Report NO: 18R010001

RICO-3288

Rockchip RK3288 Platform

Compatibility Test Report

Summary	☒ Pass ☐ Fail ☐ Pass with Deviation (Comment: _____)

Test Results Category				
	Critical	Major	Minor	Enhancement
Defect Found	0	0	0	0
Defect Unsolved	0	0	0	0

Issue date	QE Manager	Test Engineer
01-31-2018	KJ Wang	Anderson Lin

Note :

For all test items in this report, 3 results have been defined and described as following:

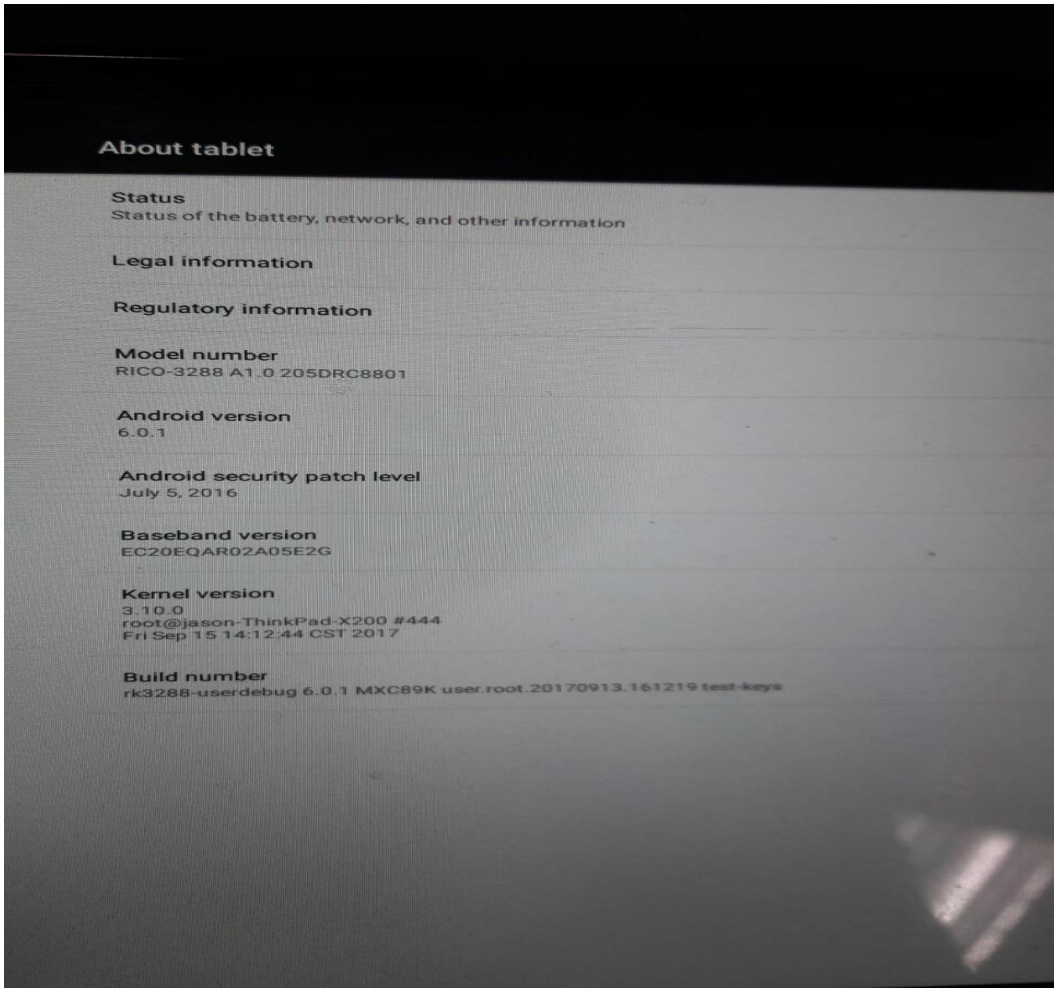
Pass:	Functionality work perfectly
Fail:	Functionality failed and must be resolved in the next version
N/A:	Functionality Not Applicable or Not Available

This test report would be updated when re-test completed in product next change version.

