L1 Service Manual

TCL Communication Ltd.

Neon

DTEK 50 STH100-1/STH100-2

PRD62980/R188

PRD62981/R189

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Note: this manual is non-contractual and TCL Communication Ltd. can modify it without prior notice on the characteristics of described equipments.

1.0	2016/6/14	Preliminary draft	Peter Ye		
Rev.	**Date**	**Modification description**	**Prepared By**	**Checked By**	**Approved By**

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1. General

Neon PRD–62980/PRD-62981 is a smart phone with MSM8952 platform (4x A53 1.7GHz + 4x A53 1.2GHz), and BT/WLAN/MP3, social network service etc functions. It can work with the GSM850/900/1800/1900, UMTS 1/2/5/8 for Global, and LTE FDD: 1/2/4/5/7/12 USA.

Detail features

Project name		NEON
Code Name		PRD62980/PRD62981
General	2G Network	GSM 850/900/1800/1900
	3G Network	NA:1/2/4/5/8 GL:1/2/5/6/8
	4G Network	NA:FDD 2/4/5/7/12/17/29/30 roaming:FDD 1/3/20 GL:FDD:1/2/3/7/8/20/28A TDD:38/40/41(China 100 MHz BW)
	OS	Android M
	Chipset	MSM8952
	CPU Frequency	Octa-Core (4x A53 1.5GHz + 4x A53 1.2GHz)
	GPU	Adreno 405 @550MHz
Design	Dimensions (mm)	147x72.5x7.45(TBC)
	Estimated Weight (g)	133g
	Form Factor	Bar
	Side Keys	Volume & Power Key & Boom Key
	Removable battery cover	
Display	Main LCD Size (inch)	5.2
	Main display resolution	FHD (1920×1080)
	PPI	424
	Main LCD Type	IPS
	LTPS	Yes
	Brightness (cd/m2, Max)	500

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	NTSC	70%
	View angle (Degree)	170
	Screen to body ratio	80%(TBC)
	Contrast Ratio(Nominal/Sunlight)	>1000:1
	Color Reproduction	(0.30, 0.32) +/- 0.03
	Touch icon backlight	
	LED indicator	Yes
	Touch technology	Capacitive (Palm & grip rejection)
	Touch Points	10
	TP Accuracy	Edge: 1.5mm; Center: 1mm
	Border/Bezel Size	1.9mm
	Full Lamination/ Non-Full Lamination	FL
	Touch Panel Material	OGS
	Glass type	Dragontrail/NEG/Corning only for ATT
	Oleophobic coating (Anti-finger coating)	Yes
	Other features	Brightness boost to 600nits under sunlight
Audio	Audio	2 in 1
	Number of speakers	2
	Audio Chipset (DAC)	AKM4375
	Sampling rate	192KHz/32-Bit
	Audio Amplifier	2 x NXP TFA9890 Smart PA
	HD voice	Yes
	Dual-mic Noise cancellation	Yes
	Audio Codec Support	Android default scope (AAC LC, AAC+, enhanced AAC+, AMR-NB, AMR-WB, FLAC, MP3, MIDI, Vorbis, PCM/WAVE)
	Dynamic Range	100dB
	Fidelity (THD+Noise)	-94dB
	SNR	100dB
	Distortion	-94dB
	Frequency Response	20Hz~20KHz (<0.5dB)
	Power - Pink Noise / Music (Watts)	2*3.6W
	Headphone Impedence Supported	16~200Ω
	Crosstalk	-30dB (HiFi)

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	Other features	AVC, BWE, one touch mix v2, waves
Available Ports	Card slot	Nano+Nano/SD
	SIM Card Number	2
	SIM Slot 1	4FF (Nano-SIM)
	SIM Slot 2	4FF(Nano-SIM) or TF card
	TF card slot	Yes
	Hot swap	Yes
	Audio Jack	3.5mm audio jack
	Charging Port	Micro-USB
Memory	ROM	16G
	RAM	default 3GB
	External storage	Micro SD, up to 1TB
	End User Space	10GB(TBC)
Data	2G Data	GPRS/EDGE
	3G Data	HSPA+ (42M bit/s DL, 5.76Mbit/s UL)
	4G Data	Support CAT6 (300M bit/s DL, 50Mbit/s UL)
	Carrier Aggregation	Yes
Rear Camera	Number of pixels	13M Pixel
	Focus	AF
	Image Sensor	Samsung 3M2
	Sensor Size	1/3
	Sensor Pixel size	1.12um
	Lens Apeture size	f/2.0
	Lens (Wide angle/ FOV)	75°(TBC)
	Focus Speed	0.1s
	Number of Elements	6P Lens Optics
	Camera Flash	Yes
	Flash type	Dual-Tone
	EIS	Yes
	Video	1080P @30fps
	HDR	Yes
	Other features	Instant shot (take photo in 0.6 sec), 360° selfies, PDAF, 0.1s focus speed
Front Camera	Number of pixels	8M Pixel
	Focus	FF
	Image Sensor	OV8858
	Sensor Size	1/3
	Sensor Pixel size	1.12 um

