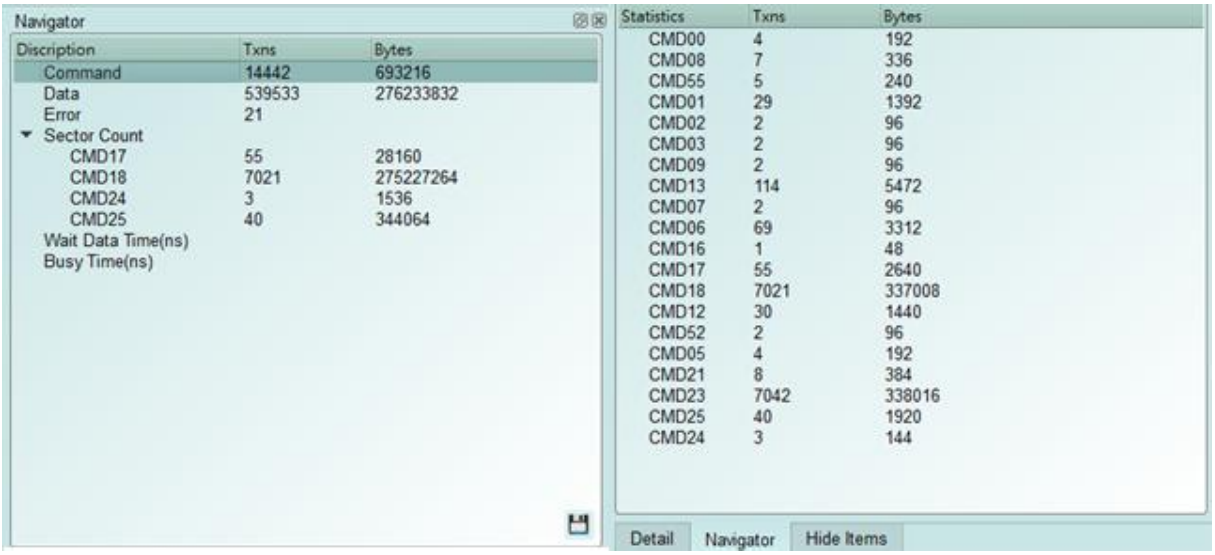
細節

```
CMD06 SWITCH

 [25:24] Access= Write Bits(3)
 [23:16] Index= HS_TIMING(185)
 [15:12] Selected Driver Strength(0)
 [11:8] Timing Interface= HS400(3)
 [2:0] Cmd Set= 1


[CRC7] = 08h (8b:11h)

[Raw Data]
    0  1  2  3  4  5  6  7   ASCII
0h 46 03 B9 03 01 11         F.....
```

細節 統計 隱藏資料

parsing

4. **Use 32Gb RAM as the buffer to stream all eMMC data into the SSD HD in order to record all data flow from Low Power Mode to High Speed Mode.**
5. **“Data Filter” filters unwanted data to save memory.**
6. **“Search” searches specific data.**
7. **“CRC Packet” displays and counts CRC**
8. **eMMC command statistics include numbers of packets, individual command, different data length, and errors**



Navigator

Discription	Txns	Bytes
Command	14442	693216
Data	539533	276233832
Error	21	
▼ Sector Count		
CMD17	55	28160
CMD18	7021	275227264
CMD24	3	1536
CMD25	40	344064
Wait Data Time(ns)		
Busy Time(ns)		

Statistics	Txns	Bytes
CMD00	4	192
CMD08	7	336
CMD55	5	240
CMD01	29	1392
CMD02	2	96
CMD03	2	96
CMD09	2	96
CMD13	114	5472
CMD07	2	96
CMD06	69	3312
CMD16	1	48
CMD17	55	2640
CMD18	7021	337008
CMD12	30	1440
CMD52	2	96
CMD05	4	192
CMD21	8	384
CMD23	7042	338016
CMD25	40	1920
CMD24	3	144

Detail Navigator Hide Items

9. eMMC command trigger

a. Trigger parameters include commands and data in order to cover all kinds of packets.

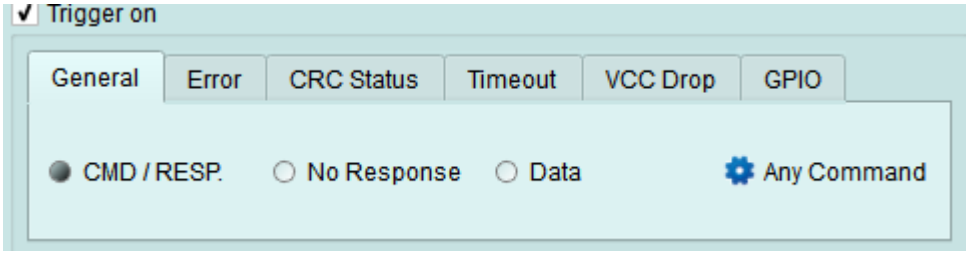
b. Command or 16 byte Data.