Platform Information:

Item	Device Information	Test Item
Model	RICO-3288	1,2,3,4,5,6
MB Ver.	RICO-3288 Rev:A 1.0	1,2,3,4,5,6
CPU Type	Rockchip RK3288 ARM Cortex™-A17 Quad-core 1.6GHz (up to 1.8GHz)	1,2,3,4,5,6
Storage	16GB eMMC	1,2,3,4,5,6
Memory Type	DDR3L 2GB SDRAM	1,2,3,4,5,6
HDMI Monitor	Dell P2415Qb	1,2,3,4,5,6
Android Version	Android 6.0.1	1,2,3,4,5,6
Adapter	A065112-TD1 / OUTPUT:12V~5.4A	1,2,3,4,5,6

OS Version:



Summary:

1. Mechanical Check

(1.1) Mechanism construction check

- Key test point:
  1. Inspect the mechanical appearance

Test Result	Judgment		
	Pass	Fail	Remark
No mechanical conflicts, gap, blend, deformed appearance, misalignment	☒		

(1.2) I/O Connector and Cover check

- Key test point:
  1. Inspect the I/O connector and I/O cover

Test Result	Judgment		
	Pass	Fail	Remark
I/O Cover is firm	☒		

(1.3) DC power outlet / inlet check

- Key test point:
  .1. Inspect DC Power outlet/inlet

Test Result	Judgment		
	Pass	Fail	Remark
No mechanical conflicts, gap, blend, deformed appearance, misalignment	☒		

(1.4) Button and Function Key check

- Key test point:
  1. Inspect appearance of Power button

Test Result	Judgment		
	Pass	Fail	Remark
			N/A

2. Basic Function Test

(2.1) Display Function Test

(2.1.1) Display quality check

- Key test point:
  1. Perform “Display Tester” application->”Display quality”
  2. Check display quality with different patterns (full white / full black / color bar / black white brick) with variant back light

Test Result	Judgment		
No color deviation / No saw-tooth / No flicker / No light leak /No abnormal Uniformity	Pass	Fail	Remark
	☒		

(2.1.2) Auto Brightness Function Test

- Key test point:
  Open a dialog for adjusting the brightness of the screen. You can check Automatic brightness to set the tablet to adjust the brightness automatically, using the tablet’s built-in light sensor. Or uncheck that option to use the slider to set a brightness level you want at all times when using the tablet**.**

Test Result	Judgment		
Not support	Pass	Fail	Remark

(2.1.3) Play Video

- Key test point:
  Play video then check the display quality.

Test Result	Judgment		
No lag / No ghost / No flicker / No color deviation while playing video.	Pass	Fail	Remark
	☒		
4k.mp4	☒		
720P.wmv	☒		
1080p.mp4	☒		
1080p.mov	☒		
350X240.mpg	☒		
640X480.avi	☒		

(2.1.4) LCD Leakage check

- Key test point:
  1. Put UUT under dark environment
  2. Adjust UUT brightness to max then check LCD leakage status

Test Result	Judgment		
	Pass	Fail	Remark
No obvious leakage appeared	☒		

(2.1.5) HDMI Function test

- Key test point:
  1. Plug HDMI cable to connect to HDMI monitor
  2. Check HDMI screen

Test Result		Judgment		
		Pass	Fail	Remark
1.Tablet content can be shown on HDMI monitor 2.Sound can be played on HDMI monitor		☒		
HDMI Monitor compatibility connected with 5M cable	Samsung U28D590D (4K Monitor)	☒		
	DELL P2415Qb(4K Monitor)	☒		
	ASUS VE288	☒		
	CHIMEI 22SH-L	☒		

(2.1.6) HDMI Setting under Android

- Key test point:
  1. Plug HDMI cable to connect to HDMI monitor
  2. Check HDMI screen