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	Lens Apeture size	f/2.2
	Lens (Wide angle/ FOV)	84°
	Number of Elements	4P Lens Optics
	Camera Flash	Yes
	Flash type	Flash light
	Video	1080 @30fps
	Other features	Selfie flash
Battery	Capacity (mAh)	2610
	Battery type	Softpack
	Charging Technology	5V2A
Connectivity	Wi-Fi / WLAN	802.11a/b/g/n/ac (2.4GHz & 5GHz)
	Wi-Fi Direct	Yes
	WFD	Yes
	NFC	Yes
	Radio	Yes
	Bluetooth	Yes
	Bluetooth supported version	V4.2
	USB Data Transfer	Yes
	USB OTG	Yes
	USB Charging	Micro-USB
	Others	Optional support RCS/IR 94/EMBMS/DACC
Sensors	GPS	Yes(Glonass, Beidou, Galileo) with A-GPS
	Accelerometer (G sensor)	Yes
	Proximity Sensor	Yes
	Light Sensor	Yes
	E-Compass	Yes
	Gyro	Yes
	Hall Switch	Yes
Others	HAC	Optional (M3 for GL and T3&M3 for NA)
	TTY	Compatible
	HDCP	Yes

2. Portable Label

2.1 IMEI label sample:

GL Version： for PRD-62981-XXX


```
Blackberry XXXXX   STH100-2
PRD-62981-XXX                              ←————————————→  CU reference
Model:   RJD211LW          Made in: China  ←————————————→  Fixed value
Date: DDMMYY
IMEI: 35387107XXXXXXX
```

GL (Single SIM)

NA Version： for PRD-62980-XXX


```
Blackberry XXXXX   STH100-1
PRD-62980-XXX

Model: RJE181LW            Made in: China
Date: DDMMYY
IMEI: 35387207XXXXXXX
```

NA (Single SIM)

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2.4 Accessory

2.4.1 Charger

2.4.2 Stereo Headset

2.4.3   End user USB cable

2.5 Maintenance policy

This chapter describes the maintenance of the Neon PRD62980 series phones authorized at L1 repair center. The maintenance operations can only be performed in approved repair canters.Main L1 maintenance operations are as following:

2.5.1 For handset:

1) Warranty check

2) Function test

3) SW downloading

4) Replacement of the defective handset.

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2.5.2 For standard accessories (charger, headset and USB cable)

1) Warranty check

2) Functional check

3) Replacement of defective accessories

2.5.3 If input the following codes on handset, you can:

Code	Description
*#06#	Display IMEI number
*#2886#	Enter Auto Test mode
*#3228#	Check current software version
###232#	Access call duration directly
#837837#	Display CU reference in HW version

2.5.4 Check the IMEI on SIM tray

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2.6 Cell phone maintenance

1)   Equipments for handset test.

- Handset with full power.

- One SIM card.

2)   It is recommended the following tools:

- One PC with Windows Windows 7/Windows 10.

- One ampere meter for charger current test.

2.7 Invoice check

1. Check warranty status of Handset by POP (Proof of Purchase) ;

2.   If the end user lost his POP, then consider the data code as the purchasing day;

Date code: (**SHP**)

3. If IMEI sicker (commercial label) is lost but the phone can be power on, input "*#2886#" at dial mode and then select "MANU" "Traceability" to check date code, IMEI info, CU-REF, PTH(PTM), etc.

    If the phone can't power on, please read data code by using Sugar tool. Please refer to SW download process in term 3 for details.

2.8 IMEI Check

1) Power on the handset, enter *#06#

2) If the IMEI sticker in the back casing is not lost:

    We should make sure that the IMEI number must be the same with the one on the IMEI sticker, if not, it's out of warranty policy.

2.9   Visual Mechanical inspection

Mechanical warranties check items:

1) Corrosion

    ■   Corrosion on the USB connectors, SIM connectors, and other metal surfaces

2) Hole

    ■   Holes (Diameter > 1mm) on any surface, including front casing, decorate frame, battery cover, LCD Lens, keypad.

3) Bump

    ■   Bumps (Diameter>1mm) on any surface, including the front casing, decorate frame, battery cover, LCD Lens, keypad

4) Scratch (length > 3mm)

    ■   Scratches on any surface, including the front casing, furnished frame, battery cover, LCD Lens, keypad

5) Distortion

    ■   Bend, twisted or crushed on the h/s, cover/casing or connectors

6) Broken

■ LCD broken, casing broken, cover broken

7) Dropped.

