FAIRPHONE

Fairphone 5: Information on how to repair and recycle

FAIRPHONE

1. Product Identification

This document refers to the Fairphone 5 5G, a product by Fairphone, that was launched in the market on October 15, 2023.

The main technical specifications are as follows:

Display

6.46 inch Full HD+ OLED, 1224×2700 resolution

90 Hz refresh rate

300 Hz touch screen sample rate

880 nits peak brightness (800 nits typical brightness)

1.07 billion colors (P3)

1.000.000:1 contrast ratio

Pixelworks Processor for image enhancements including adaptive tone

Corning Gorilla Glass 5, fully laminated, oleophobic coating

20:9 aspect ratio

Sound

Stereo speaker

The supported formats include: SBC, AAC, aptX, aptX HD, LDAC

Main Camera:

50MP Sony IMX 800 sensor, 1/1.49”, 1.0µm pixel size

Pixel Binning: 12.5MP, 2.0 µm effective pixel size

26 mm full frame equivalent, F1.88 lens, 6 lens elements

Autofocus, 10 cm minimum focusing distance, time of flight sensor

Up to 8x digital zoom

Optical image stabilization + electronic image stabilization

Ultra Wide camera:

Image sensor: 50 megapixels SONY IMX 858, 1/2.51”, 0.7 µm pixel size

Pixel binning 12.5 MP, 1.4 µm effective pixel size

13 mm full frame equivalent, F2.2, 6 elements

Autofocus, Macro Mode, 2.5 cm minimum focusing distance, time of flight sensor

Electronic image stabilization

Selfie camera

Image Sensor: 50MP Samsung JN1, 1/2.76", 0,64 µm pixel size

Pixel binning 12.5 MP, 1.28 µm effective pixel size

22 mm full frame equivalent, F2.45 lens

Up to 1,5x digital zoom

Electronic Image Stabilization

Display usable as flash

Camera Modes

Super night mode, portrait, stop-motion, panorama, slow motion, pro mode, high pixel mode

Video

4k: 3840×2160p, 30 fps

Full HD: 1920×1080p, 30 fps or 60 fps

Slow Motion: Full HD: 1920×1080p,120 fps or HD: 1280×720p, 240 fps

Operating system

Android™ 13

Android Enterprise Recommended

Software updates until 2031

Performance

Qualcomm QCM 6490 (extended life chipset)

64-bit Octa-Core processor

1x “Gold +” high performance core 2,7GHz

3x “Gold” high performance core 2,4GHz

4x “Silver” efficiency core 1,9 GHz

Qualcomm Adreno 643 @ 812MHz

8 GB Ram

Storage

256 GB internal storage

External storage capacity: micro-SD up to 2 TB

Battery

4200mAh removable Li-ion battery

459 hours idle

38 hours phone calls

18 hours web browsing

50% charge in 20 minutes, 30W charging

Connectivity & location

Wi-Fi 6E

Bluetooth® 5.2 LE

NFC

GPS/A-GPS, Beidou, Galileo, GLONASS,

Dual SIM (nano-SIM + eSIM, both 5G enabled)

Bands and Band-Combinations:

4G: B1/2/3/4/5/7/8/12/20/28/32/38/40/41/42/48/66/71

5G: n1/2/3/5/7/8/20/28/38/41/48/66/71/77/78

USB-C 3.0 (OTG capable)

Durability

IP 55

CE 60058-2-31 (1.8m)

MIL-810H (1.5m)

Sensors & Security

Fingerprint scanner (integrated in power button)

Facial recognition

Magnetometer

Accelerometer

Gyroscope

Compass

Hall Switch

Light Sensor

Proximity Sensor

2. Repairs done by Fairphone

If you can not or do not want to repair the device yourself, you can always send it to us for repair. There are a few spare parts that we cannot offer for repair. At the time of writing this guide, the following components could be replaced by us:

1. Battery
2. Back Cover
3. Display
4. Top Unit
5. Wide Camera
6. Ultra-Wide Camera
7. Selfie Camera
8. Earpiece
9. Loud Speaker and Vibration Motor
10. USB-C Port
11. Mid-Frame
12. Top PCBA
13. Bottom PCBA

3. List of repair and test equipment needed

Repairing the Fairphone 5 is very simple, and the list of required tools is short. Most of the repairs will only require a Phillips screwdriver (PH00). For more complex repairs, you will need tools 2–8.

1. Phillips screwdriver PH00
2. Prying tool
3. USB-C cable (to test charging)
4. Battery Discharge Power measurement equipment
5. ESD protection gear
6. RF Connector tool
7. Soldering gun and soldering tin
8. Computer with Software flashing tool. You can find the instructions here.

4. Technical manual

Anyone can access our technical manual online. There are tens of different guides depending on the needs. See below for a selection of the 10 most important articles.

1. FP5. Charge your phone
2. FP5. Set up SIM card
3. FP5. Set up eSIM card (embedded SIM)
4. FP5. Connect to Mobile data
5. FP5. Connect to Bluetooth
6. FP5. Connect to a Wi-Fi
7. FP5. Migrate data from another phone
8. FP5. Update to the latest Fairphone OS
9. FP5. Maximize battery lifespan
10. FP5. Replace a spare part

You can access all the rest here

5. Diagnostic faults and error codes

- We make use of Android's (AOSP) default logging and tracing mechanisms, which mostly means Android *logcat* messages generated by the Android framework, apps and HAL implementations, as well as kernel logs.

- Additionally, we use logging and diagnostics in components of third party suppliers, most of which comes from Qualcomm. These components use the same technical mechanisms as AOSP code: Android *logcat* and kernel logs.
- For modem and low-level implementations, we fully rely on the logging and diagnostics implemented by our chipset vendor Qualcomm and their proprietary tooling.
- We currently mostly use a "pure-AOSP" approach -- keeping customization compared to AOSP to a minimum -- which facilitates maintenance and longevity
- For any customization we add on top of AOSP and device-specific code (from Qualcomm and other suppliers), we again make use of Android *logcat* and kernel log.
- If you encounter a pop-up with an error code "There has been an error" then you can use USB debugging https://developer.android.com/studio/debug/dev-options and the "adb logcat" tool to get the full log that contains all the strings to help you figure out what the error code is.

  In summary, our failure analysis relies on analyzing Android logcat, Linux kernel logs, and additionally Qualcomm modem logs where applicable, making use of existing tagging mechanisms from Android and Linux to identify failing components. Within the scope of the Android and Linux kernel, we currently do not have any proprietary formal error/fault codes (e.g., numerical error codes that follow certain specifications to identify which code would be related to what fault state). Our fault analysis relies on the mostly text-based analysis of Android and Linux logs.

6. Component information

For any question on this chapter, please contact product.management@fairphone.com.
Fairphone 5 contains the following key components with the following key data points:

Component	Part details	Vendor	Key specs
Battery	Model: F5AC1	Kayo	Capacity : 4200 mAh Nominal Voltage: 3.87 V Cut off Voltage: 3.0 V Charging Voltage: 4.45 V Dimensions: 77.4 x 60.45 x 6.2 mm DC Internal Impedance < 130 mΩ Standard discharge: Continuous 0.2 to 3.0 V Operational Charging Temperature Range: 0-60 ℃ Operational Discharge Temperature Range: -20 - 60 ℃ Recommend full charge & discharge cycle once every 3-6 months.
Chipset	QCM6490	Qualcomm	64 bit application processor Low-power island (LPI): contains DSP and embedded AI accelerator Supports: GNSS, WLAN/BT, LTE, TD-SCDMA, WCDMA, GSM 5G NR and EN-DC. Support camera interfaces: 3 x 14 bit ISP + 2x ISP-lite, 22+22+22 MP Adreno 642L GPU Qualcomm® Universal Bandwidth Compression (UBWC) with camera, display, GPU, video, and compute DSP FHD+, 10 bit DisplayPort, eight hardware layers, improved HDR10+, and wide color Gamut, Qualcomm® Low-Power Picture Enhancement display feature, and Qualcomm® True Palette Display feature, VESA DSC 1.2 One 4-lane DSI DSC1.2, D-PHY 1.2, or C-PHY 1.0
Display	BF065GBM-TK0-7DP0	BOE	6.46” Outline: 68.15(W)*149.85(H)*0.038(T) mm Active area: 67.7484(W)*149.445(H) mm Number of dots: 1224(W)* 27000(H) Frequency: 60/90 Hz MIPI Differential Input: -0.3 to 1.35 V Supply Voltage -(I/II/LV): -0.3 to 3.6/5.5/1.26 V Logical input & output voltage: -0.3 to 0.3 V ELVDD: 4.6 V (4.6 to 5.0 V) ELVSS: -3.5 V (-6 to -0.8 V) AVDD: 7.6 V (4.5 to 8 V) VCI: 3.0 V (2.6 to 3.6 V) VDDIO: 1.8 V (1.65 to 1.95 V) DVDD: 1.2 V (1.1 to 1.25 V) VGH: 3 V to 15 V VGL: -15 V to -3 V Operating Temp: -40 to 85 °C

Board to Board Connector	BM23PF0.8-20DP-0.35V	Tohoku Hirose Electric Co.	Voltage 30 V AC/DC Signal contact 0.3 A Power Contact 5.0 A Operating Temperature: -55 ℃ to 85 ℃ Storage Temperature: -10 ℃ to 60 ℃
Board to Board Connector	BM24-20DP /2-0.35V	Tohoku Hirose Electric Co.	Voltage 30 V AC/DC Signal contact 0.25 A Power Contact 5.0 A Operating Temperature: -40 ℃ to 85 ℃ Storage Temperature: -10 ℃ to 60 ℃
Speaker Top	SLS1012A	AAC	Dimensions: 10 x 12 x 2.8 mm Impedance: 7 Ω @ 2 kHz Input DC Resistance: 6 Ω 50 mW Rated Power Operating Temperature: -20 ℃ to +70 ℃ Storage Temperature: -40 ℃ to 85 ℃
Speaker Bottom	SLS1115D-01	AAC	Dimensions: 11 x 15 x 2.35 mm 8 Ω @ 2 kHz, 1 Vrms Input 1 W Rated Noise (1.5W Max) in 0.7cc 200-20 kHz Frequency range Operating Temperature: -20 ℃ to +70 ℃ Storage Temperature: -40 ℃ to 85 ℃
Microphone	SM0103B-R S421-M02	AAC	Sensitivity: -42 dB Output Impedance: 450 Ω Supply Voltage: 2.75V to 3.6 V Rated Current: 100uA S/N Ratio: 64dB Power Supply Rejection -95dBV Load Resistor 5 kΩ Operating Temperature: -40 to +85 ℃ Soldering Information: Preheat 150-180℃ for a maximum of 120 secs. Soldering Above 220℃ for a maximum of 90 secs. Peak 260℃ for a maximum of 30 seconds. Do not reflow more than 3 times.