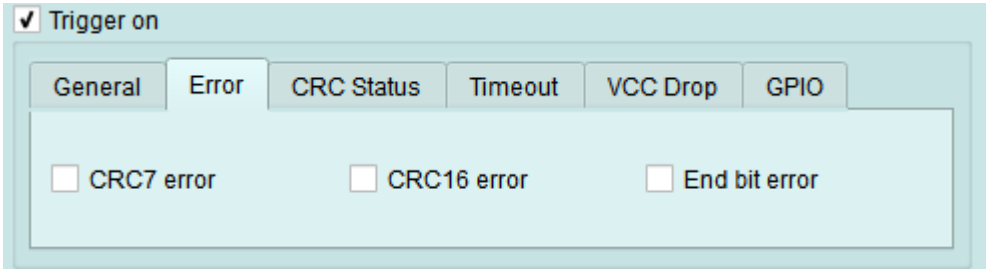
c. CRC7, CRC16, End Bit Error.

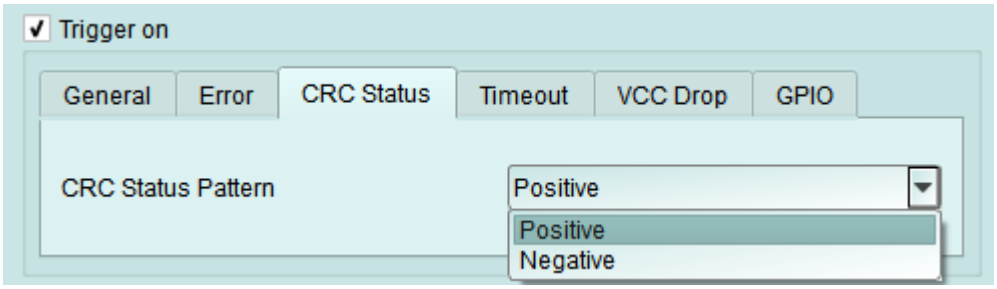
d. Data to Data timeout, CRC Status timeout, CRC Status pattern, Busy timeout.

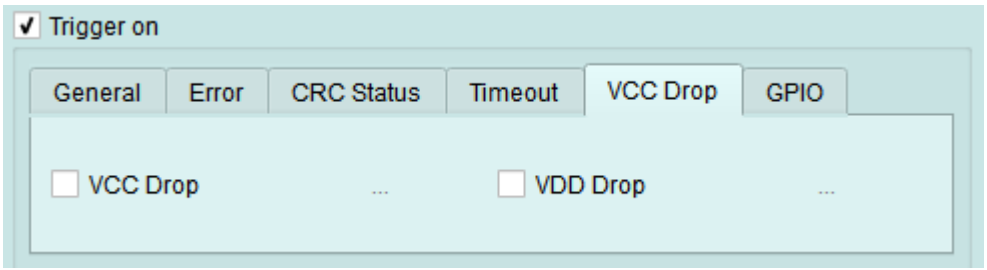
e. VCC drop, VCCQ2 drop.

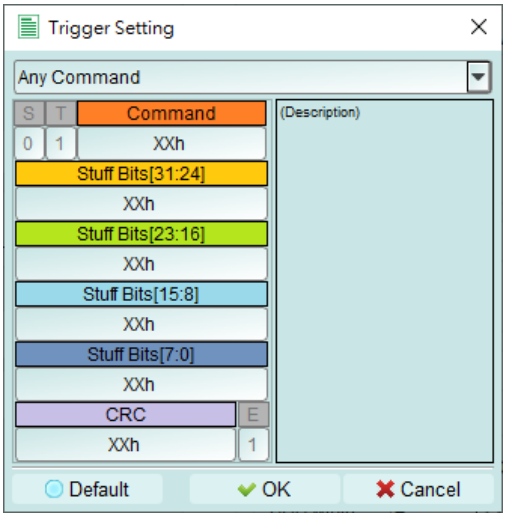
f. The Trigger-Out port is to trigger a DSO to capture waveforms.