■ Keypad tear off, LCD lens, connectors fallen off

8) Gap:

■ External physical damage relating to abnormal use, like front case and frame opened

9) Others:

■ Damage caused by disassembly like wrong part assembly, lost of components

■ Use in abnormal environment like too high temperature with plastic melts

2.10 Accessories inspection

Accessories warranties check items:

1) Any use in abnormal temperature, other than the one specified in the user manual. Any evidence of plastic/casing melted.

2) Any mark of food or liquid around the accessory or in the USB socket.

3) Any evidence of mechanical shocked which damage the enclosure of the battery, charger or headset.

4) Any mark of tentative of disassembly the accessory

5) Any abnormal use which induce wire damage, wire broken or USB socket deformed.

2.11 Cell phone maintenance procedure

1) Check that the SIM card is set correctly.

2) Power on the cell phone.

3) If the cell phone asks to input NCK code, which means it is SIM locked, and can only be worked with dedicated SIM card. Use the correct SIM card.

4) Enter the phone code if necessary.

5) If power on, test step by step with the auto test code:

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Press *#2886# in dial screen and then you will see the interface displaying the SW version. Select "Auto" to start the auto test, or select "MANU" to do the MMI test manually.

If one of the tests failed during "Auto" test mode, it will show "Failed: XXX", press "Next" to go on test and press "END" to power off.

- **Traceability**

    I.   You can get some information such as IMEI, CU-REF, PTM, Date Code, etc.

    II.   Press "Pass" to continue.

- **SMARTPA CAL**

    I. It will running the test automatically and show "TOP OK; BOTTOM OK; SmartPA Test PASS" if it functions well;

    II.   Press "PASS" to continue.

- **Speak Box**

    I.   It will run the test automatically and show "TOP OK;BUTTOM OK"; SpeakerBox Test PASS if it functions well

    II.   Press "Pass" to continue;

- **Raw Data**

    I. It will running the test automatically, don't touch the screen during test and it will show "Pass" if it functions well;

    II.   Press "PASS" to continue.

- **Touch Panel**

    I. "Please draw on the yellow area" according to instructions;

    II.   Press "Pass" to continue.

- **LCD**

I.   You will see the LCD display three colors: RED, GREEN and BLUE if it functions well;

II.   Press "Pass" to continue;

III.   You will see the LCD displays grey level if it functions well;

IV.   Press "Pass" to continue;

V.   You will see the LCD displays black if it functions well;

VI.   Press "Pass" to continue;

VII. You will see the LCD displays white if it functions well;

VIII. Press "Pass" to continue;

IX.   You will see the LCD displays grey if it functions well;

X.   Press "Pass" to continue.

■ Keyboard

I. Press the key displayed on the screen. The key on the screen will turn grey when you press it if it functions well;

II.   Press "Pass" to continue.

■ LCD Backlight

I.   The screen backlight will be flashing if it functions well;

II.   Press "Pass" to continue.

■ Front Camera

Press "Pass" to continue if the front camera functions well.

■ Main Camera

Press "Pass" to continue if the main camera functions well.

■ Camera Led

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  I.   Camera LED will turn on if it functions well;

  II.   Press "Pass" to continue.

- **Charge Led**

  I. The charge LED(LED1&LED2& front LED) will turn on if it functions well;

  II. Press "Pass" to continue.

- **Hall**

  I. Flip cover according to the instruction if it functions well;

  II. Press "Pass" to continue.

- **Audio**

  I. You will hear a voice prompt which introduces some emergency call numbers from the top receiver if it functions well;

  II.   Press "PASS" to continue;

  III. You will hear a voice prompt which introduces some emergency call numbers from the bottom receiver if it functions well;

  IV.   Press "Pass" to continue;

  V. You will hear a voice prompt which introduces some emergency call numbers from the top speaker if it functions well;

  VI. Press "Pass" to continue;

  VII. You will hear a voice prompt which introduces some emergency call numbers from the bottom speaker if it functions well;

  VIII. Press "Pass" to continue;

  IX. Make a noise near the MAIN MIC, you will hear it from the top receiver if it functions well;

  X. Press "Pass" to continue;

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XI. Make a noise near the SEC MIC, you will hear it from the bottom receiver if it functions well;

XII. Press "Pass" to continue.

■ Vibrator

I. You can feel the phone's vibrating if it functions well;

II. Press "Pass" to continue.

■ NFC

I. Close the NFC test card on battery cover and it will show "NFC: Detected; ID: xxxx" if it functions well;

II. Press "Pass" to continue.

■ Memory Card

I. Insert SD card and the phone will detect it if it functions well;

II. Press "Pass" to continue.

■ USB/Charger

I. Insert USB cable according to instruction and it will say "USB cable checked", "USB: OK", "Charger: OK", "Current: xxx" if it functions well;

