YUNOVA / MOBILE PHONE REPAIR — PRACTICAL PROJECT: EXPERT

# Board-Level Repair Case File

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**Submission Date:** 13 November 2026 | **Scope:** Three Core Assessment Repairs, Bench Measurements, Shop Job Cards & Additional Portfolio

This case file documents three real board-level repairs completed within the three months leading up to submission: (01) schematic-guided fault isolation of a dead/no-charging Redmi Note 10 Pro, (02) liquid-damage cleaning and RF network recovery on a Samsung Galaxy A12, and (03) IC rework and lower logic board module replacement on an iPhone 13 Pro. Each record includes intake symptoms, bench measurements, schematic/boardview trace logic, board-level rework steps, cleaning procedures, post-repair verification, and customer job-card documentation.

| Case | Device Model | Fault Category & Core Repair | Key Parts & Verification Status |
|---|---|---|---|
| 01 | **Redmi Note 10 Pro** | Schematic-guided diagnosis of no power and no charging after liquid exposure | 10 µF / 6.3 V filter capacitor & OVP IC replaced; boot & fast charging verified |
| 02 | **Samsung Galaxy A12** | Liquid-damage cleaning, sub-board short clearing & cellular network recovery | Sub-board short cleared & WTR RF IC replaced; calls & mobile data verified |
| 03 | **iPhone 13 Pro** | Boardview diagnosis, initial IC rework & lower logic board replacement | Lower logic board swapped after intermittent Wi-Fi; Wi-Fi & Bluetooth verified |

CASE 01 / SCHEMATIC-GUIDED DIAGNOSIS & SHORT REMOVAL

## Redmi Note 10 Pro — No Power and No Charging After Liquid Exposure

### Intake Symptoms and Liquid-Damage Cleaning

The device arrived completely dead: it would neither boot on battery/DC supply nor draw charging current over USB. Under microscope inspection, visible oxidation and liquid residue were found around the primary charging section, overvoltage protection (OVP) IC, and battery connector. Before applying bench power, I disconnected the battery, cleaned all affected shields and component pads with electronics-grade Isopropyl Alcohol (IPA) using an ESD-safe brush, and allowed the logic board to dry completely to prevent electrolysis or secondary shorts.

### Bench Measurements and Diagnostic Readings

| Test Point / Line | Measurement Mode | Before Repair | After Repair |
|---|---|---|---|
| **USB Charging Input** | USB Voltage / Current | 5.00 V / 0.00 A (no draw) | 5.00 V / 1.80 A, then fast charge |
| **VBAT Main Power Input** | DC Supply (3.8 V, 2.0 A limit) | 0.12 A pre-boot leak before Power press | 0.00 A idle draw; normal boot sequence |
| **VPH_PWR Main Supply** | Diode Mode to Ground | 0.001 V (Short to ground) | 0.365 V (Short cleared; nominal) |
| **VBUS at OVP IC** | DC Voltage (USB connected) | 5.00 V at OVP input; 0.00 V at OVP output | 5.00 V pass-through restored at output |

### Schematic Trace and Short-Removal Technique

The 0.12 A idle current draw prior to pressing the power key pointed directly to a partial short on the primary **VPH_PWR** rail. Using **Borneo Schematic & Bitmap**, I traced VPH_PWR across the charging circuit and applied a light coat of rosin flux over the suspect capacitor bank. Injecting 3.8 V (2.0 A current limit) from the bench DC power supply caused a single filter capacitor near the charging IC to melt the rosin immediately.

- **Clean Component Removal:** Shielded adjacent plastic connectors with Kapton tape, applied flux, and lifted the shorted filter capacitor cleanly using hot air set to **350 °C (airflow setting 2)** with fine curved tweezers, leaving both PCB pads and traces intact without requiring micro-jumper reconstruction.
- **Capacitor Replacement:** Wicked residual solder, cleaned the pads with IPA, re-verified in diode mode that the VPH_PWR short had cleared, confirmed the component value in Borneo Schematic, and soldered a matching **10 µF / 6.3 V** donor capacitor.
- **OVP IC Rework:** Because 5.00 V reached the OVP IC input without passing through to the charging IC, I desoldered the corroded OVP IC at **350 °C (airflow setting 2)**, cleaned and tinned the pads, aligned pin-1 orientation per schematic, and cleanly reflowed a replacement OVP IC.