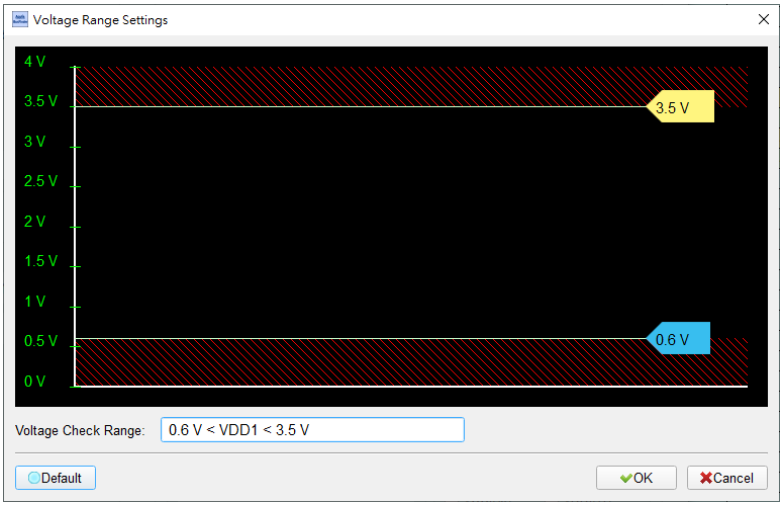


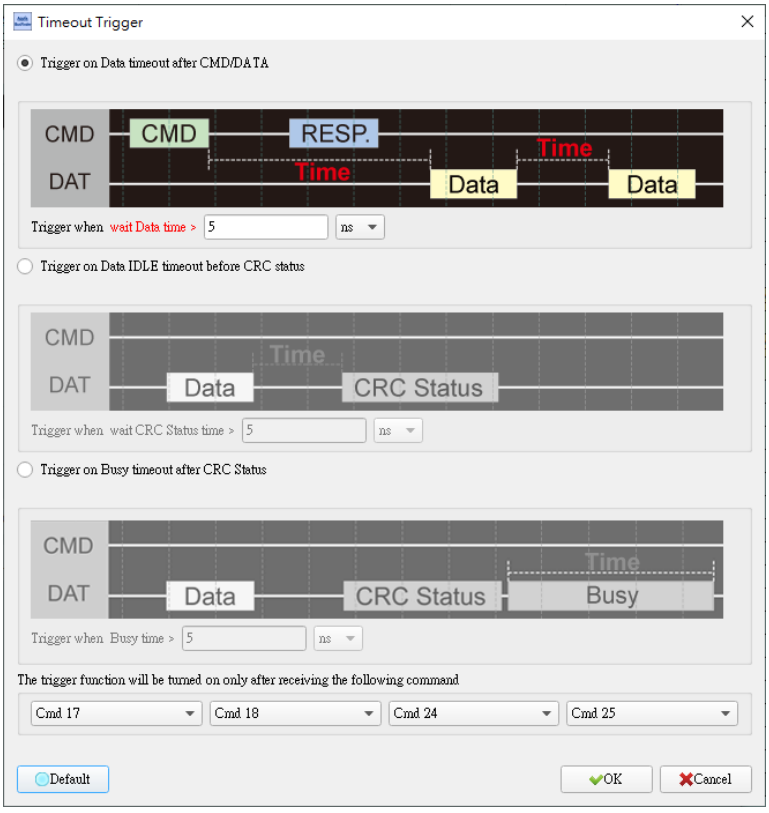






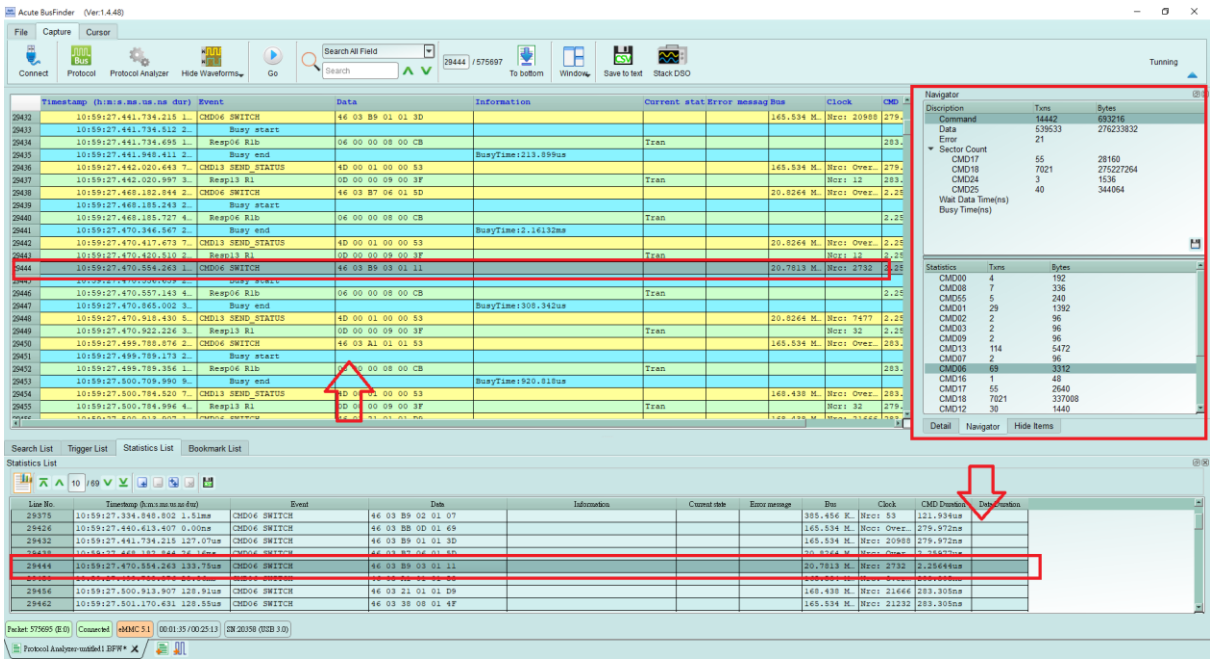