II. Press "Pass" to continue.

■ Accessory

I. Insert headset according to the instruction and you will hear a voice prompt which introduces some emergency call numbers through the headset left if it functions well;

II. Press "Pass" to continue;

III. You will hear a voice prompt which introduces some emergency call numbers through the headset right if it functions well;

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IV. Press "Pass" to continue;

V. Make a noise near the headset mic, you will hear it from headset if it functions well;

VI. Press "Pass" to continue;

VII. Remove headset according to the instruction and press "Pass" to continue.

- FM

  I. Insert headset according to the instruction and you will hear FM playing and FM frequency will be displayed on the screen if it functions well;

  II. Press "Pass" to continue;

  III. Remove headset according to instruction and press "Pass" to continue.

- G-Sensor

  I.   Put the handset towards up according to instruction;

  II.   Press "Pass" to continue;

  III. Put the handset "FACE DOWN", "DOWN", "LEFT", "RIGHT" and "FACE UP" according to instruction, and then the instruction will disappear if it functions well;

  IV.   Press "Pass" to continue.

- GyroScope

  I.   It will display "BIST test: OK" and you can get some value such as Vx, Vy, Vz, dx, dy, dz if it functions well;

  II.   Press "Pass" to continue.

- E-Compass

  I. Please move the phone is an 8 shape according to the instruction;

  II. Press "Pass" to continue;

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III. The compass will always point north whatever the phone is put at which direction if it functions well;

IV. Press "Pass" to continue.

■ Light Sensor

I. It will show the value of ambient light and the value will change according to the phone's environment (Bright or Dark), then it will say "dark: OK", "bright: OK" if it functions well;

II. Press "Pass" to continue.

■ Proximity Sensor

I. Please shawdow the senor according to instruction and it will say "near: OK", "far: OK" if it functions well;

II. Press "Pass" to continue.

■ Hall

III. Flip cover according to the instruction if it functions well;

IV. Press "Pass" to continue.

■ SIM

I. Insert SIM card and the phone will detect it if it functions well;

II. Press "Pass" to continue.

■ Battery ID

I. Screen will display ID information of battery and pass in default

II. Press "PASS" to continue;

■ Battery Temperature

I. It will display the value of battery temperature, current, battery voltage, capacity rate and battery present if it functions well;

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II. Press "Pass" to continue.

- Bluetooth

  I. Bluetooth will search automatically and it will display device address if it functions well;

  II. Press "Pass" to continue.

- WIFI

  I. It will search for WIFI hotspot and it will display searched result on the screen if it functions well;

  II. Press "Pass" to continue.

- HARDWAREINFO

  I. You will see the hardware information on the screen, such as the G-sensor, E-compass and so on.

  II. Press "Pass" to continue.

- Battery Level

  I. You will see the percentage information and the charging information on the screen.

  II. Press function key "Back" to quit the test

- FIRMWARE

  I. You will see the firmware information on the screen, such as TP.

  II. Press "Pass" to continue;

- GPS

  I. It will run GPS and search for satellite, and then it will display info such as "PRN", "SNR", etc. on the screen if it functions well;

  II. Press "Pass" to continue.

- EfuseCheck

I. it auto check the phone has been written Efuse or not. Normally, Mobile Efuse show Enable is pass

II. press "Pass"

- HDCP Key Check

I. It auto check the phone has written KDCP key or not. Normally, the phone show like this is pass
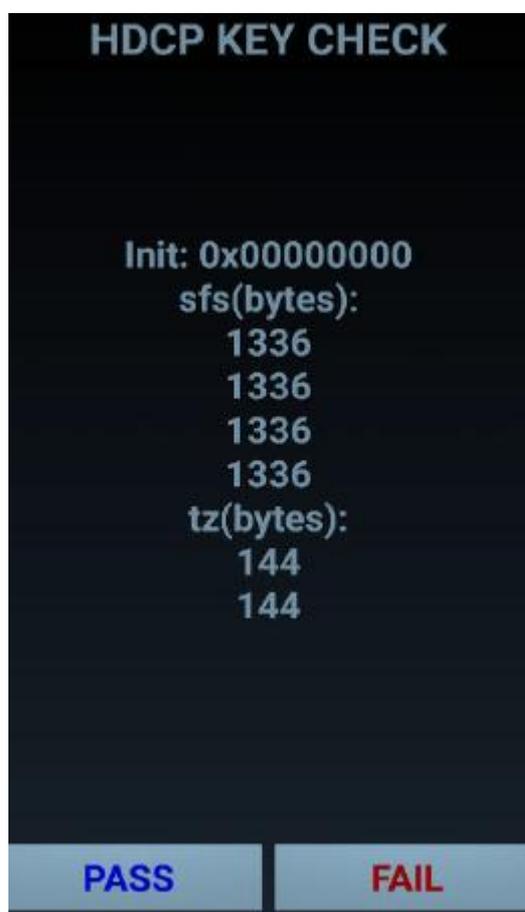
3. Software download

It is authorized to download software for the handset which needs to be updated.   you can get the driver and Egineering download tool from TS Website: https://css.tclmobile.cn/.