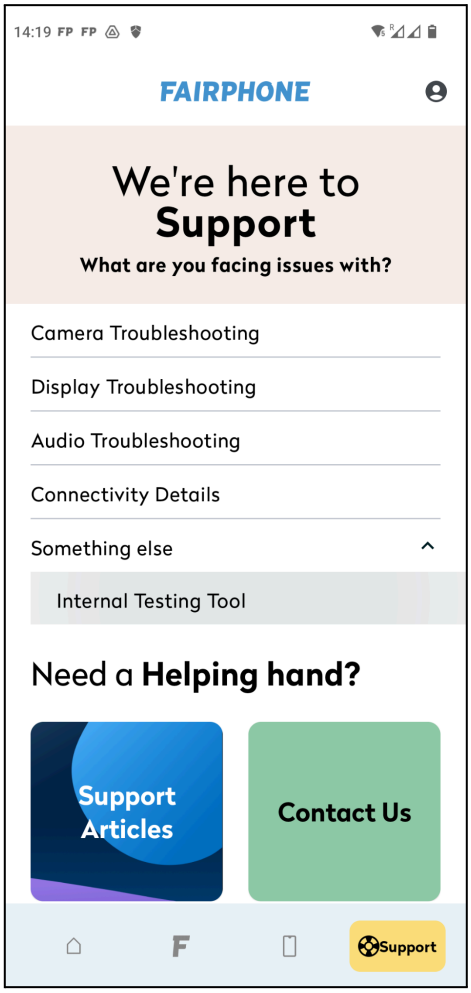
7. Diagnosis information

There are several components in your device that can be diagnosed. We advise you to follow our diagnosis tree on our website.

You can also test one of the phone functions or components directly. To do so, please go to **My Fairphone App** on your phone. Please only do this under the instruction of our customer support :

- Open MyFairphone App
- Click on "Support" (4th item in Bottom Navigation Bar)
- Click on “Something else”
- Click on "Internal Testing Tool"

To exit the test mode, scroll down and press exit.



Internal Testing Tool in the MyFairphone-App

FAIRPHONE

Diagnostic tests you can perform:

a. Traceability test
b. Fingerprint sensor (raw data)
c. Touch panel (raw data)
d. Sensor (raw data)
e. SD Memory card
f. SIM
g. eSIM
h. Earpiece (top speaker)
i. Speaker (bottom speaker)
j. Bluetooth
k. Wi-Fi 2.4G
l. Wi-Fi 5G
m. GPS
n. Fingerprint enroll (image capture)
o. Touch panel
p. LCD
q. LCD Backlight LEDs
r. Keyboard
s. E-compass
t. G-Sensor
u. Gyroscope
v. Front Camera
w. Main Camera
x. Ultra Wide Camera
y. Camera LED
z. Audio
aa. Vibration sensor
bb. NFC
cc. Proximity sensor
dd. Light sensor
ee. Backlight Sensor
ff. USB / Charger
gg. USB Type-C
hh. Accessory
ii. USB 3.0
jj. DP (video output)
kk. USB NTC (for temperature)
ll. Camera OTP
mm. Attestation Key Check (tests public and private keys to validate SW in the device)
nn. Calling

8. Instructions for software updates.

Fairphone OS releases for Fairphone 5 5G, based on Android 13 (A13), and we provide regular software updates.

Instructions on how to download and **install** these updates **directly on your phone** are here.
Instructions on how to download and **install** these updates **using your computer** can be found here.
Here you will also find the updated list of new features, bug fixes, and security patches for each release. The date and availability of system updates may vary by network carriers or country.
Instructions on how to make a factory reset can be found here.

9. Data records of reported failure incidents

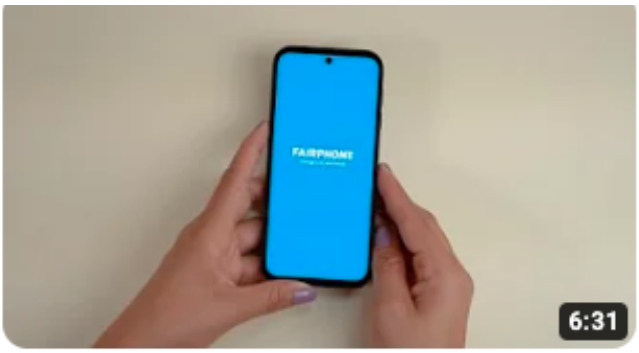
Fairphone maintains data records of failure incidents in accordance with GDPR regulations. When customers contact us about a reported failure, it is necessary for us to hold a certain amount of data to be able to process this failure and the potential return of the product to our repair center. We also maintain records of reported failures in an anonymized way where no customer data is required for varied business related purposes such as cost management and future warranty provisioning. We do not make this information available publicly. Furthermore, we do make information available about certain known failures of our products on a case-by-case basis. For any questions on this chapter, please contact product.management@fairphone.com.

10. Guidance for self-repair and technical manual.

Repairing the Fairphone 5 is very easy. The actions contained in this chapter have no consequence for your warranty coverage.

You can find any of our video self repair videos and a simple self-repair guide in this link.

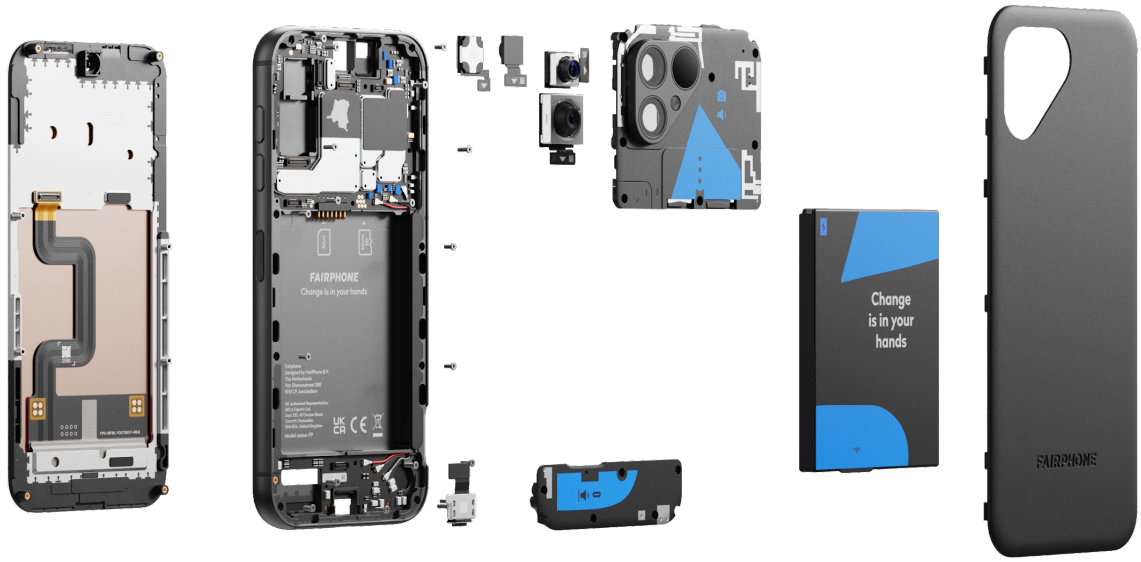
In this document, you can also find a printed version of our repair manuals.