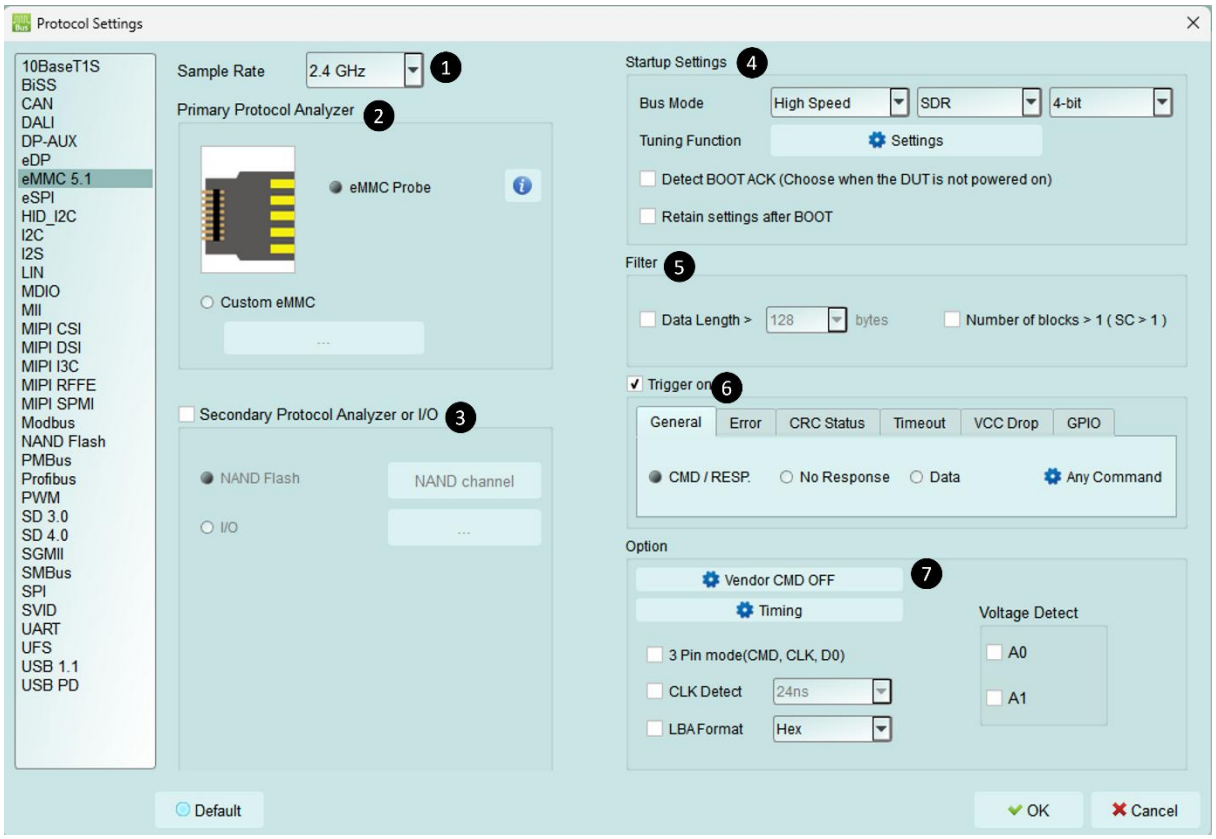


10. Report area

Statistics list: Quickly categorize and track the location of data with statistical functions.