Test Result		Judgment		
		Pass	Fail	Remark
HDMI enable / disable		☒		
HDMI Resolution	Auto	☒		
	1920X1080p-60	☒		
	1920X1080p-50	☒		
	1920X1080p-30	☒		
	1920X1080p-25	☒		
	1920X1080p-24	☒		
	1280X720p-60	☒		
	1280X720p-50	☒		
	720X576p-50	☒		
	720X480p-60	☒		

(2.2) Audio Function Test

(2.2.1) Internal speaker Function

- Key test point:
  1. Play music track (or ring tones)
  2. Hear the sound quality from internal speaker
  3. Adjust volume bar from minimum to maximum then check sound level is from minimum to maximum.
  4. Adjust volume bar from maximum to minimum then check sound level is from maximum to minimum

Test Result	Judgment		
	Pass	Fail	Remark
Internal speaker no sound while unplug earphone.	☒		

(2.2.2) Line-out Function

- Key test point:
  1. Plug earphone.
  2. Play music track (or ring tones).
  3. Hear the sound quality from earphone.
  4. Adjust volume bar from minimum to maximum then check sound level is from minimum to maximum.
  5. Adjust volume bar from maximum to minimum then check sound level is from maximum to minimum

Test Result	Judgment		
	Pass	Fail	Remark
No noise, no distortion, the sound is clean, volume can be changed as we set with line-out. Internal speaker will be turned off automatically when we plug in earphone. Sound can be played from left channel or right channel as we set	☒		

(2.2.3) Microphone Function

- Key test point:
  1. Execute "Sound Recorder" program
  2. Choose "record" button then say something close to internal MIC
  3. Choose "stop" button
  4. Choose "play" button to play recording file
  5. Check recording file
  6. Repeated step 1->5 on earphone MIC

Test Result	Judgment		
	Pass	Fail	Remark
Microphone no sound.	☒		

(2.3) Wi-Fi Function Test

(2.3.1) Turn on /off Wi-Fi Function

- Key test point:
  Turn on Wi-Fi function then check the signal strength of Wi-Fi is displayed on system bar.
  Turn off Wi-Fi function then check the signal strength of Wi-Fi is off on system bar.
  Switch Wi-Fi on /off for 5 times then check Wi-Fi function still can work normally.

Test Result	Judgment		
Wi-Fi function can work normally after switch Wi-Fi on /off. The signal strength of Wi-Fi is displayed on system bar.	Pass	Fail	Remark
	☒		

(2.3.2) Connect to internet

- Key test point:
  Turn on Wi-Fi function then execute web browser. Type in website link (ex: www.google.com)

Test Result	Judgment		
We can connect to internet by web browser via Wi-Fi connection. Website shows correctly without any error or crash.	Pass	Fail	Remark
	☒		

(2.3.3) Download files

- Key test point:
  Turn on Wi-Fi function then connect to website to download files

Test Result	Judgment		
We can download files from internet via Wi-Fi connection. The file is complete and not broken.	Pass	Fail	Remark
	☒		

(2.3.4) Check the strength indicator of W-Fi signal

- Key test point:
  Turn on Wi-Fi function then look at the system bar. Check the strength indicator of Wi-Fi signal.

Test Result	Judgment		
Wi-Fi icon is present at the system bar all the time for at least 5 minutes. The indicator of Wi-Fi signal is variable.	Pass	Fail	Remark
	☒		

(2.3.5) Wi-Fi performance test

- Key test point:
  Turn on Wi-Fi function then connect to http://speedof.me/m/ Execute download and upload performance test. Record the test result.

Test Result			Judgment		
Run	download	upload	Pass	Fail	Remark
1	2.81 Mbps	13.17 Mbps	☒		
2	2.32 Mbps	16.21 Mbps			
3	2.08 Mbps	11.68Mbps			
4	2.43 Mbps	15.22 Mbps			
5	2.87 Mbps	13.84 Mbps			
Average	**2.5 Mbps**	**14.02 Mbps**			

(2.3.6) Switch on /off between 3G , Wi-Fi , and Airplane mode

- Key test point:
  Switch on /off between 3G, Wi-Fi, and Airplane mode at least 5 times.