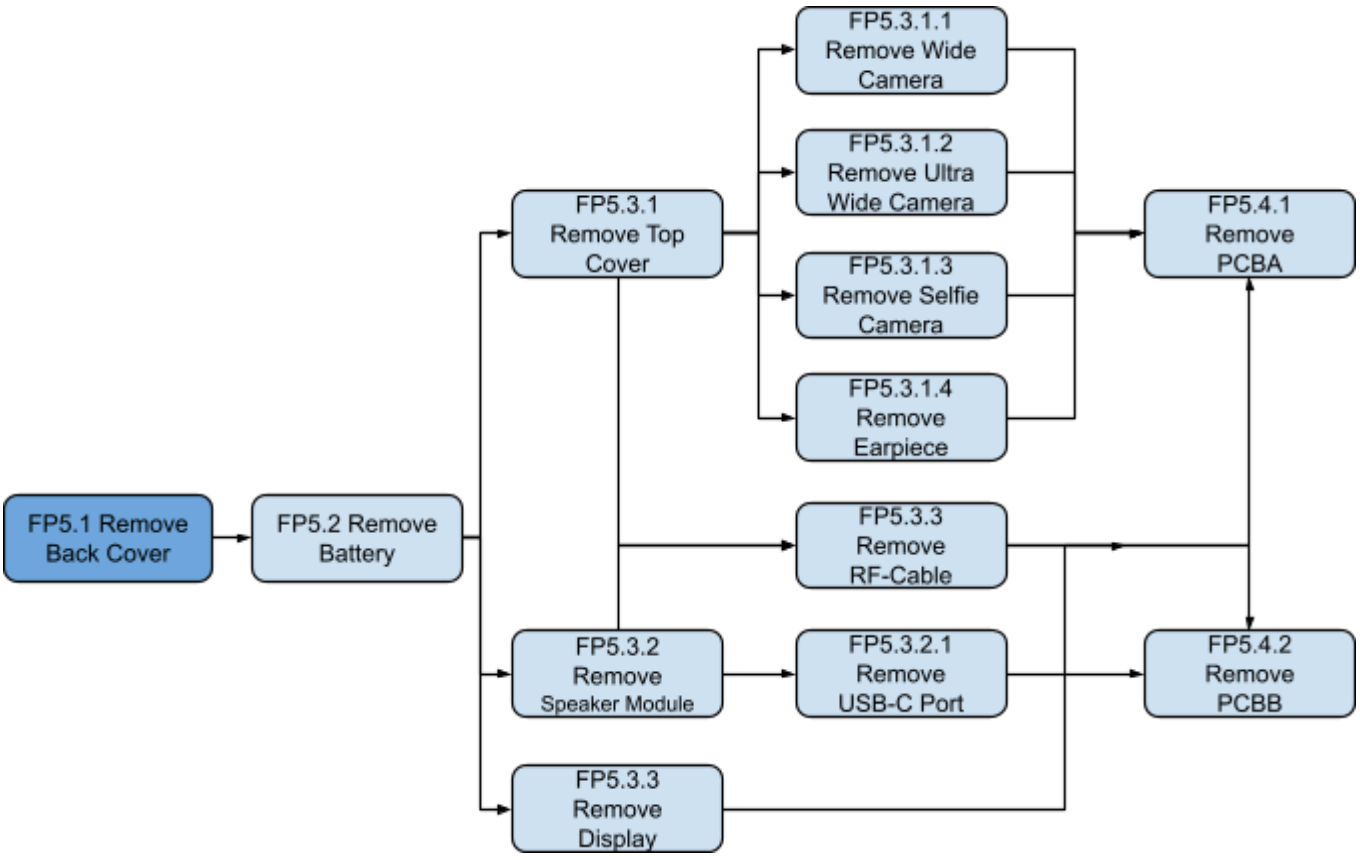
Getting Started | HOW TO FAIRPHONE 5

FAIRPHONE

a. Spare parts overview and disassembly map



b. Disassembly flow



c. Cautions before disassembly

i. **Power off the device:** Before disassembly, please power off the device and take out the battery.

ii. **Press the power button** more than 5 seconds after the battery is removed, to release the electricity residual in capacitors.

iii. **ESD Protection:** Electronic-sensitive components inside (especially in winter); suggest releasing the static electricity on the body (e.g., finger touch metal objects).

iv. **Pay attention to the two different types of screws:**

1. Black Phillips head (M1.4) (for display repairs)
2. Silver Phillips head (M1.4) (for other repairs)

v. **Prepare your tools:**

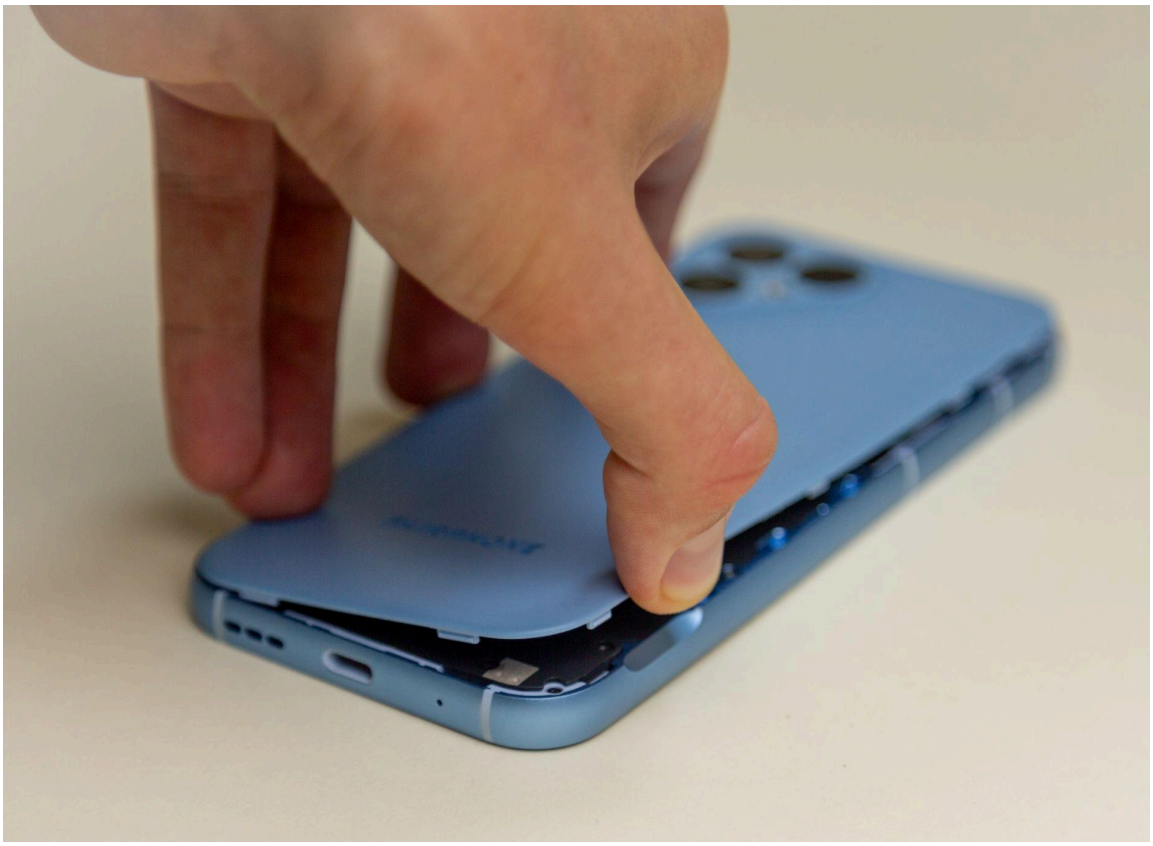
1. Phillips screwdriver PH00.

vi. **If you are a professional repairer, consider the torque force** needed for screw/unscrew operation:

1. Torque force for Philips screws: 0.08Nm

d. Replacing back cover and battery

Step 1: Lift the back cover, starting at the opening position on the bottom right, and then remove it completely.



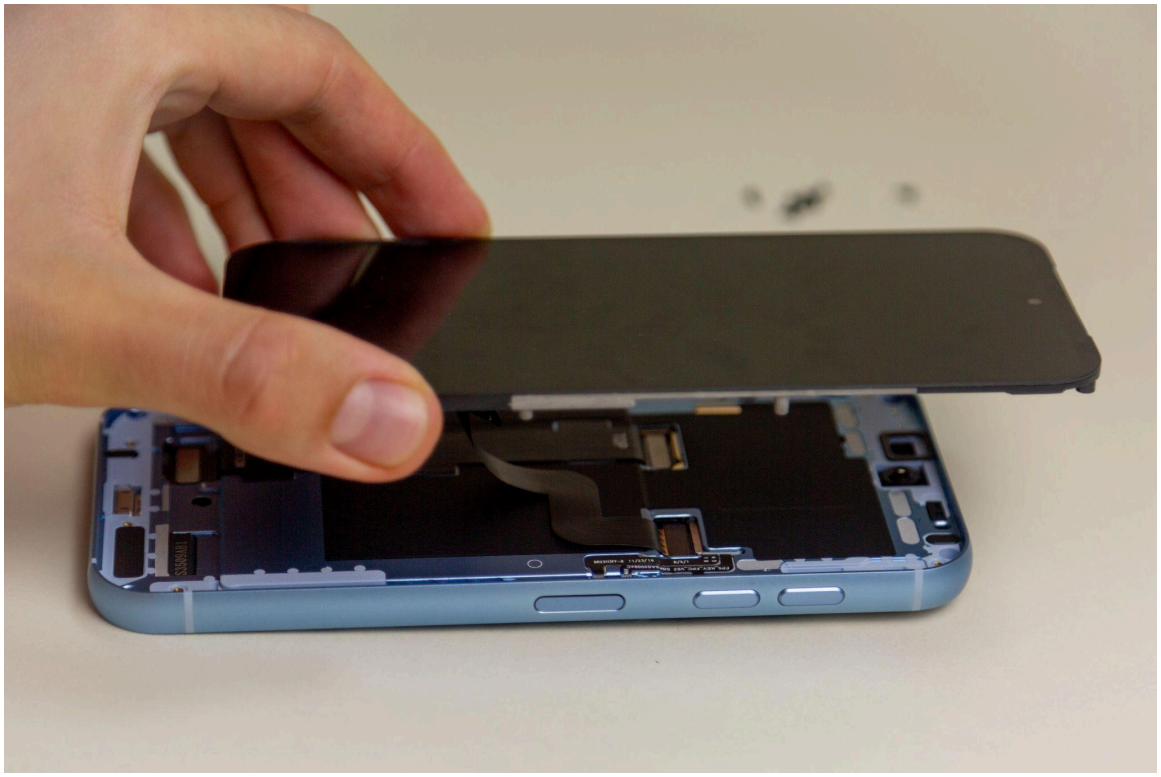
Step 2: Remove the battery by lifting it up from the tab at the bottom of the battery.