Neon PRD-62980-001 (test CU) egineering download tool

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BlackBerry-USBDrivers-5.0.0.0

3.1 Equipments requested when download：

⑴ A handset with full power;

⑵ PC with windows system;

⑶ A USB cable.

3.2 Install of download Tool
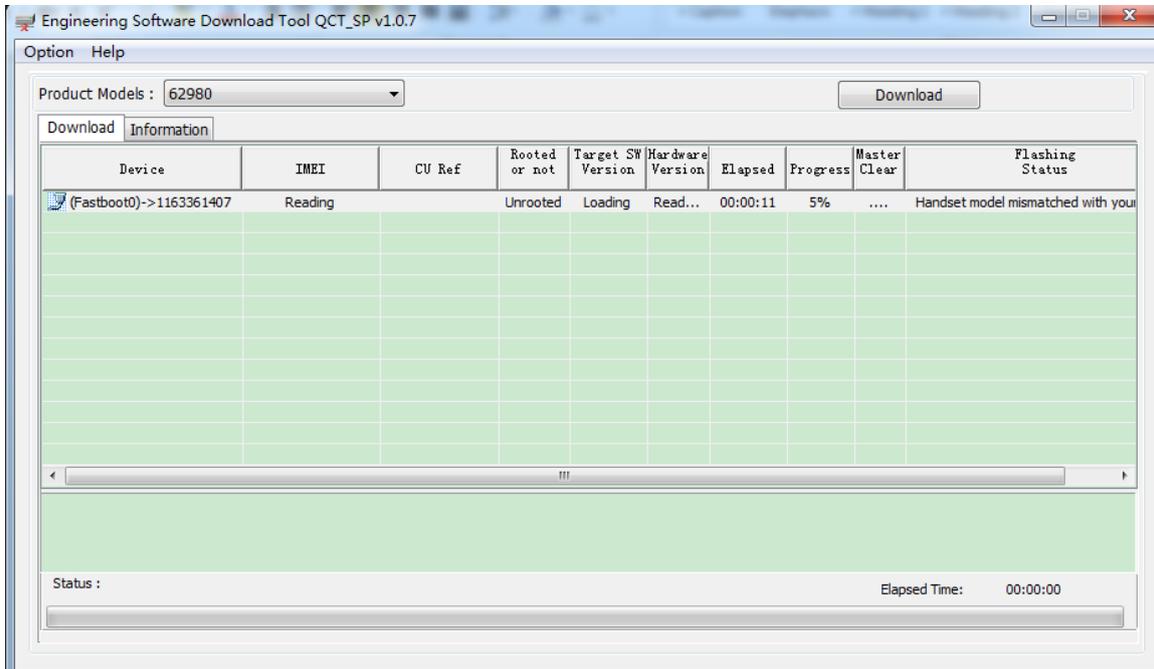
1. get the Driver install Exe from TS Website: https://css.tclmobile.cn/.

2, press Power on + volume down key at the same time, then the phone entry the fastboot mode like below picture. Then use USB cable connect the phone to PC