Test Result	Judgment		
Network function is workable while switching between 3G, Wi-Fi, and Airplane mode.	Pass	Fail	Remark
	☒		

(2.3.7) Switch on /off between 3G and Wi-Fi

- Key test point:
  Turn on Wi-Fi and 3G connection. Check system should use Wi-Fi connection.
  Turn off Wi-Fi connection. Check network connection will change from Wi-Fi to 3G automatically.

Test Result	Judgment		
Network function is workable while switching between 3G and Wi-Fi	Pass	Fail	Remark
	☒		

(2.3.8) Wake up from sleep mode, check Wi-Fi function

- Key test point:
  Wake up system from sleep mode then check Wi-Fi function is workable.

Test Result	Judgment		
Not support	Pass	Fail	Remark

(2.3.9) Reboot system, check Wi-Fi function

- Key test point:
  Reboot system then check W-Fi function.

Test Result	Judgment		
W-Fi function still can work correctly after reboot.	Pass	Fail	Remark
	☒		

(2.4) 3G Function Test

(2.4.1) Turn on /off 3G Function

- Key test point:
  Turn on 3G function then check the signal strength of 3G is displayed on system bar.
  Turn off 3G function then check the signal strength of 3G is off on system bar.
  Switch 3G on /off for 5 times then check 3G function still can work normally.

Test Result	Judgment		
3G icon is displayed on system bar. 3G function can work normally after switch 3G on /off. The signal strength of 3G is displayed on system bar.	Pass	Fail	Remark
	☒		

(2.4.2) Connect to internet

- Key test point:
  Turn on 3G function then execute web browser. Type in website link (ex: www.google.com)

Test Result	Judgment		
We can connect to internet by web browser via 3G connection	Pass	Fail	Remark
	☒		

(2.4.3) PING Test

- Key test point: Ping 168.95.1.1 (Hinet IP) for 1000 clcyes, loss<2 times.

Test Result	Judgment		
	Pass	Fail	Remark
0% packet loss	☒		

(2.4.4) Download files

- Key test point:
  Turn on 3G function then connect to website to download files

Test Result	Judgment		
	Pass	Fail	Remark
We can download files from internet via 3G connection. The file is complete and not broken.	☒		

(2.4.5) Check the strength indicator of 3G signal

- Key test point:
  Turn on 3G function then look at the system bar. Check the strength indicator of 3G signal.

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Test Result	Judgment		
	Pass	Fail	Remark
3G icon is present at the system bar all the time for at least 5 minutes. The indicator of 3G signal is variable.	☒		

(2.4.6) 3G performance test

- Key test point:
  Turn on 3G function then connect to http://speedof.me/m/ Execute download and upload performance test. Record the test result.

Test Result			Judgment		
Run	download	upload	Pass	Fail	Remark
1	4.53 Mbps	0.12 Mbps	☒		
2	4.30 Mbps	0.33 Mbps			
3	4.18 Mbps	0.29 Mbps			

4	4.63 Mbps	0.17 Mbps			
5	4.07 Mbps	0.26 Mbps			
Average	**4.32 Mbps**	**0.23 Mbps**			

(2.4.7) Switch on /off between 3G ,Wi-Fi , and Airplane mode

- Key test point:
  Switch on /off between 3G, Wi-Fi, and Airplane mode at least 5 times..

Test Result	Judgment		
Network function is workable while switching between 3G, Wi-Fi, and Airplane mode.	Pass	Fail	Remark
	☒		

(2.4.8) Switch on /off between 3G and Wi-Fi

- Key test point:
  Turn on Wi-Fi and 3G connection. Check system should use Wi-Fi connection.
  Turn off Wi-Fi connection. Check network connection will change from Wi-Fi to 3G automatically.

  .