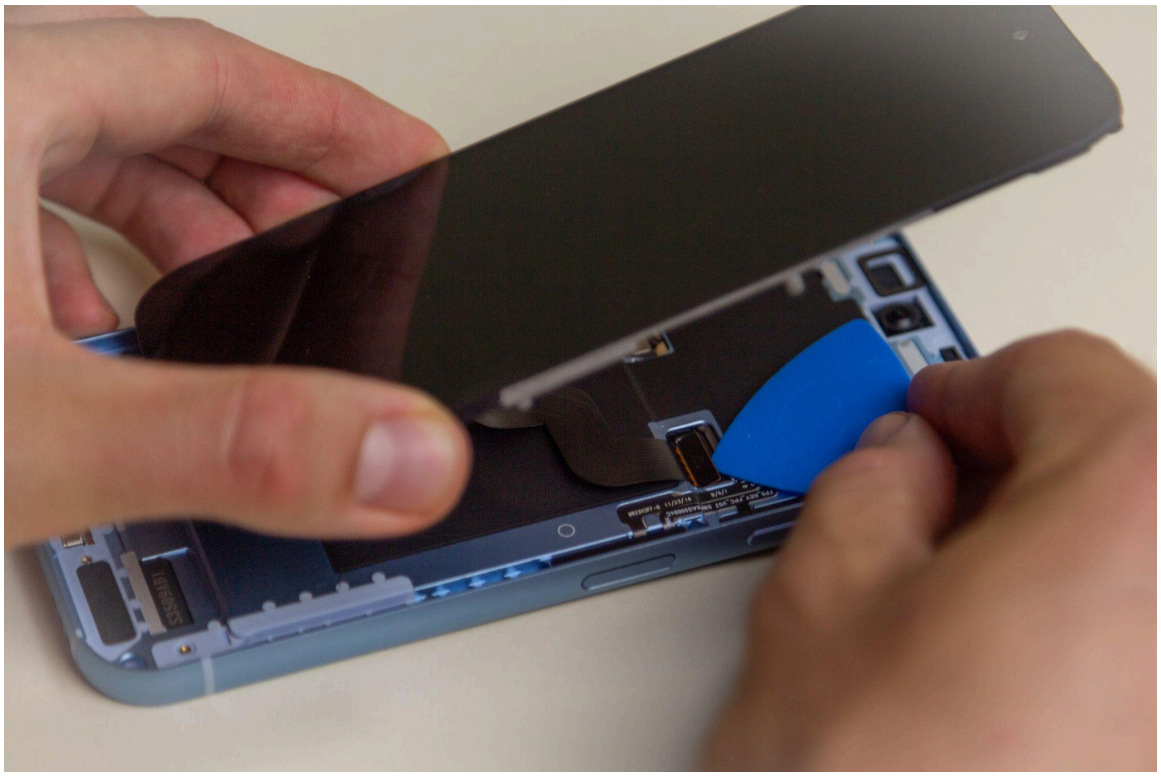
e. Replacing display

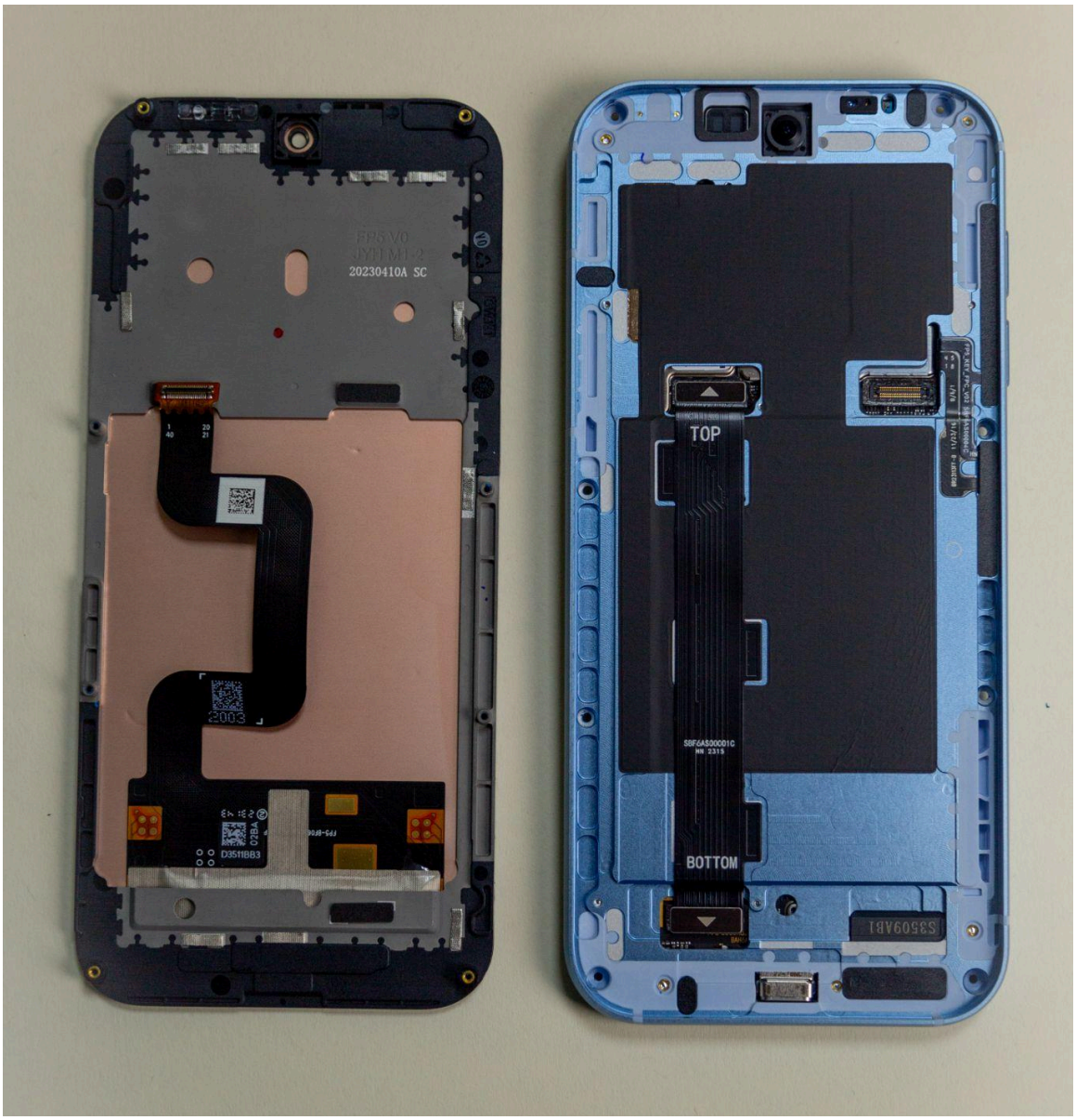
Step 1: Follow previous steps (d) to remove the back cover and the battery

Step 2: Remove the 8 black Phillips screws indicated in the picture below.

Step 3: Lift the display and disconnect the cable behind it.







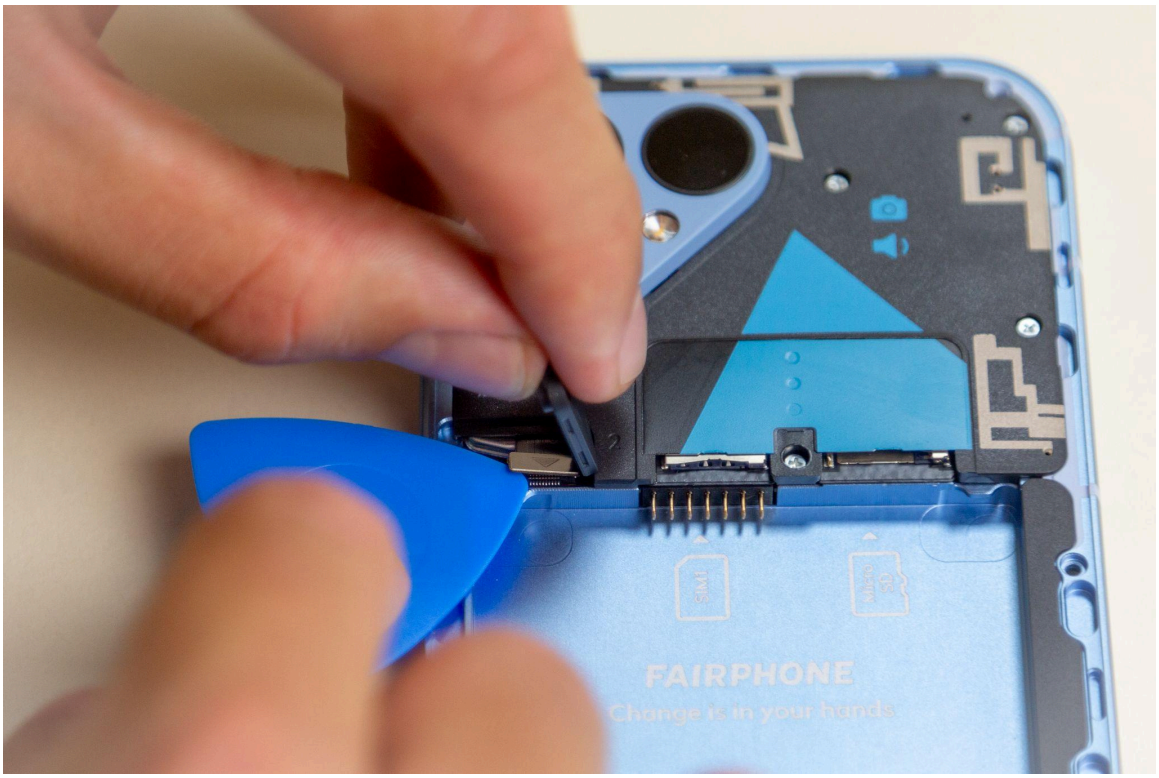
Step 4: Connect the new display by first connecting the cable back. Simply push the connector in until you hear a click.