### Diagnostic Trace Sequence (Borneo Schematic & Bench Notes)

| Power Rail | Initial Fault Reading | Isolation Method | Corrective Action |
|---|---|---|---|
| **VPH_PWR Main Supply** | 0.12 A idle draw; short to ground | Rosin thermal trace at 3.8 V / 2.0 A | Removed shorted cap; fitted 10 µF / 6.3 V donor |
| **VBUS USB Input** | 5.00 V in; 0.00 V at OVP output | Schematic pin trace & voltage check | Cleaned corroded pads & reflowed new OVP IC |

### Post-Repair Verification and Job Record

After final IPA cleaning and cooling, the phone booted normally on battery and negotiated fast charging (5 V / 1.8 A ramping to fast-charge protocol). Full functional verification confirmed speaker, microphone, display, touch, and cellular network operation.

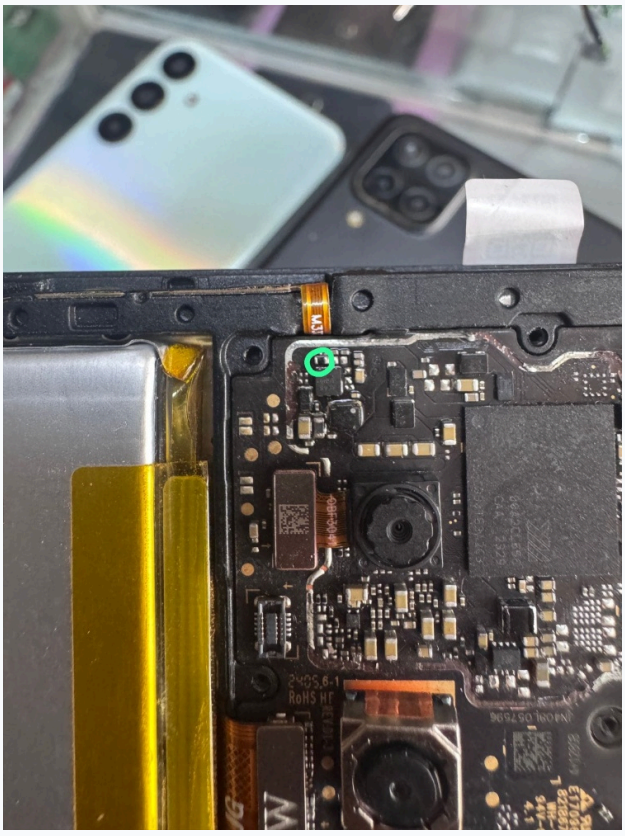


**Fig 1.1:** Microscope inspection isolating the faulty SMD filter component (circled in green) prior to hot-air removal.