3, install the BlackBerry-USBDrivers-5.0.0.0

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3.3 SW download process

I. Power off the handset.

II. press Power on + volume down key at the same time, then the phone entry the fastboot mode(below picture), Then use USB cable connect the phone to PC
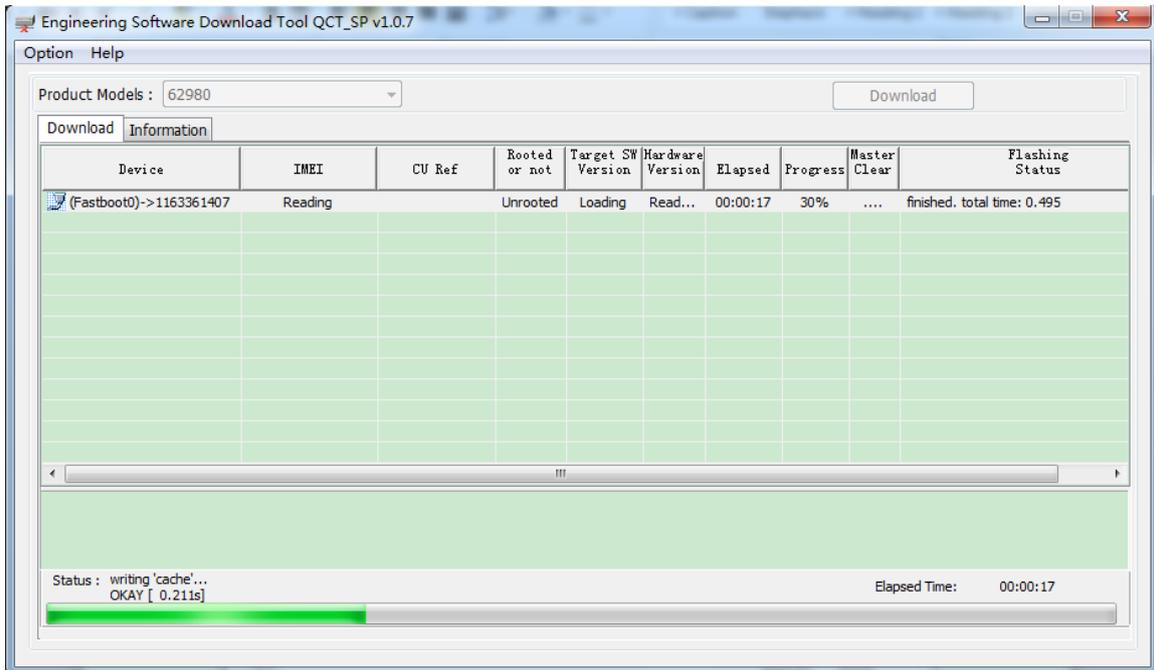

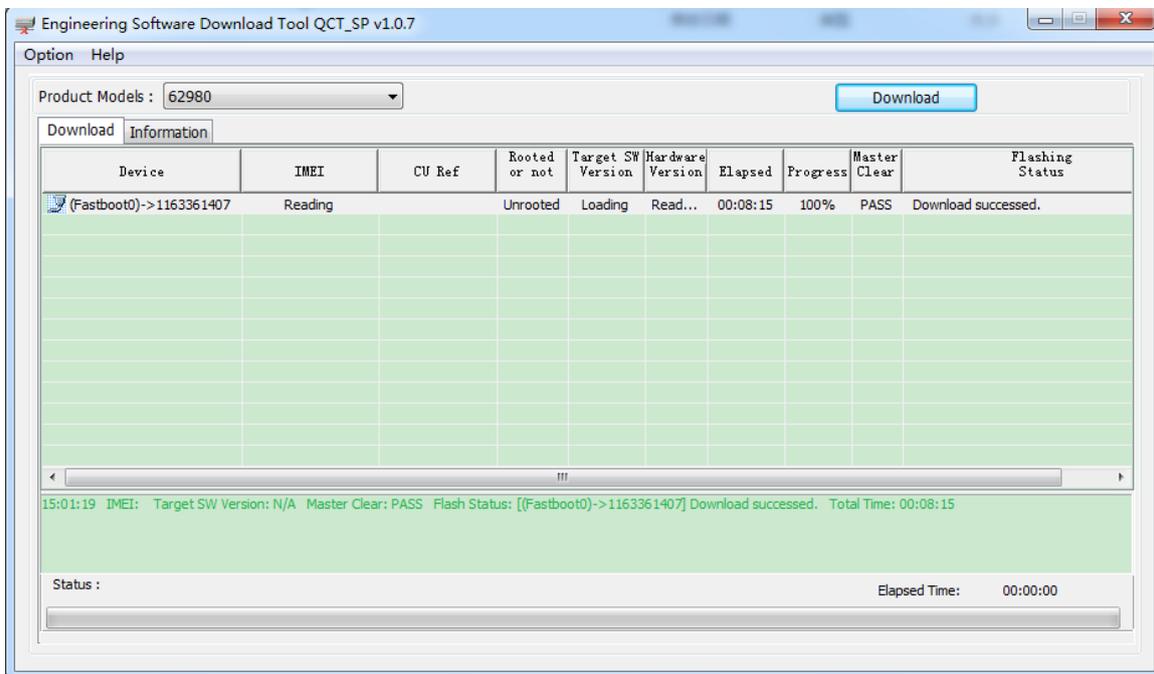III.Open the Engineering software download tool. Choice the 62980 in the Product Models