Step 5: To assemble again, repeat the actions in steps 3, 2, and 1 in reverse order.

f. Replacing the rear cameras, selfie camera, or earpiece

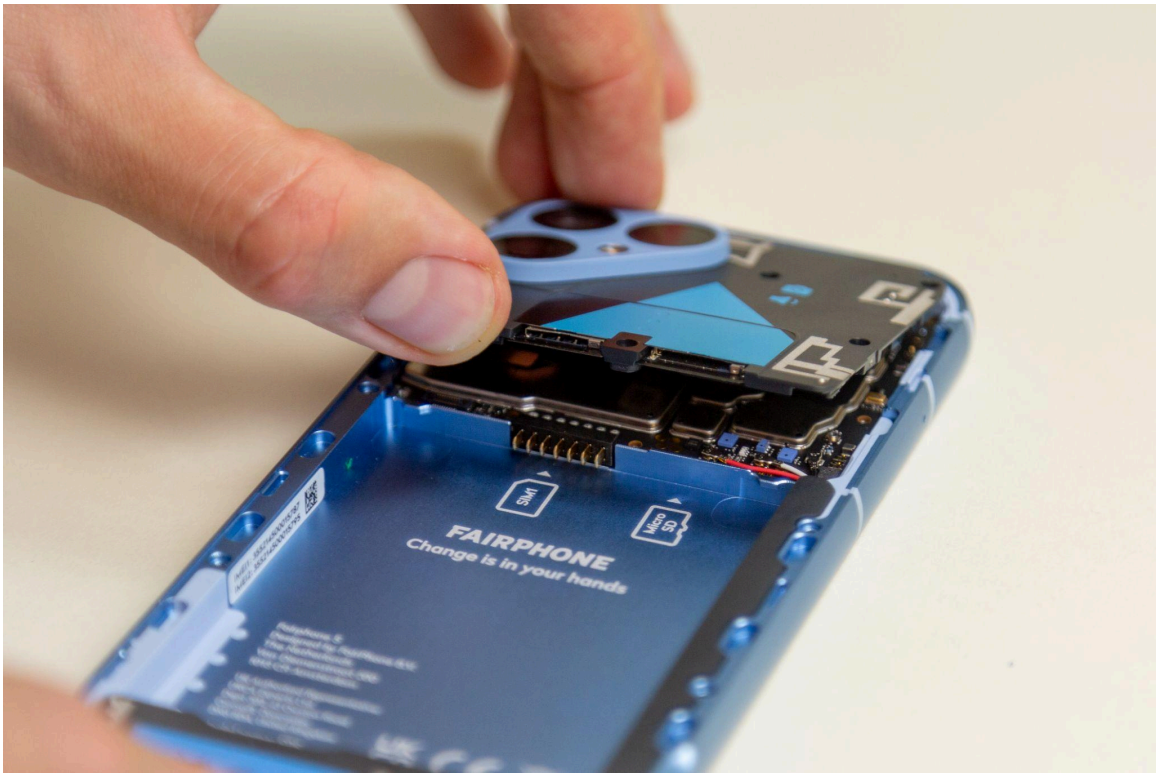
Step 1: Follow instructions for replacing the back cover and battery (e).
Step 2: Remove the top cover lid screw.

Step 3: Lift the top connector lid and disconnect the connector.

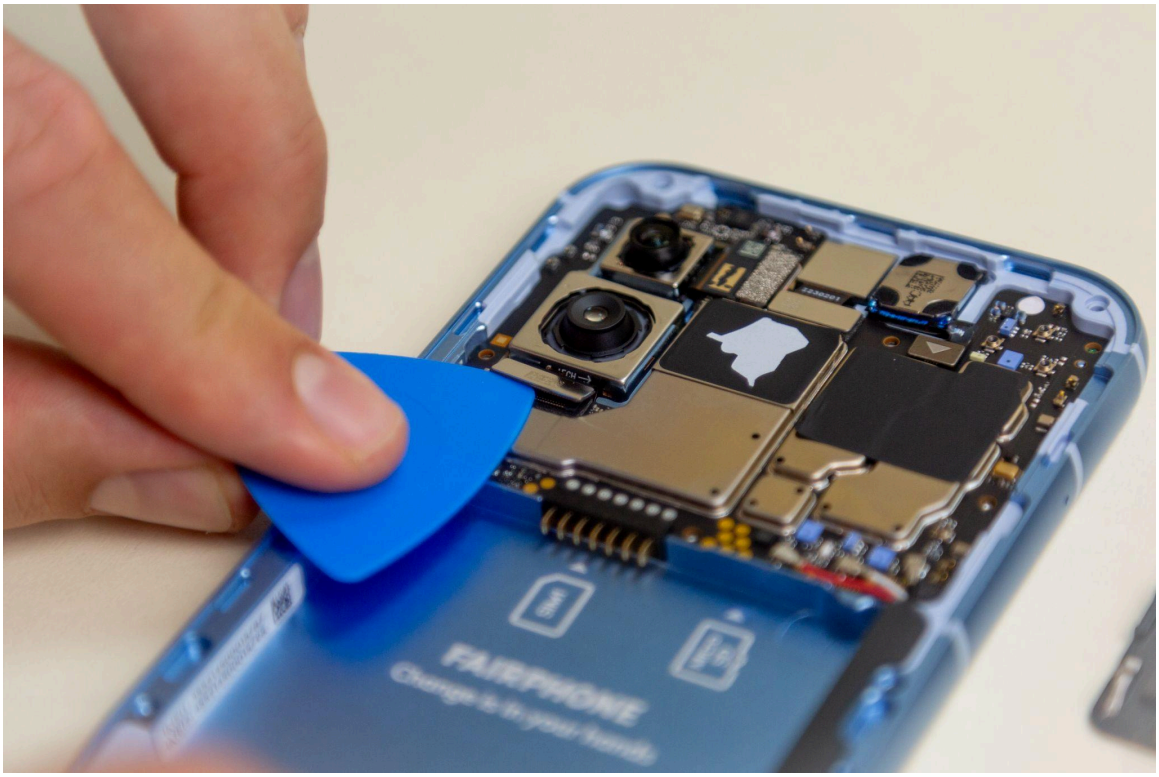


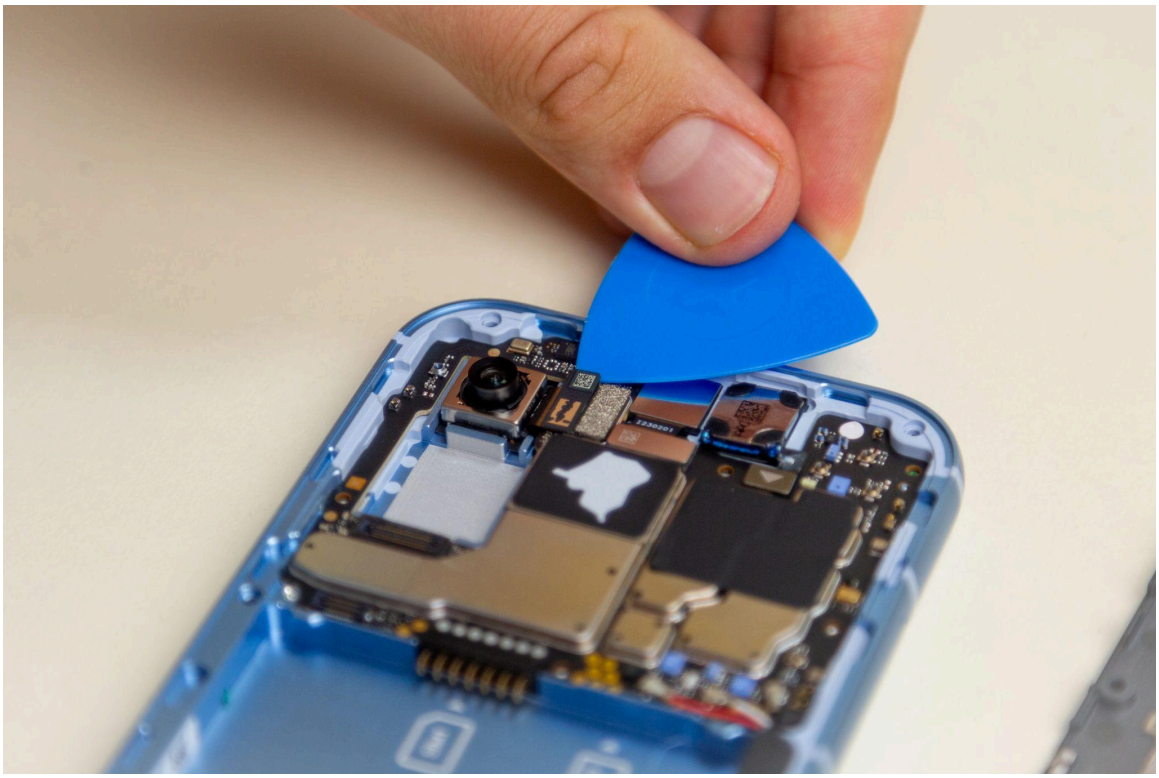
Step 4: Remove the remaining six silver rear camera screws.