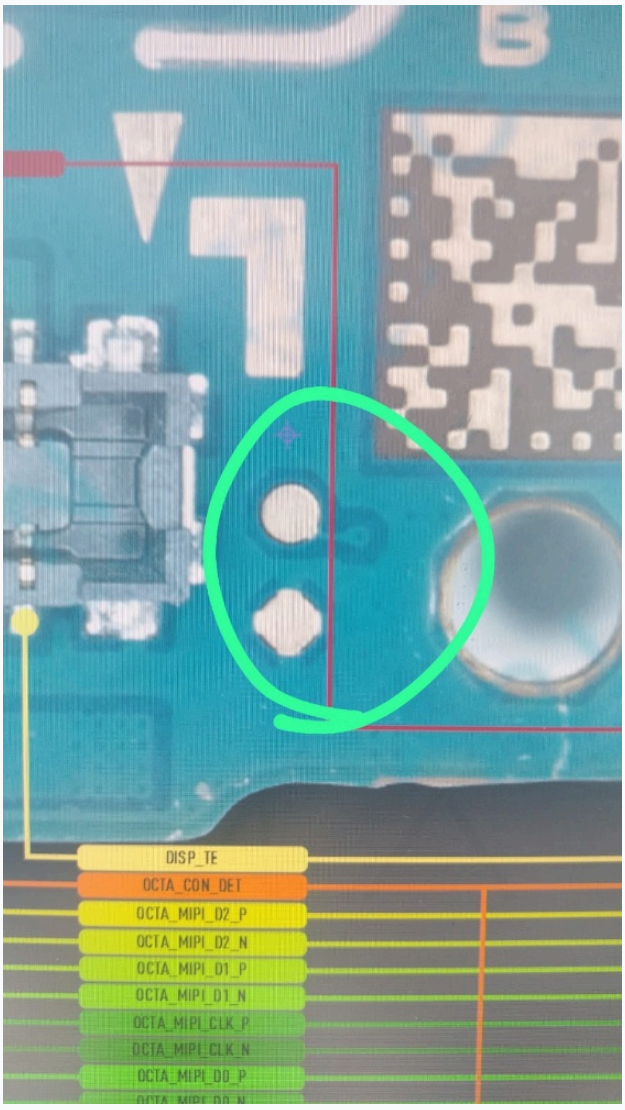



**Fig 1.2:** Borneo Schematic & Bitmap reference verifying test pads and line routing during fault isolation.

> **Case 01 Job Card & Warranty Note:** Logged under `JOB-01` (see Consolidated Job Card Ledger in Section 4 for elapsed time and agreed pricing). Shop warranty covers the replaced OVP IC and charging circuit workmanship, excluding recurring corrosion caused by prior liquid exposure.

CASE 02 / LIQUID-DAMAGE RECOVERY & RF NETWORK REPAIR

# Samsung Galaxy A12 — Loss of Cellular Service After Liquid Exposure

## Intake Symptoms and Liquid-Damage Cleaning Procedure

The phone arrived after liquid exposure with complete loss of cellular service ("No Service" despite SIM card insertion). Following standard liquid-damage recovery protocol, I isolated the battery first and disassembled both the main logic board and lower charging/RF sub-board for microscope inspection.

1. **Corrosion Assessment:** Inspected the main board, sub-board, board-to-board flex connectors, and coaxial RF antenna ports under magnification, identifying mineral oxidation on the sub-board and around the main-board network section.
2. **Chemical Cleaning & Decontamination:** Cleaned all corroded zones on both the sub-board and main board thoroughly with electronics-grade **Isopropyl Alcohol (IPA)** and an ESD-safe brush to dissolve ionic residue under low-clearance components.
3. **Complete Drying Before Power:** Dried both boards completely with warm air and allowed full evaporation before connecting a power source or taking powered measurements.

## Bench Measurements and Schematic Diagnosis

With power disconnected, I opened the Samsung Galaxy A12 schematic for the fitted board revision and traced the incoming RF/network path from the sub-board antenna feed into the main-board transceiver circuit.

| Test Point / Section | Measurement Mode | Before Repair | After Repair |
|---|---|---|---|
| **Sub-Board Network / RF Path** | Diode Mode / Continuity | 0.002 V (Short to ground) | 0.415 V (Short cleared; normal continuity) |
| **WTR RF Transceiver Supply** | Diode Mode / Voltage | 0.048 V diode / 0.00 V active (Faulty) | 0.390 V diode / 1.80 V active (Nominal) |
| **SIM & Network Registration** | Live Known-Good SIM | SIM detected; No Service / 0 bars | Full 4G/LTE registration & voice/data |

## Board-Level Rework and IC Replacement

I cleared the sub-board short by removing the damaged component, cleaning the pads with solder wick and IPA, and confirming pad and trace continuity restoration. On the main logic board, I shielded neighboring RF components with Kapton tape, applied flux around the faulty **WTR RF transceiver IC**, and lifted the IC cleanly with controlled hot air. After leveling the BGA pads with wick and cleaning with IPA, I aligned the replacement WTR IC to the corner reference marks and cleanly reflowed it until self-centered on molten solder balls.

### Post-Repair Verification and Job Record

Using a known-good SIM card, I verified SIM detection separately from network registration, confirmed full signal bars, completed test voice calls, verified mobile data browsing with Wi-Fi disabled, and restarted the phone to confirm automatic cellular re-registration.