11. eMMC settings



1. **Sample Rate:** Choose the sampling rate to use. To enable the Secondary Protocol Analyzer – NAND Flash option, the sampling rate must be set below 1GHz,
2. **Primary Protocol Analyzer:** Can choose to use the probe type, can also customize the channel / trigger level,
3. **Secondary Protocol Analyzer or I/O:** An additional set of specified logic analysis can be opened to analyze the remaining available pins at the same time
4. **Startup setting:** It needs to be set to the mode of the current acquisition, the mode of the test object is running, and has the Tuning function.
5. **Filter:** Each Data Frame can specify the size of the collection, and data larger than the set value will not be recorded
6. **Trigger on:** CMD, DATA, ERROR, Voltage, Timeout, CRC Status trigger conditions can be set
7. **Other options:**
    a. **Vendor CMD:** Can change the name of the command group by itself, with or without information
    b. **Timing:** Set the clock cycle numbers of symbols.
    c. **3 Pin mode:** After connecting CLK, CMD, D0, the protocol flow and status agreement can be analyzed. Mainly used for test objects with difficult wiring or non-data errors,
    d. **CLK Detect:** Can detect whether CLK has action,
    e. **Two sets of voltage detection function**

FAQ

1. **What eMMC version is supported?**

   A：Support eMMC 5.1 HS400 / HS200 / CMD Queue.

2. **Will the signal quality be affected during measurement?**

   A: The measurement of the external instrument will inevitably have some load effect. We use the active probe to reduce the interference of the object to be measured and improve the signal quality.