I.   Click the Download.—download ongoing as below picture

II.   Download finish- one port and multi-port

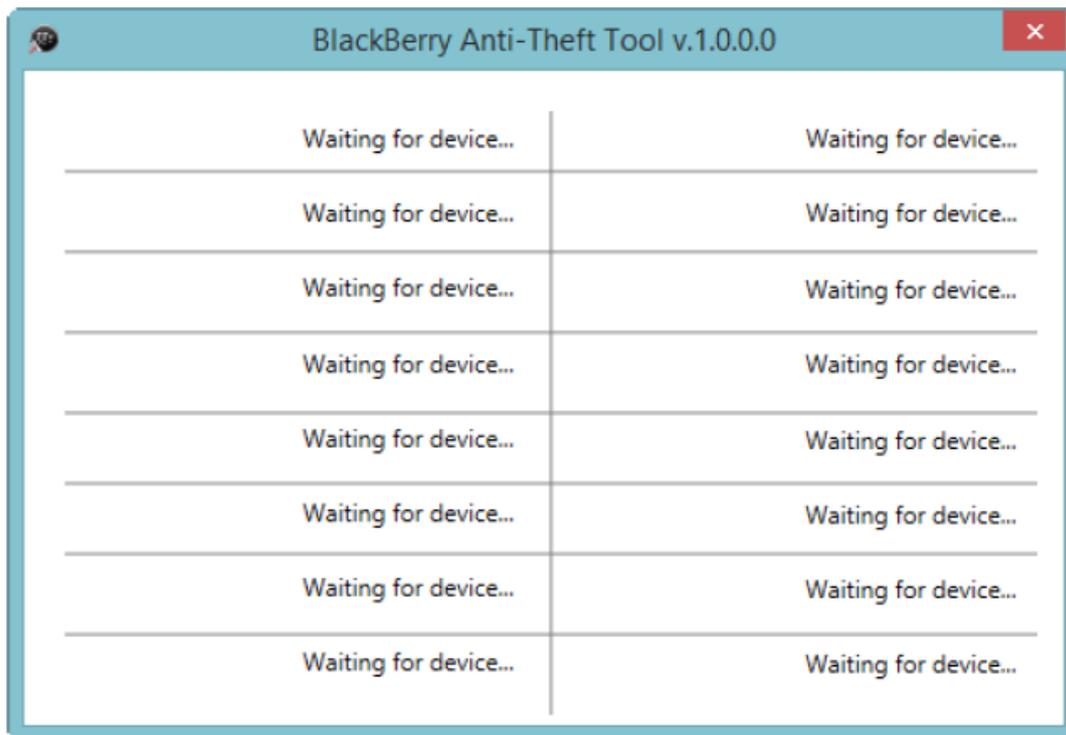| Rev.	Neon PRD62980/62981 Level 1 Service Manual	Page
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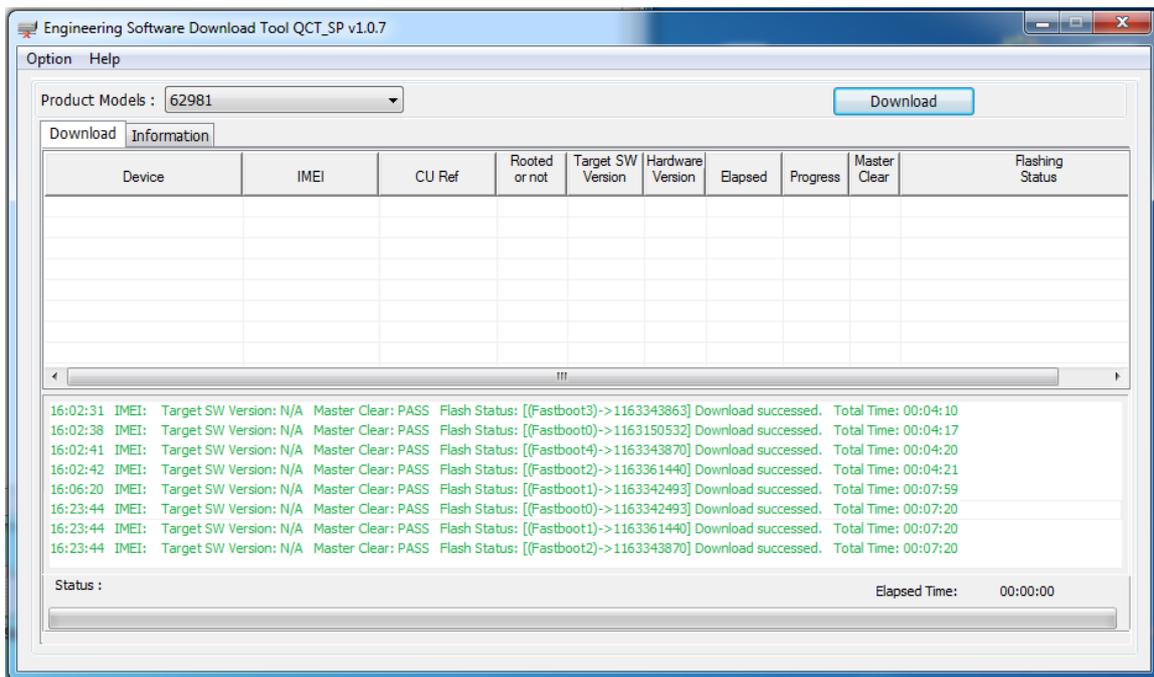
3.4 Kill switch tool introduce