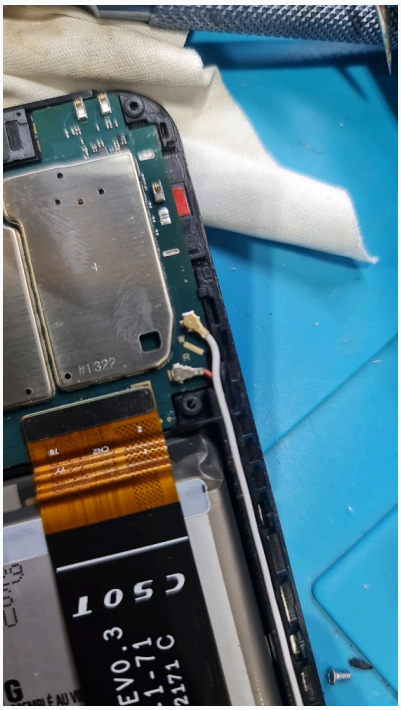


**Fig 2.1:** Triggered red Liquid Damage Indicator (LDI) and coaxial RF antenna feeds inspected on intake.

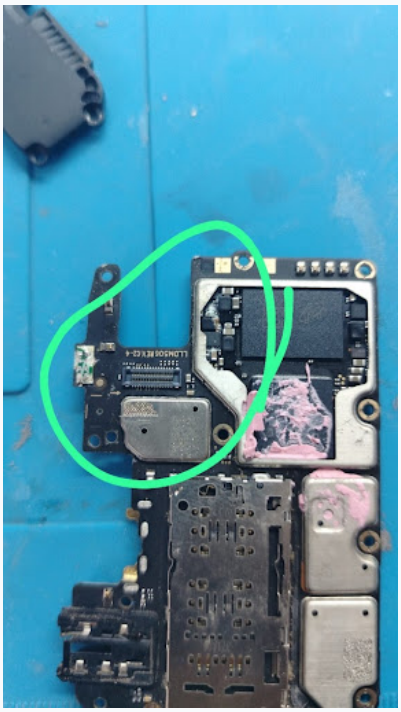


**Fig 2.2:** Visible mineral corrosion around connector and shield edge (circled) prior to IPA decontamination.




**Fig 2.3:** Main-board and sub-board flex isolation during diode-mode and RF path continuity verification.

> **Case 02 Job Card & Warranty Note:** Logged under `JOB-02` (see Consolidated Job Card Ledger in Section 4 for elapsed time and agreed pricing). Before starting the repair, the customer was advised and agreed that shop warranty excludes repeat or progressive faults caused by the original liquid damage.

CASE 03 / BOARDVIEW DIAGNOSIS & MODULE REPLACEMENT

## iPhone 13 Pro — Lower Logic Board Replacement for Wi-Fi & Bluetooth Fault

### Intake Symptoms and Software Isolation

The customer initially reported a charging complaint. Upon intake testing, charging functioned normally and the phone detected a SIM card, but both Wi-Fi and Bluetooth toggles were unavailable and the Wi-Fi address was missing under *Settings* > *General* > *About*. Because the fault persisted after network settings reset and software verification, I proceeded to hardware board diagnosis.

### Bench Measurements and Boardview Diagnosis

With the battery disconnected, I inspected antenna contacts and inter-board connectors under microscope magnification and referenced the fitted board revision boardview to check radio supply and ground test points.

| Diagnostic Check | Method / Tool | Before Repair | After Repair |
|---|---|---|---|
| **Wi-Fi Address in Settings** | Settings > General > About | Missing / N/A; toggle greyed out | Valid MAC address displayed |
| **Radio Supply & Inter-Board Pads** | Boardview Diode Mode | OL / 0.890 V fluctuating (Intermittent open) | 0.385 V stable (Nominal diode value) |
| **Wi-Fi & Bluetooth Stability** | Load Test & Restart Cycle | Dropped shortly after initial IC rework | Stable across multiple restarts |

### Board Rework Attempt and Lower Logic Board Replacement

I first tested board-level IC replacement on the original board: after shielding adjacent components, I removed the suspect IC with controlled hot air, cleaned the pads, and reflowed a replacement IC. Wi-Fi returned briefly, then dropped out again shortly afterward, indicating an underlying interposer/lower-board trace failure. After re-verifying inter-board test points, I performed a clean **lower logic board module replacement**, carefully seating all inter-board flexes, coaxial RF connectors, and retaining shields before reassembly.

### Post-Repair Verification and Job Record

Following reassembly, I confirmed the Wi-Fi address in *Settings* > *General* > *About*, connected to a known-good Wi-Fi network with cellular data turned off and loaded web pages, paired a Bluetooth audio accessory and verified clean playback without dropouts, restarted the phone to confirm automatic Wi-Fi and Bluetooth reconnection, and retested charging, SIM detection, cellular registration, display, touch, cameras, and audio.