3. **Is Tx supported?**

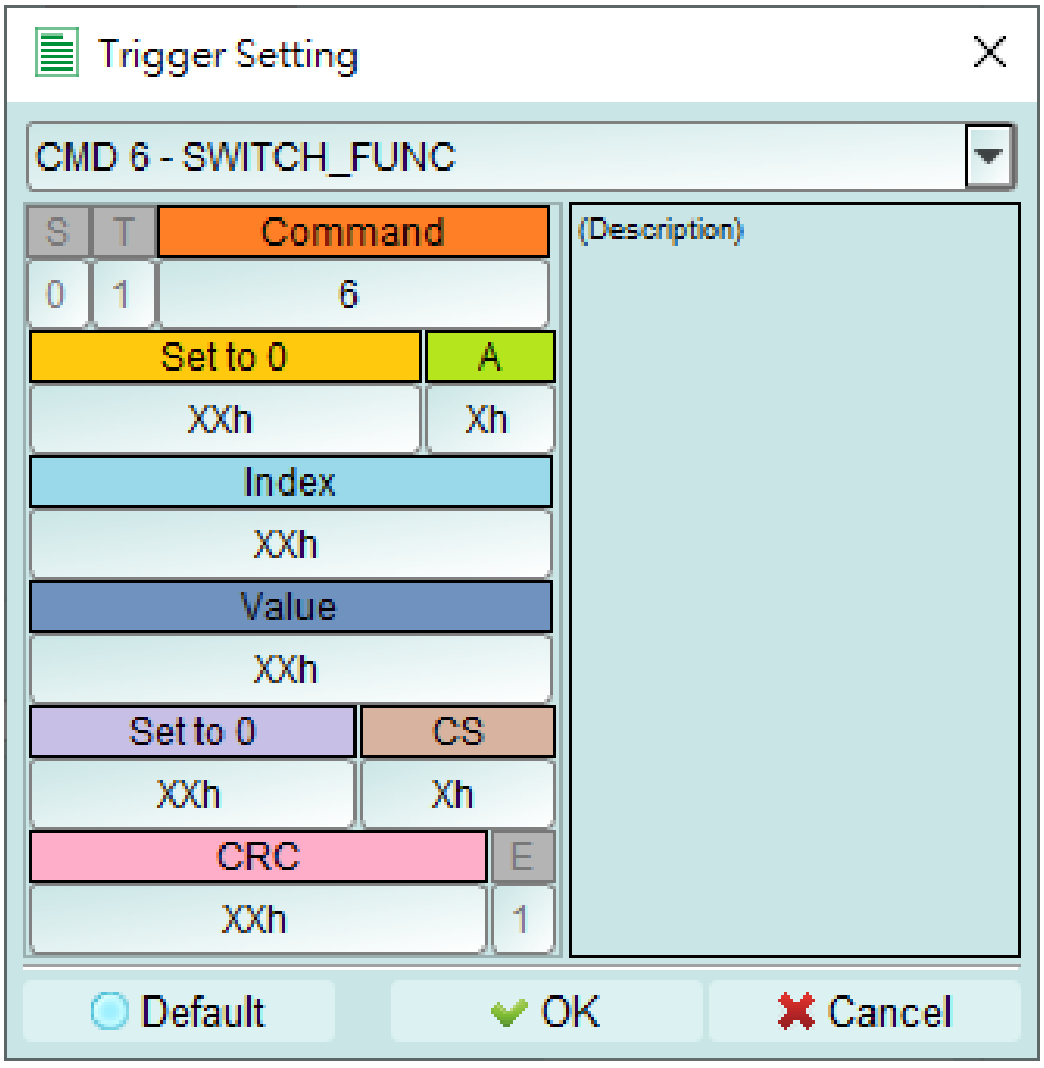
   A: No

4. **Precautions during measurement**

   Please make sure to connection according to the “Probe and test object connection” on page 9.

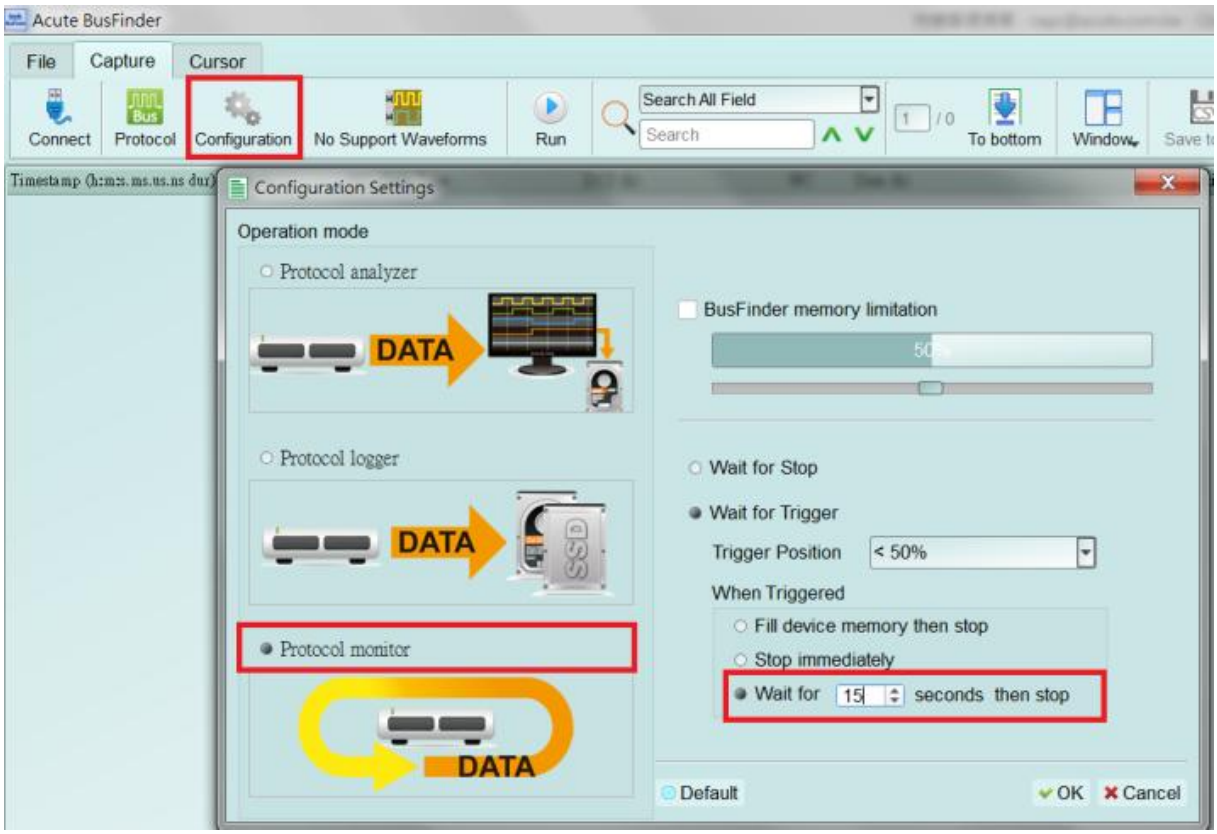
5. **Can I specify an eMMC packet as the trigger point function?**

   A: You can specify specific eMMC packet or Error to trigger.