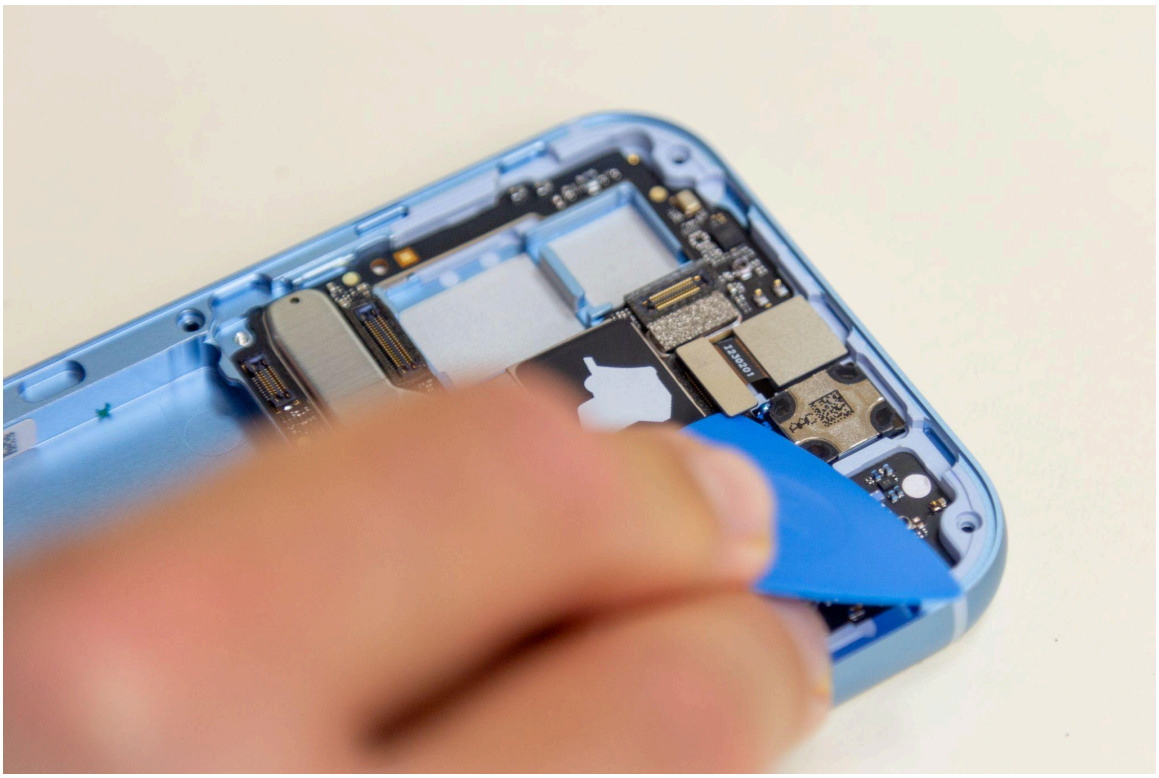
Step 5: Lift the top cover.

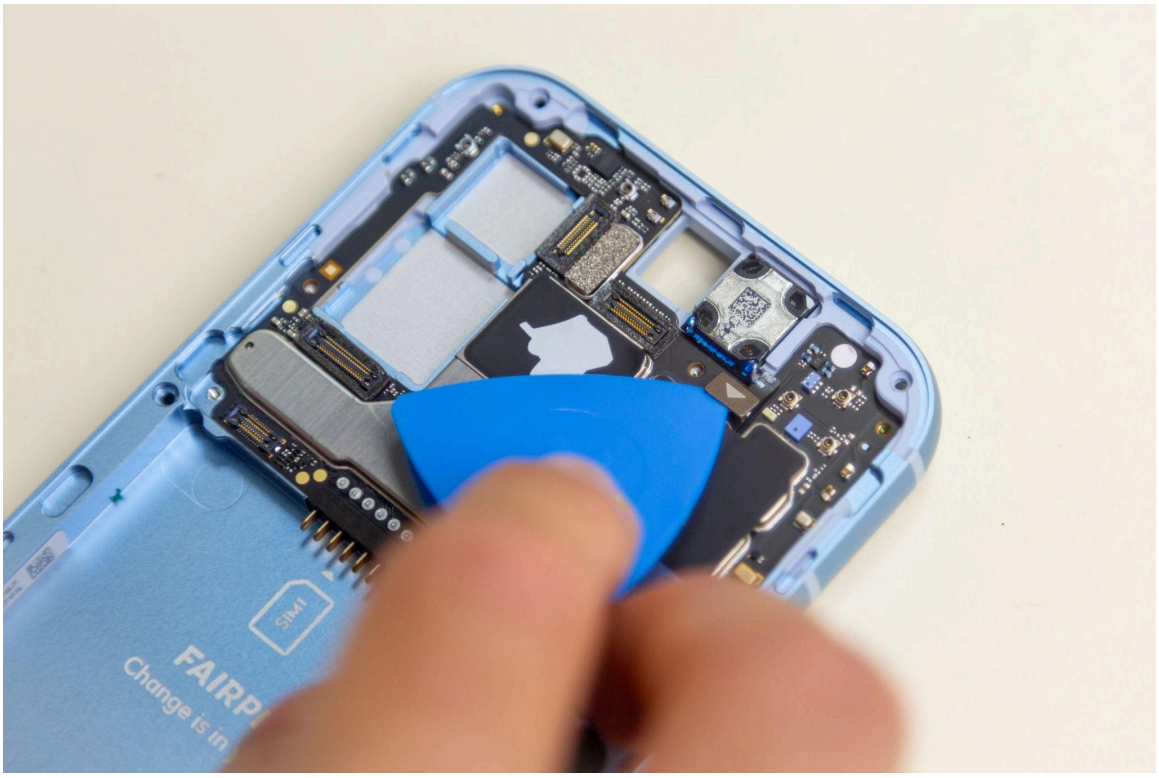


Step 5: Disconnect the according Camera or Earpiece Connector








SIM1

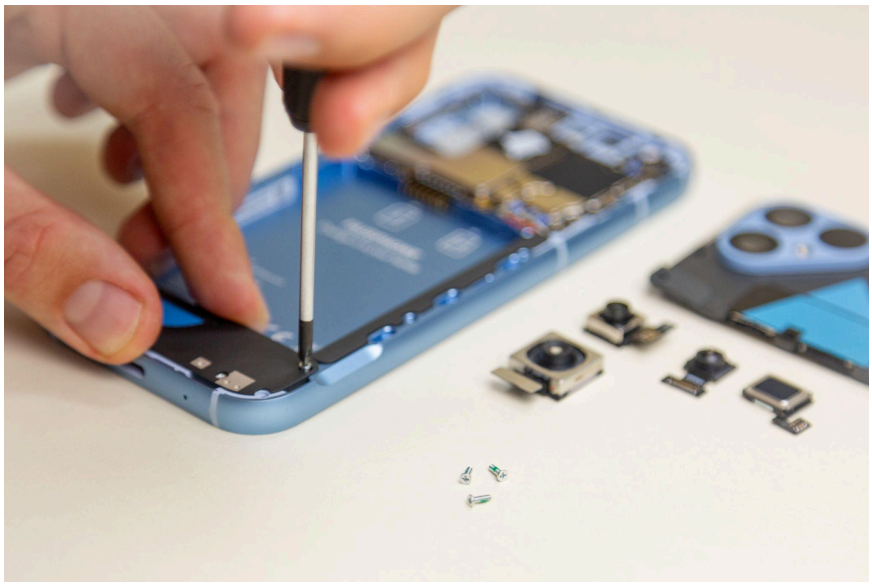
Step 6: Remove the camera or earpiece.

Step 7: Insert the new camera or earpiece and connect it to its appropriate connector.
Step 8: repeat actions in the steps 5 to 1 in reverse order

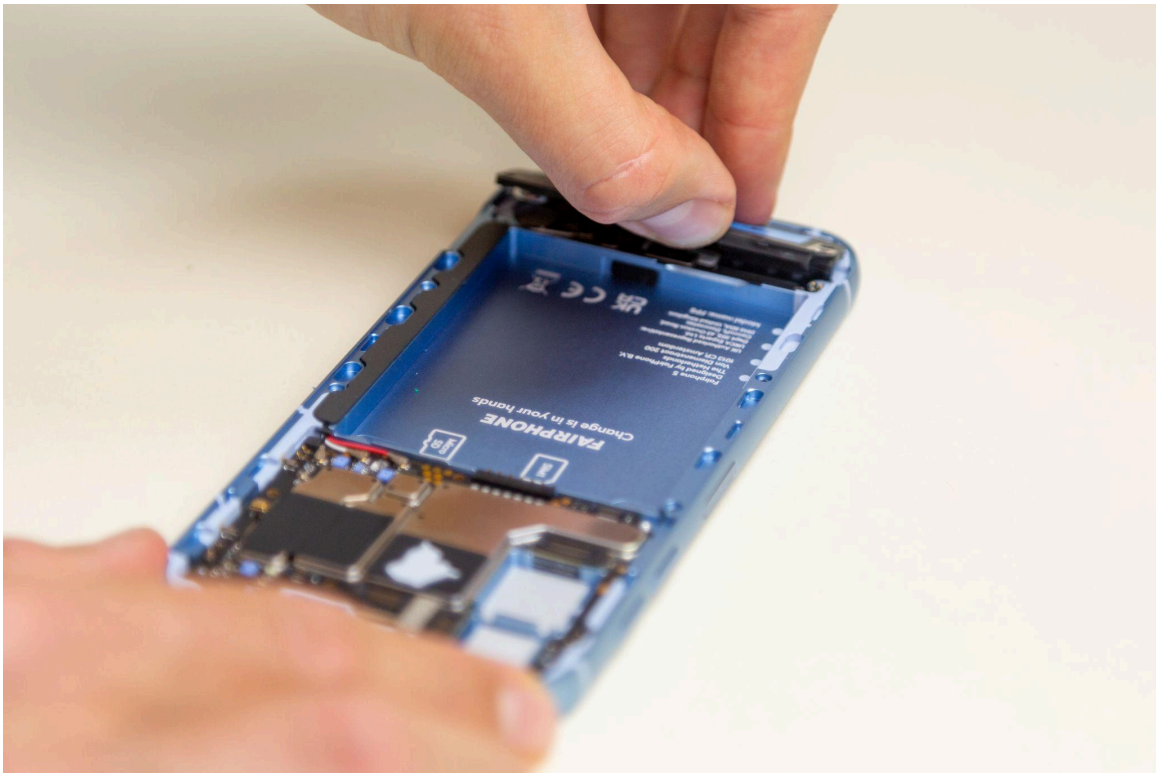
g. Replacing the loudspeaker, vibration motor, or USB-C port

Step 1: Follow the steps in e.