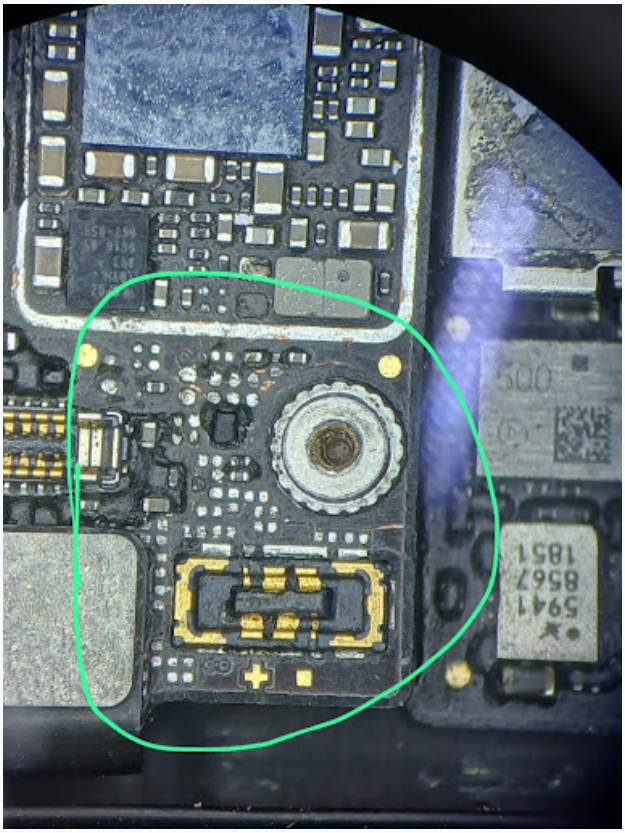


**Fig 3.1:** Microscope inspection of inter-board connector and adjacent RF/power components (circled in green).



**Fig 3.2:** iPhone 13 Pro rear chassis and lower-assembly hardware inspection during module replacement.

> **Case 03 Job Card & Warranty Note:** Logged under `JOB-03` (see Consolidated Job Card Ledger in Section 4 for elapsed time and agreed pricing). Covered by shop module replacement warranty on Wi-Fi and Bluetooth operation, excluding physical impact or liquid damage.

SHOP PRACTICE & CUSTOMER DOCUMENTATION

## Consolidated Job Cards, Pricing, Handover Checklist & Warranty Policy

At **ASHTECHMOBILE** (Ruwi, Muscat, Oman), every board-level repair is logged on a workshop job card recording the intake complaint, diagnostic findings, parts consumed, elapsed bench time, agreed customer price, post-repair handover checklist, and signed warranty terms.

| Job ID | Device & Fault | Parts Consumed | Bench Time | Agreed Cost | Warranty Scope |
|---|---|---|---|---|---|
| **JOB-01** | **Redmi Note 10 Pro** No power / no charge | 10 µF / 6.3 V donor cap; replacement OVP IC | 90 min | 18 OMR | 30 days (excl. liquid recurrence) |
| **JOB-02** | **Samsung Galaxy A12** Liquid / No service | Replacement WTR RF transceiver IC | 110 min | 15 OMR | Pre-agreed liquid-damage exclusion |
| **JOB-03** | **iPhone 13 Pro** Wi-Fi & BT missing | Replacement IC (initial) & lower logic board | 140 min | 45 OMR | 30 days module warranty |

### Standard Handover Checklist & Warranty Terms

- **Full Function Sign-Off:** Every device passes a 7-point handover check before customer release: (1) power & fast charging, (2) display & touch response, (3) earpiece, loudspeaker & microphones, (4) front & rear cameras, (5) SIM detection & cellular calls/data, (6) Wi-Fi & Bluetooth stability, and (7) cold restart re-verification of the original complaint.
- **Pre-Repair Authorization & Liquid-Damage Terms:** Customers approve estimated repair pricing and turnaround time prior to board rework. For liquid-damaged devices, customers are briefed before work begins that corrosion can cause delayed failures elsewhere on the board and that warranty applies strictly to the specific replaced component workmanship.
- **Technical References:** Borneo Schematic & Bitmap (boardview & rail tracing), iFixit (liquid-damage board cleaning and drying), Samsung Support (Galaxy no-signal checks), and Apple Support (iPhone Wi-Fi and Bluetooth diagnostics).