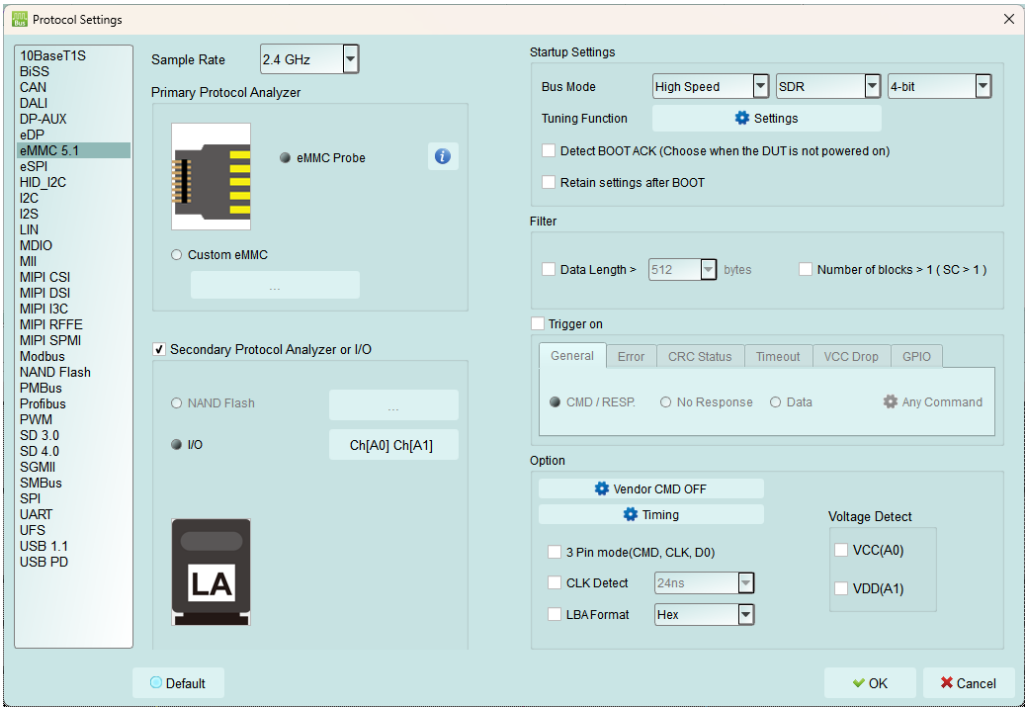


6. Is it possible to set an eMMC starting point, and specify how much time to capture Data?

A: You can set the starting condition to the trigger item and adjust to the data monitor mode in the working mode menu. And specify the length of acquisition time.

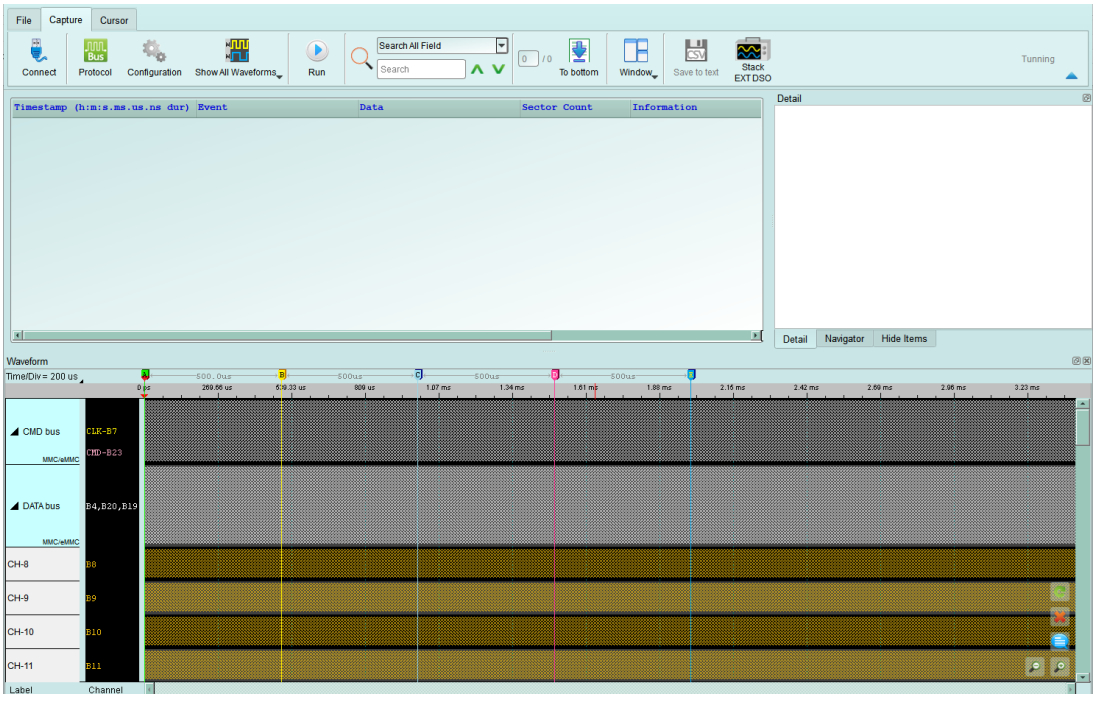


7. Secondary Protocol Analyzer or I/O



While using the eMMC 5.1 protocol analyzer, you can additionally enable the NAND Flash logic analyzer function or additional I/O pins for analysis.