Step 2: Remove the five loudspeaker Phillips screws (silver).



Step 3: Lift the loudspeaker by lifting the central lip and removing it. This part also contains the vibration mechanism.



Additional step: *If you are replacing the USB-C port, you can now access it. For this, disconnect the USB-C port connector first. Please keep in mind that there is no screw holding the USB-C port at this point. You have already removed it when removing the loudspeaker screws. Place the new USB-C back in place and push the connector until you feel a click.*

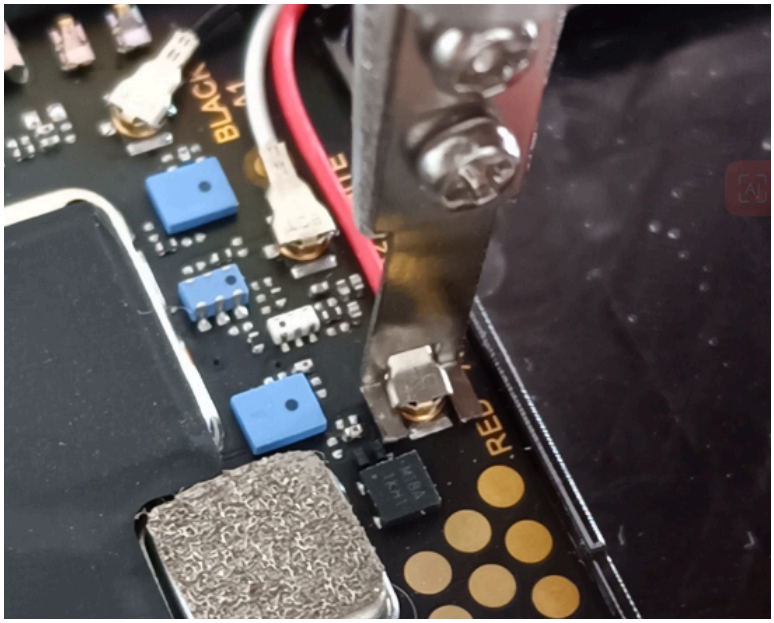
Step 4: Put the (new) loudspeaker in place. Click it in and place back the six screws.

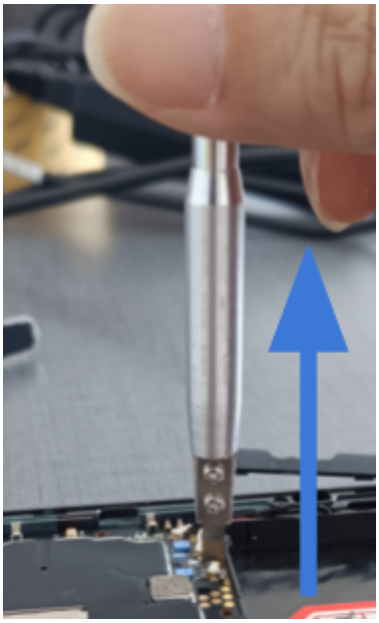
h. Replacing the PCB and mid-frame

Step 1: Follow the steps in **e** to remove the back cover and battery.
Step 2: Follow the steps in **f** to remove the display.
Step 3: Follow steps in **g** to remove cameras and earpiece
Step 4: Follow steps in **h** to remove the loudspeaker and USB-C port.
Step 5: Use a prying tool to remove the FP5 coaxial cable cover.

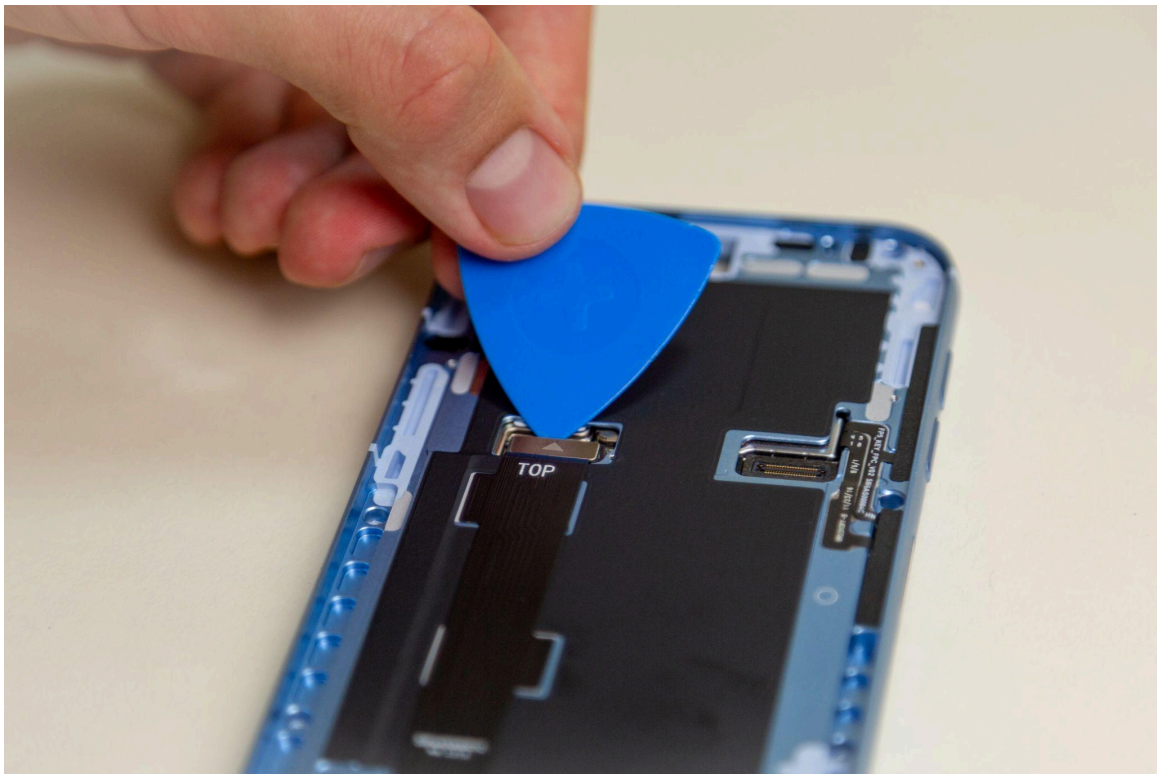
Step 6: Remove the RF cable rubber.

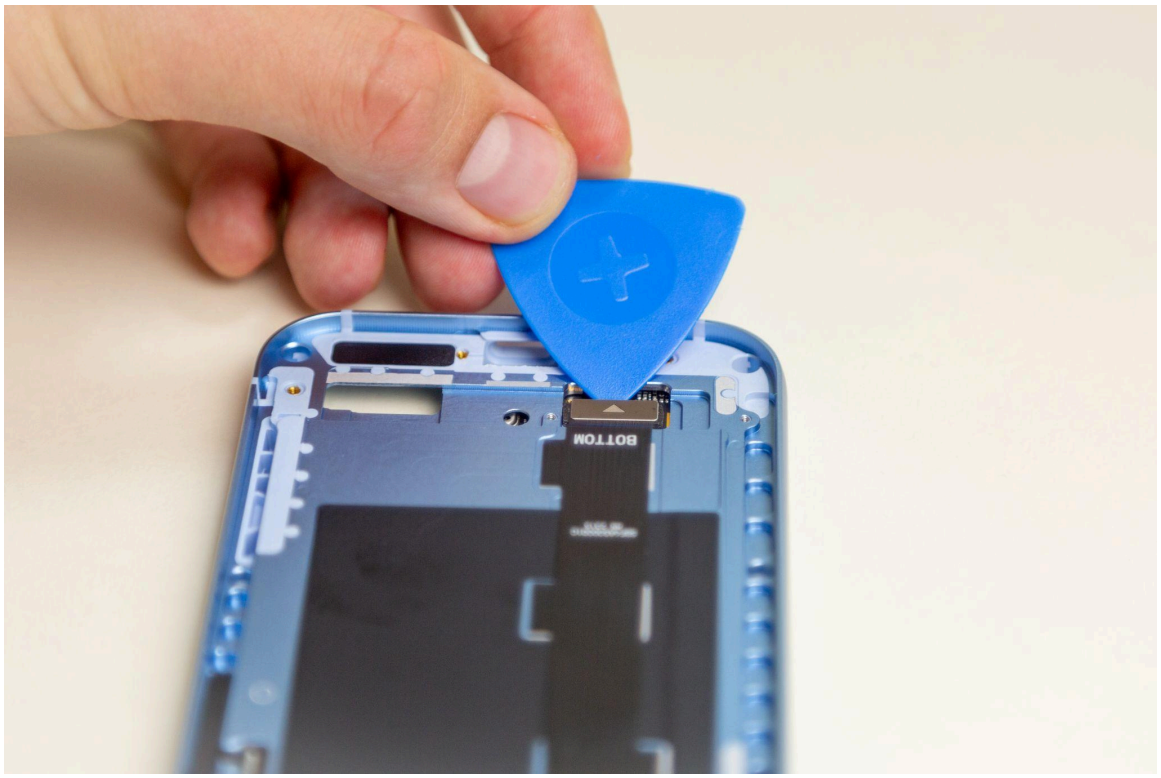
Step 7: Gently disconnect the red, black, and white RF-Cables, connected to the top PCBA and bottom PCBB, by hooking the RF-Cable connectors and then applying the force upward (vertical) to the receptacle.