WORKSHOP DOCUMENTATION & PORTFOLIO

## Photographic Bench Record, Additional Repairs & Software Services

The workshop photographic documentation submitted with this portfolio demonstrates microscope board inspection, BGA solder-ball preparation, and boardview pin-map reference usage during bench diagnostics:

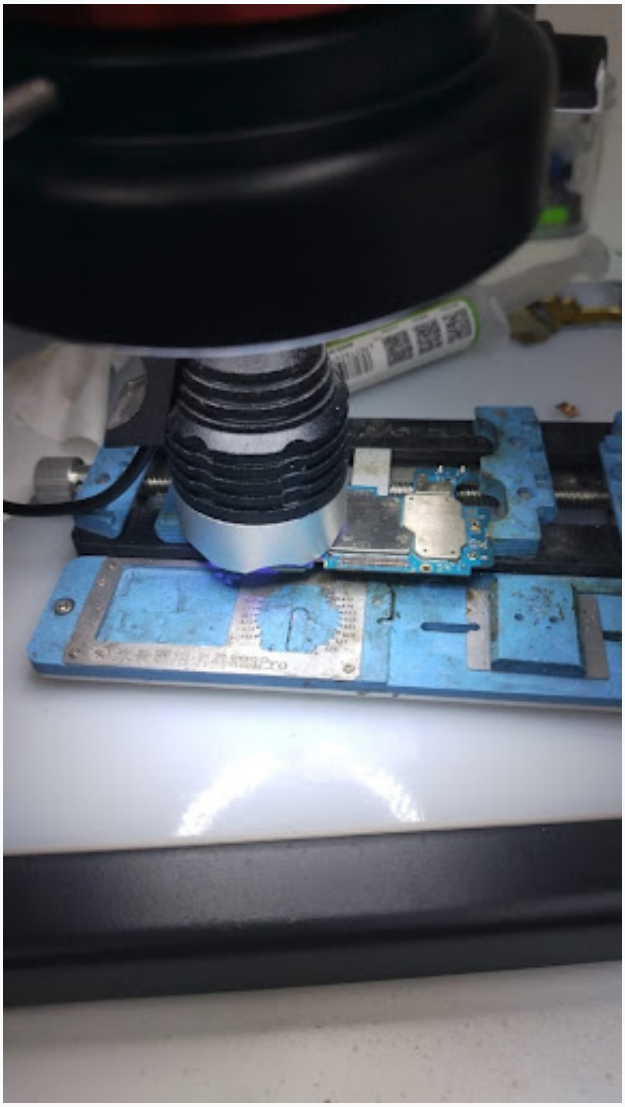


**Exhibit A:** ASHTECHMOBILE micro-soldering bench setup with stereo microscope, K23Pro PCB holder, and rework flux.

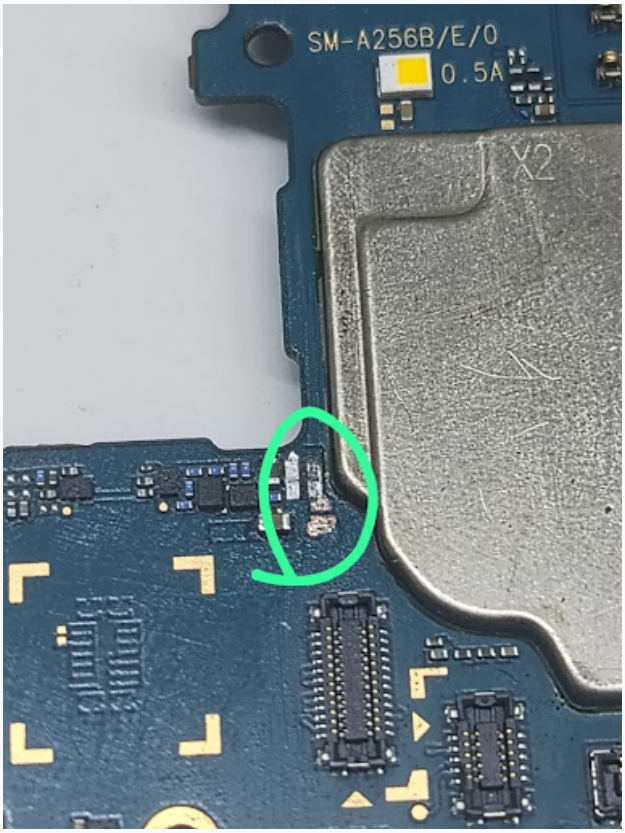



**Exhibit B:** High-magnification inspection of exposed copper traces and solder pads (circled) for continuity restoration.