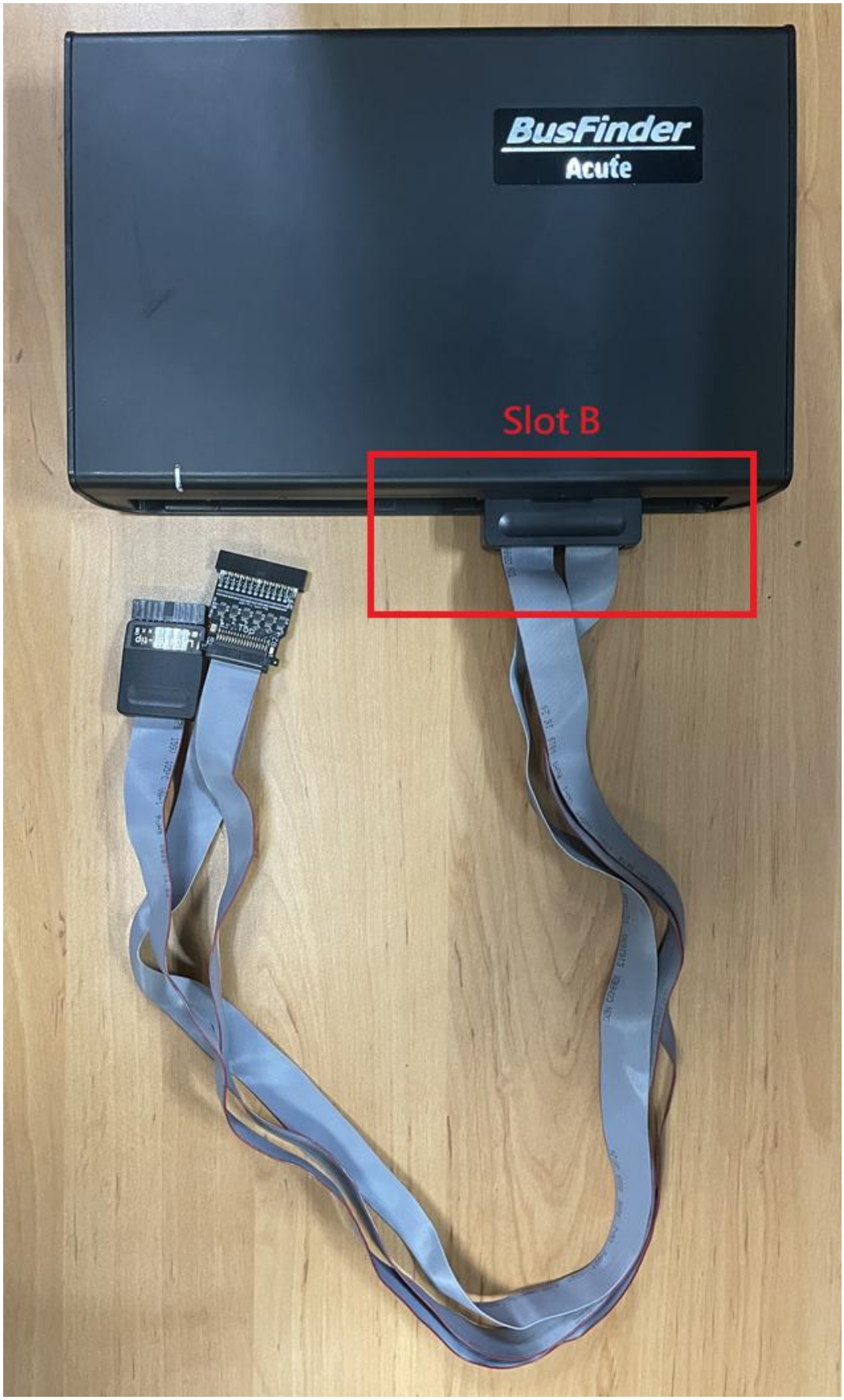
To use this function, you must turn on the “Show Waveform” on the main screen of the protocol analyzer.



Since the analysis of NAND Flash requires the use of more channels, an LA probe needs to be connected to Slot A, and it can only be turned on using a sampling rate of 1GHz.

BusFinder and Probe connection

The BusFinder can only use Slot B as the probe connection slot.



Probe and test object connection