Kill switch tool is provided by Blackberry, if BBRY has deploy this tool for you, then you can use it.
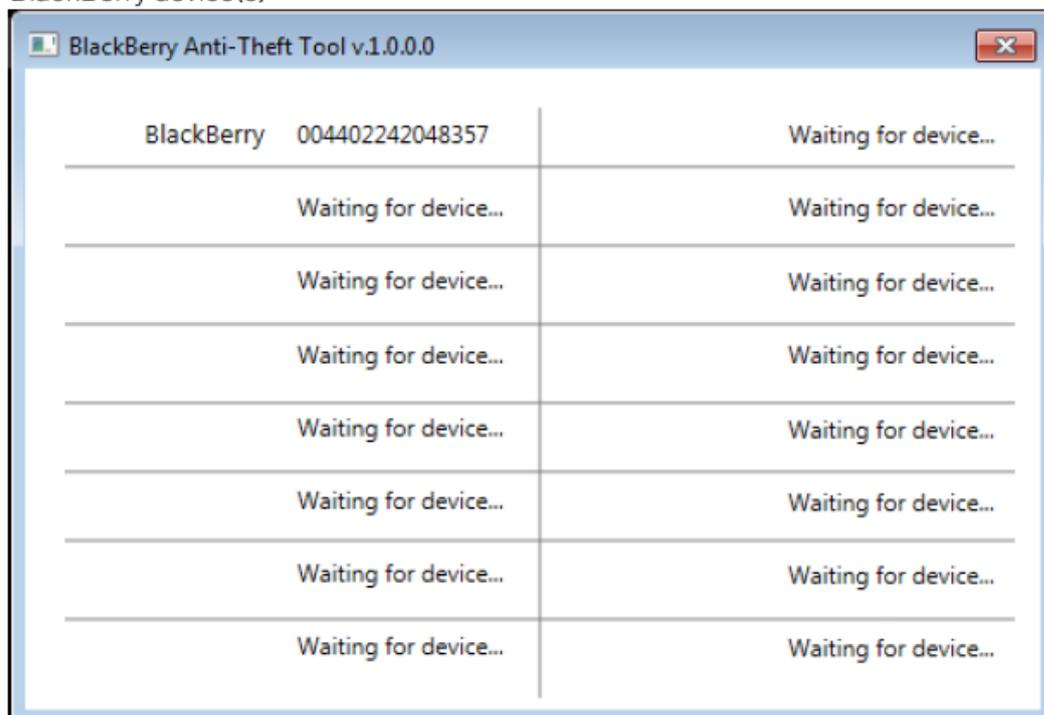
1. Launch the Anti-theft tool from the desktop short cut or C:\Cfg\Anti-theft Tool
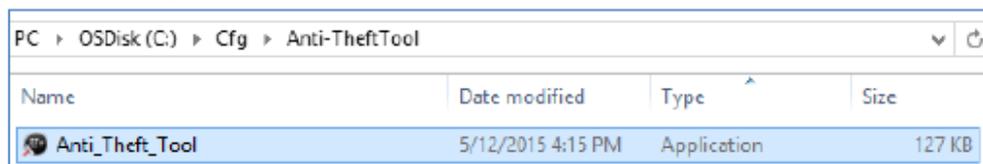
2. Once the application opens connect a device for processing

3. The application will automatically detect and start processing the connected BlackBerry device(s)

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4. Once processing is complete the application will display the Pass/Fail results and toggle the device LED indicator Green/Red so that the Hand held can be disconnected and sent for dispositioning.

Pass

Fail
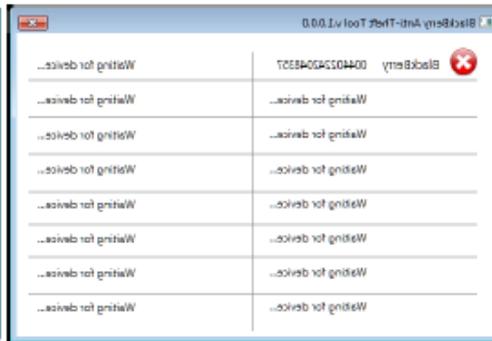
Note

Once the USB cable is disconnected the device will reset (for a passed device this means the LED will go from Green to Red then off).

If you have any question or problem, please feel free to contact us

(tct_gcc_techSupport@tcl.com) .

Thanks for your cooperation.

TCL Communication Ltd.

Global Customer Service TS Dept.

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