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## **STANDARD FIELD SERVICE BULLETIN**

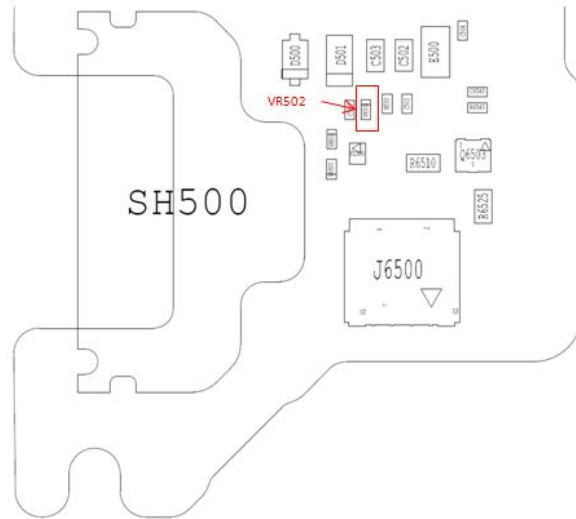
FSB Number	CHRAEFSB2016-12 Rev. 1
Author	Tony Bryan
Date	08/30/2016
Subject	XT1585 Droid Turbo 2, XT1580 Moto X Force - Does Not Charge - USB Connection Issues
Model Affected	XT1585 Droid Turbo 2, XT1580 Moto X Force
Level Of Repairs	Level 3

Motorola is aware of a potential field return issue on the Droid Turbo 2 / Moto X Force products related to "Wired Charging". Some users reported experiencing issues during wired charging, such as:

- Device does not detect any charger when inserted
- Device detects charger is inserted but does not fully charge the battery
- Device does not recognize Turbo Charger, able to charge in standard mode only

Engineering analysis determined that most of the charging issues were related to the USB Connector interface and could be summarized into two potential causes:

- Overvoltage Protection Diode VR502 (P/N: 48014187001) Damaged. Component is damaged from an undetermined over-voltage condition creating a low resistance on Pin #4 (EMU\_ID) of the uUSB Connector. See Fig. 1 below.

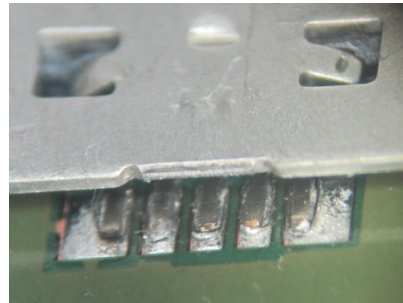


**Fig. 1 - VR502 Diode Location**

- uUSB Connector J500 (P/N: 09014162015W) Damaged. Connector has either damaged external contacts (Fig. 2a) or cracked solder joints on internal pins (Fig. 2b). The damage is due to excess mechanical force applied to connector from improper insertion/handling. See images below.



**Fig. 2a - External Contact Damage**



**Fig. 2b - Internal Pin Damage**

## **Solution:**

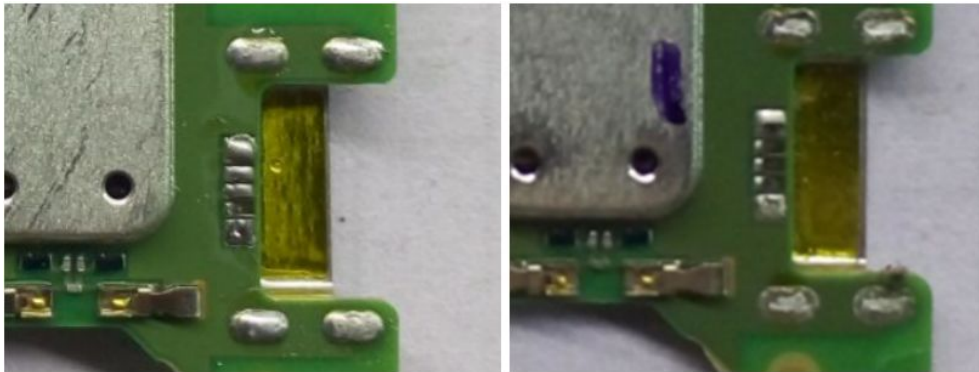
Motorola has implemented corrective actions to address both potential causes:

- Overvoltage Protection Diode Damaged - Motorola added new factory test procedures to screen for this issue - Completed February 22, 2016.
- uUSB Connector Damaged - Motorola added epoxy (Loctite EO1072) over the internal pins of the uUSB Connector to help strengthen the mechanical connection to the PCBA - Completed April 25, 2016

## **Field Service Action:**

**Field Service Action - A.** When servicing ALL customer returns on the Droid Turbo 2 / Moto X Force product, that require disassembly to board level as part of the normal repair process, then complete the rework below:

1. Carefully inspect the uUSB Connector J500, under 2x Magnification, for any signs broken/cracked solder joints.
  - a. If broken/cracked solder joints are observed, then continue to Step 2.
  - b. If no broken/cracked solder joints are observed, then skip to Step 4.
2. Remove uUSB Connector J500 from PCBA using approved procedure and then carefully inspect PCBA for any sign of pad delamination. See Fig. 3 below for examples of pad delamination.