Test Result	Judgment		
Network function is workable while switching between 3G and Wi-Fi.	Pass	Fail	Remark
	☒		

(2.4.9) Wake up from sleep mode, check 3G function

- Key test point:
  Wake up system from sleep mode then check 3G function is workable.

Test Result	Judgment		
Not support	Pass	Fail	Remark

(2.4.10) Reboot system, check 3G function

- Key test point:
  Reboot system then check 3G function.

Test Result	Judgment		
3G function still can work correctly after reboot.	Pass	Fail	Remark
	☒		

(2.5) GPS Function Test

(2.5.1) GPS cold-start TTFF

- Key test point:
  After first boot, executing “GPSTest.apk” to test GPS cold-start TTFF.

Test Result	Judgment		
Not support	Pass	Fail	Remark

(2.5.2) GPS performance

- Key test point:
  Execute “GPSTest”.apk to check GPS performance

Test Result	Judgment		
Not support	Pass	Fail	Remark

(2.6) Bluetooth Function Test

(2.6.1) Bluetooth on /off Function

- Key test point:
  Turn on Bluetooth function then check the Bluetooth icon is displayed on system bar.
  Turn off Bluetooth function then check the Bluetooth icon is not displayed on system bar.
  Switch Bluetooth on /off for 5 times then check Bluetooth function still can work normally.

Test Result	Judgment		
Bluetooth function can work normally after switch Bluetooth on /off. The Bluetooth icon is displayed on system bar.	Pass	Fail	Remark
	☒		

(2.6.2) Search BT Devices

- Key test point:
  Click Apps->Settings->Wireless &networks->Bluetooth settings->Find nearby devices->Scan for devices"

Test Result	Judgment		
We can see other surrounding Bluetooth enabled device in the screen of BT setting.	Pass	Fail	Remark
	☒		

(2.6.3) Data transmission via Bluetooth

- Key test point:
  1. Click "Apps->Settings->Wireless &networks->Bluetooth settings->Discoverable"
  2.Click"Apps->Settings->Wireless &networks->Bluetooth settings-> Find nearby devices"
  3. Pair with other Bluetooth device
  4. Send files (10MB file) to other Bluetooth device.
  5 .Receive files (10MB file) from other Bluetooth device.

Test Result	Judgment		
Send files (1 minute 38 seconds) Receive files(1 minute 57 seconds)	Pass	Fail	Remark
	☒		

(2.6.4) Connect to Bluetooth Devices

- Key test point:
  1. Click "Apps->Settings->Wireless &networks->Bluetooth settings->Discoverable"
  2. Click "Apps->Settings->Wireless &networks->Bluetooth settings->Find nearby devices"
  3. Pair with Bluetooth device (Bluetooth mouse / Keyboard / Earphone)
  4.make sure Bluetooth device can work.

Test Result	Judgment		
1.We can use BT Mouse(Logitech M557) to select APP or execute APP 2.We can use BT Keyboard to(Microsoft Mobile Keyboard 5000) type words as we expected 3. We can hear music by BT Earphone (SONY MW600).	Pass	Fail	Remark
	☒		

(2.6.5) Wake up from sleep mode, check Bluetooth function

- Key test point:
  Wake up system from sleep mode then check Bluetooth function is workable

Test Result	Judgment		
Bluetooth function still can work correctly after waking up from sleep mode.	Pass	Fail	Remark
	☒		

(2.6.6) Reboot system, check Bluetooth function

- Key test point:
  Reboot system then check Bluetooth function.

Test Result	Judgment		
Bluetooth function still can work correctly after reboot.	Pass	Fail	Remark
	☒		

2.7 USB Function Test

(2.7.1.1) USB Compatibility Test

- Key test point:
  1. Connect with USB mouse, USB keyboard, USB Flash, USB Hub.