| Workshop Exhibit | Subject & Bench Setup | Technical Observation & Reference Values |
|---|---|---|
| **Figure 1**<br>Board Inspection | Samsung logic board under microscope magnification | Clear identification of silkscreened **VBUS**, **GND**, and **TH** (thermistor) test pads prior to powered probing. |
| **Figure 2**<br>BGA Rework | BGA IC package underside under high magnification | Inspection of solder-ball array uniformity and pad cleanliness before alignment and hot-air reflow. |
| **Figure 3**<br>Radio Circuit Pin Map | Boardview pin map for WLAN and Bluetooth RF transceiver pads | Reference diode values and net names verified against board revision: `AVDD12_RF` (0.421), `WL_RXQN` (0.549), `WL_TXIP` (0.337), `AVDD18_PA` (0.305), `VDD18_IO` (0.282), `WL_SPDT_S` (0.314), `AVDD12_BB` (0.422). |

## Additional Bench Repairs Portfolio (ASHTECHMOBILE)

| Device Model | Fault Reported & Board-Level Work Performed |
|---|---|
| **Samsung Galaxy A16** | Investigated a cellular network fault, replaced the faulty RF/network IC, and restored full cellular service. |
| **Samsung Galaxy A23** | Carried out CPU work after repeated restarts at the startup logo, restoring stable boot operation. |
| **Realme C35** | Rear camera remained unavailable after module replacement; traced the board-level camera supply/control fault and restored rear-camera operation. |
| **OnePlus 8T** | Arrived dead after liquid exposure; cleaned corrosion, isolated and cleared a main-board short, and restored normal power-on. |
| **Redmi Note 8** | Arrived dead; after initial power-rail checks, removed, reballed, and reflowed the CPU, restoring normal boot. |

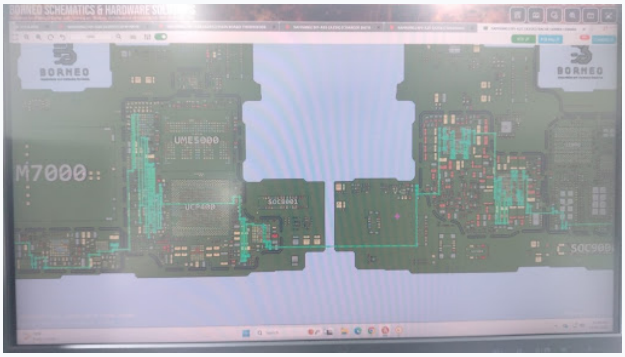


**Exhibit C:** Borneo Schematics inter-board trace mapping across main-board and sub-board connectors.

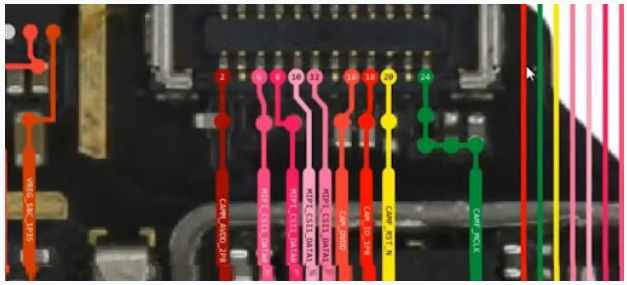


**Exhibit D:** Camera connector pinout and supply/MIPI trace reference used for board-level camera fault isolation.

## Mobile Software Troubleshooting & Workshop Profile

Alongside hardware micro-soldering, I handle Android and iPhone software faults including boot loops, recovery/DFU mode restoration, USB and driver communication issues, and persistent settings or connectivity faults. Device model and firmware variant are verified prior to flashing, alongside customer-authorized device setup and account recovery. I operate **ASHTECHMOBILE** in Ruwi, Muscat, Oman (`ashtechmobile.com`), providing model-based repair intake and firmware/driver support resources.