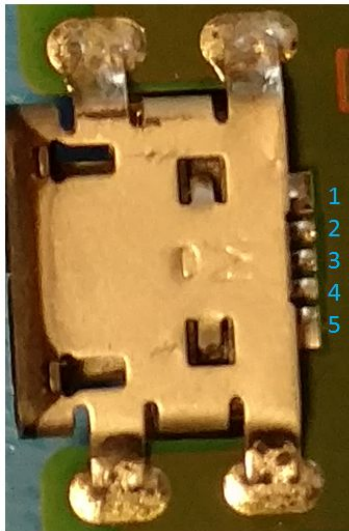
**Fig. 3 - PCBA w/Pad Delamination**

- a. If any sign of pad delamination is observed (like shown in Fig. 3 above), then the PCBA **must** be scrapped.
  - b. If no pad delamination is observed, then continue to Step 3.
3. Place new uUSB Connector J500 using approved procedure, clean area to remove any excess flux, and carefully inspect each pin under 2x Magnification for proper solder joint.
4. Apply the Epoxy (Loctite EO1072) , carefully follow the **L3\_USB Epoxy Application Procedure** which is available to download from the [Global Service Site](#).
5. Continue with normal Repair Process.

**Field Service Action - B.** When servicing Droid Turbo 2 / Moto X Force returns with customer complaints related to “Wired Charging”, then:

1. Confirm the customer complaint by testing “Charging” functionality using approved testing procedures.
2. Use a Digital Multimeter (DMM) to measure resistance from each of uUSB Connector pins to GND. See image below for details.
  - a. If one or more pins measure a higher than normal resistance, then uUSB Connector J500 needs replaced. Follow the Rework Procedure detailed in **Field Service Action - A** above.
  - b. If Pin #4 (EMU\_ID) of the uUSB Connector measures a lower than normal resistance, then replace Overvoltage Protection Diode VR502 (P/N: 48014187001).

- c. If Pins #2, #3 (USB D+/D-) of the uUSB connector measure a low resistance short to GND, then replace the U1000 MSM8994 IC (Service P/N: 51016314001).
3. Apply the Epoxy (Loctite EO1072) to the uUSB Connector. Carefully follow the **L3\_USB Epoxy Application Procedure** which is available to download from the [Global Service Site](#).
4. Per Service Manual, carefully reassemble the device and completely retest the device, per standard Service procedure, to ensure proper repair.



Pin	Line	Nominal Resistance	Symptom (If Bad)
1	USB_VBUS	30-35k Ohm	No Charge Indication / No SOL
2	USB_D-	725-755k Ohm	No Turbo Charge
3	USB_D+	725-755k Ohm	No Turbo Charge
4	EMU_ID	150-300k Ohm	Does Not Charge or Power-Cycles
5	GND	0 Ohm	

**Important Warning:** ONLY Standard USB Cables should be used when connecting to an Accessory Charger to charge a device. Factory Cables have different wiring and should NEVER be used for this purpose as this can cause damage to the device.

## **Service Inventory:**

New Part added to SBOM:

- Please add Overvoltage Protection Diode VR502 (P/N: 48014187001) to the SBOM L3 Parts List and stock inventory of this part to support field replacement, per this bulletin.
- Please stock inventory of uUSB Connector J500 (P/N: 09014162015W) to support field replacement, per this bulletin.

## **Call Center Action:**

When responding to customer inquiries on the Droid Turbo 2 / Moto X Force products with “Wired Charging” related complaints, then:

1. Follow normal troubleshooting steps, including testing with multiple accessory chargers to rule out a bad accessory charger, in attempt to resolve the user’s issue.
  - a. If normal troubleshooting steps cannot resolve the issue, instruct the user to return the device to Motorola Service for repair, per this bulletin.

## **Service Entry Code:**

### **Global M-Claims Codes:**

#### Customer Complaint Code:

C0028 - Charging/Battery Issue

#### Problem Found Code:

P0052 - Charging (Use For Diode or MSM8994 IC)

P0040 - USB (Use For uUSB Connector)

#### REF Designator Code:

OE - Other Electricals (Use for Diode)

C0 - Connectors (Use for uUSB Connector)

PCB - Circuit Board (Use if PCBA is damaged)

IC - Integrated Circuits (Use for MSM8994 IC)

#### Repair Code:

R0015 - REPL LVL 3 Part CSB

R0019 - REPL PCB CSB (Use if PCBA is damaged)

### **Note:**

Only apply the designated Service Entry Codes, listed in this bulletin, if the unit fails a test or has a customer complaint that matches the issue described in the bulletin

If the unit fails a test or has a customer complaint that does not match the issue described in the bulletin, the Service Entry Codes used should accurately reflect the true problem found

If the unit passes all tests and inspections and does not have a related customer complaint, the Service Entry Code used should be NFF