Test Result		Judgment		
USB mouse: icon can be selected by USB mouse USB keyboard: type words USB Flash: can be detected. Size is correct USB Hub: plug usb mouse, USB keyboard, USB Flash,all devices can be detected	2X USB 2.0 Type A	Pass	Fail	Remark
		☒		
	1X Micro USB(OTG)	☒		

(2.7.2) USB Data transmission

- Key test point:
  1. Perform data transmission with USB Flash.

Test Result		Judgment		
Copy 1 GB files to USB 3.0 Flash(Write speed)	USB 2.0 Type A: 4 min.13sec.	Pass	Fail	Remark
		☒		
	Micro USB(OTG): 6 min. 44 sec	☒		

(2.7.3) USB ADB Function

- Key test point:
  1. Connect to PC via ADB (mini usb or micro usb)
  2. Check PC can connect with DUT via ADB (mini usb or micro usb)

Test Result	Judgment		
Perform “adb devices” command, then we can see DUT id on the terminal screen	Pass	Fail	Remark
	☒		
check adb icon is shown on the top of screen	☒		
Data transmission via ADB command	☒		
DUT can be read/write via Windows File Manager	☒		

2.8 Micro SD Function Test

(2.8.1) Micro SD Compatibility test

- Key test point:
  1. Insert Micro SD.
  2. Check Micro SD size.

Test Result	Judgment		
Micro SD Card can be detected. Size is correct Files can be read and writed Hot-plug Micro SD Card without error or crash	Pass	Fail	Remark
SP SDHC 16GB	☒		
Sandisk SDHC 32GB	☒		
Kingston SDXC 64GB	☒		
Transcend SDXC 64GB	☒		
Kingston SDXC 128GB	☒		

2.9. Ethernet Function Test

(2.9.1)DHCP Function Test

- Key test point:
  1. Plug RJ-45 Cable then connect to internet via DHCP.

Test Result	Judgment		
1. We can connect to internet to browse website via DHCP	Pass	Fail	Remark
	☒		

(2.9.2) LAN LED status Test

- Key test point:
  1. Check LAN led color under different LAN speed.

Test Result	Judgment		
not support	Pass	Fail	Remark

(2.9.3) WOL Function Test

- Key test point:
  1. Execute “Magicpacket” App to test WOL function

Test Result	Judgment		
	Pass	Fail	Remark
Not support			

(2.9.4) LAN Bandwidth Test

- Key test point:
  1. Connect DUT and PC via different speed LAN HUB(10Mbps / 100Mbps / 1000Mbps) by using “iPerf” App
  2. Run iPerf APP then execute command:
     iperf –c 192.168.x.x –w 100M –t 1800 –i 60

Test Result		Judgment		
		Pass	Fail	Remark
Bandwidth :747 Mbits /sec (30 minutes.)	1000Mbps LAN HUB(D-Link DGS-1008D)	☒		
Bandwidth :93.9 Mbits /sec (30 minutes.)	100Mbps LAN HUB(Accton Desktop-3005)	☒		
Bandwidth :9.04 Mbits /sec (30 minutes.)	10Mbps LAN HUB(SVEC FD916H)	☒		

2.10. COM Port Function Test

(2.10.1) COM Port Loopback Test

- Key test point:
  1. Plug COM Port loopback then executing App to test.

Test Result	Judgment		
	Pass	Fail	Remark
Running “Serial Port API sample” without data loss	☒		TtyS1(rk_serial) TtyXRUSB0(xr_usb_serial)

2.11 GPIO Function Test

(2.11) GPIO Function Test

- Key test point:
  Check GPIO function is workable.

Test Result	Judgment		
GPIO function is workable with Fixture. Measure the value by Voltage Meter.	Pass	Fail	Remark
	☒		

2.12. Configuration Check

(2.12) Configuration check

- Key test point:
  1. confirm CPU / Memory / Storage information meet with Spec.

Test Result	Judgment		
CPU: Rockchip RK3288 Memory:2GB Storage: 16GB eMMC	Pass	Fail	Remark
	☒		

2.13. Quick Launch Test

(2.13) Quick Launch Test

- Key test point:
  1. Quick Launch function is workable

Test Result	Judgment		
Wi-Fi enable / disable	Pass	Fail	Remark
	☒		
Bluetooth enable / disable	☒		
3G enable / disable	☒		
Airplane mode enable / disable	☒		

3. Power Consumption Test

3.1. Power Consumption

Test Equipment						
Equipment	DC Source					
Manufacturer	Chroma					
Model name	62012P-600-8					
Power Supply		**Current**		**P**		**Note**
(Full Loading Mode) with StabilityTest Full Loading Test	(+ 12 V)	0.73	A	8.76	W	StabilityTest V2.7
Full Loading Total Watt	8.76 (W)					
Idle mode: Measure the current value when system under android and without running any program	(+ 12 V)	0.46	A	5.52	W	
Idle Total Watt	5.52 (W)					

4. Time Accuracy Test

(4.1) System Clock & RTC Clock Test

- Key test point:
  Check RTC Clock in Power On Mode.
  Check RTC Clock in Power Off Mode.

Test Result	Judgment		
1. Power On Mode: time interval 24 hrs. Criteria: +/-1 min. 2. Power Off Mode: time interval 24 hrs. Criteria: +/-1 min.	Pass	Fail	Remark
	☒		

5. Benchmark Test

(5.1) Benchmark Test

- Key test point:
  Each benchmarking test was run 5 times in order to get an average value.

Test Result of Benchmark		
An3DBench		
Run	Score	Note
1	7994	A 3d benchmark based on the Android
2	8018	

3	8009	version of the jPCT 3d engine. Runs 7 tests from fill rate to complex scenes.
4	8557	
5	8657	
Average	**8247**	

Quadrant Standard V 2.1.1		
Run	Score	Note
1	10827	Quadrant is a CPU, I/O and 3D graphics benchmark.
2	11370	
3	11583	
4	11775	
5	10565	
Average	**11224**	

AnTuTu Benchmark V 6.3.3		
Run	Score	Note
1	44536	Benchmark App for Android device
2	46126	
3	46717	
4	45896	
5	45694	
Average	**45793**	

(5.2) Storage Performance Test

Onboard eMMC Performance				
eMMC	16GB eMMC			
Item	Comment / (unit)	Software	Score	Note
Onboard eMMC	Read	A1 SD Bench(2.4.0)	32.02MB/s	
	Write	A1 SD Bench(2.4.0)	26.29MB/s	

USB2.0 Performance				
USB Flash	Sony USB3.0 64GB			
Item	Comment / (unit)	Software	Transfer Rate (MB/s)	Note
USB2.0 TYPE A	Read	A1 SD Bench(2.4.0)	16.31 MB/s	
	Write	A1 SD Bench(2.4.0)	9.89 MB/s	
Micro USB(OTG)	Read	A1 SD Bench(2.4.0)	19.46 MB/s	
	Write	A1 SD Bench(2.4.0)	10.34 MB/s	

MicroSD performance				
MicroSD	32GB / 128GB			
Item	Comment / (unit)	Software	Transfer Rate (MB/s)	Note
MicroSD (Sandisk / SDHC / 32GB)	Read	A1 SD Bench(2.4.0)	20.08MB/s	
	Write	A1 SD Bench(2.4.0)	9.34MB/s	
MicroSD	Read	A1 SD Bench(2.4.0)	16.88MB/s	

(Kingston / SDXC / 128GB)	Write	A1 SD Bench(2.4.0)	12.15MB/s	

6. Run in Test

(6.1) StabilityTest

- Key test point:
  Execute “Stability Test” App to do run in test.

Test Result	Judgment		
DUT can work normally .No crash or pop up error message after running overnight test.	Pass	Fail	Remark
	☒		V2.7

(6.2) Playback video for overnight test

- Key test point:
  Perform “MXPlayer” to playback video for overnight test

Test Result	Judgment		
DUT can work normally. No crash or pop up error message after running playback video for 12 hours.	Pass	Fail	Remark
	☒		