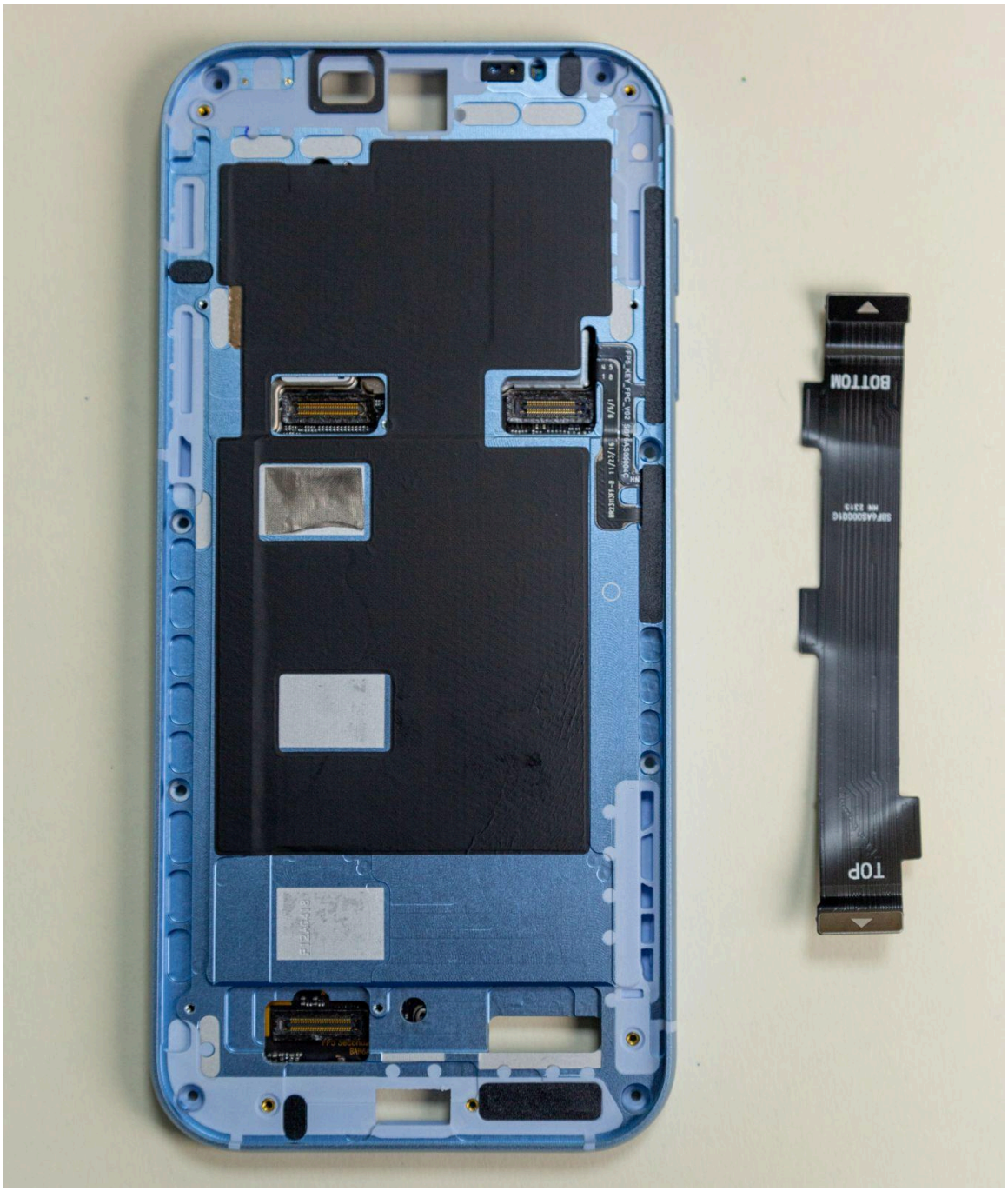




Step 8: Gently disconnect the PCB connector cable, which is located between the display and the mid-frame.

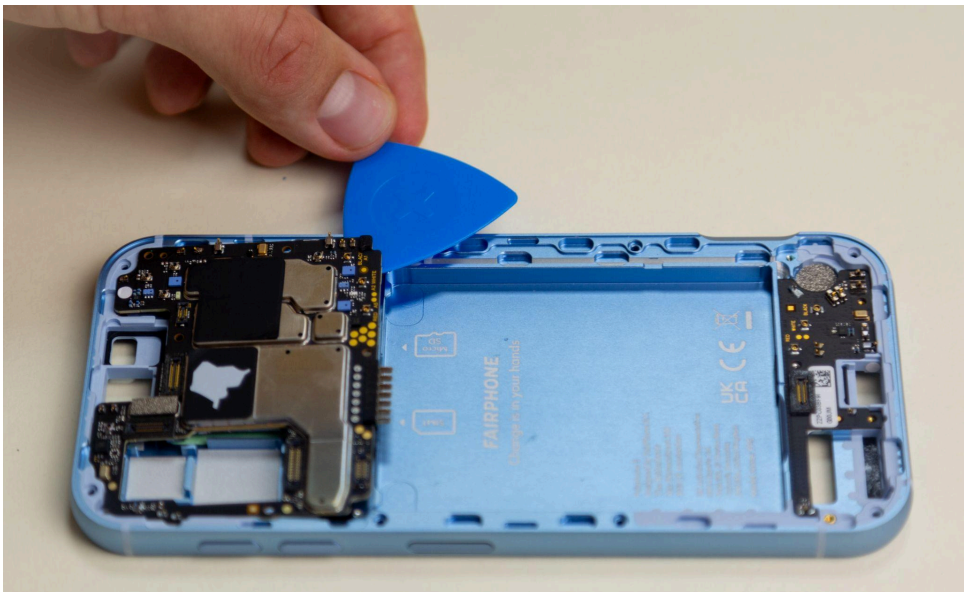





BOTTOM
TOP

Step 9: Gently push the top PCBA with your fingers through the two holes in the direction of the display.

Step 10: Gently lift the top PCBA and bottom PCBA each from the bottom right.

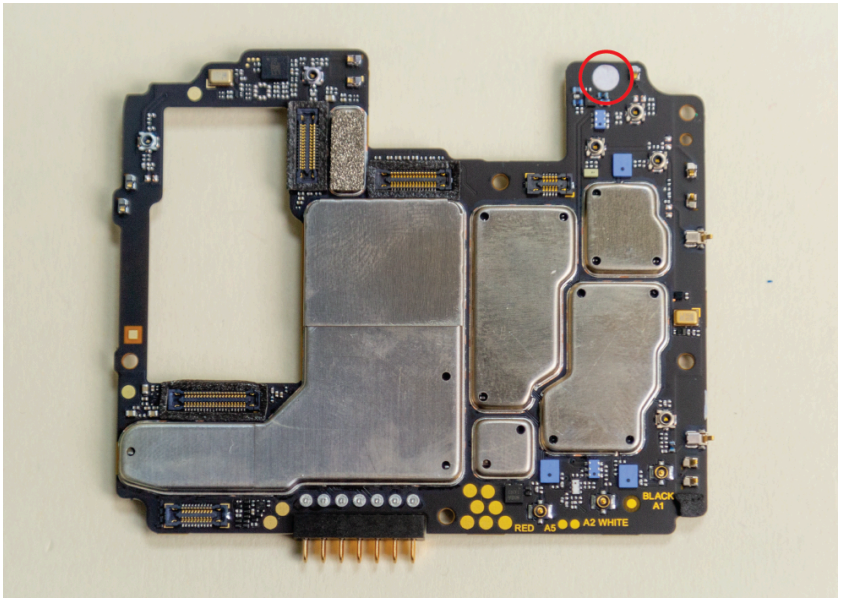


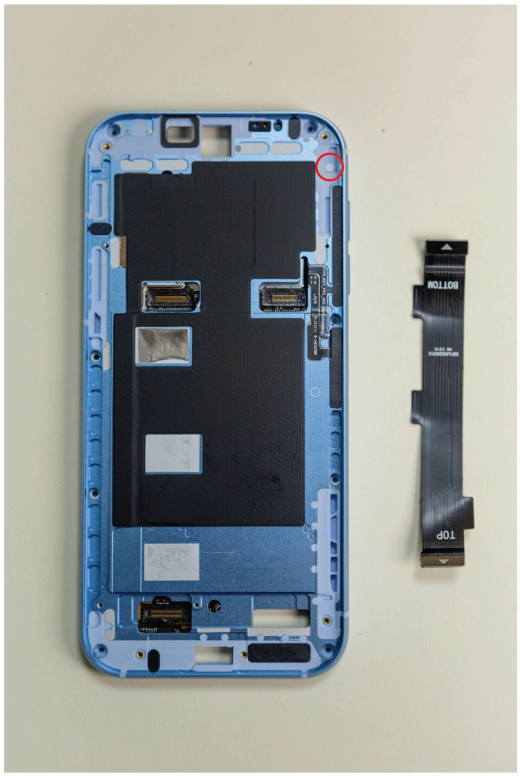
Attention: *The PCBA will include a copy of the IMEI sticker. Every time there is a PCBA or mid-frame swap, please make sure the IMEI on the PCBA matches the IMEI label on the mid-frame.*

i. Check for water ingress

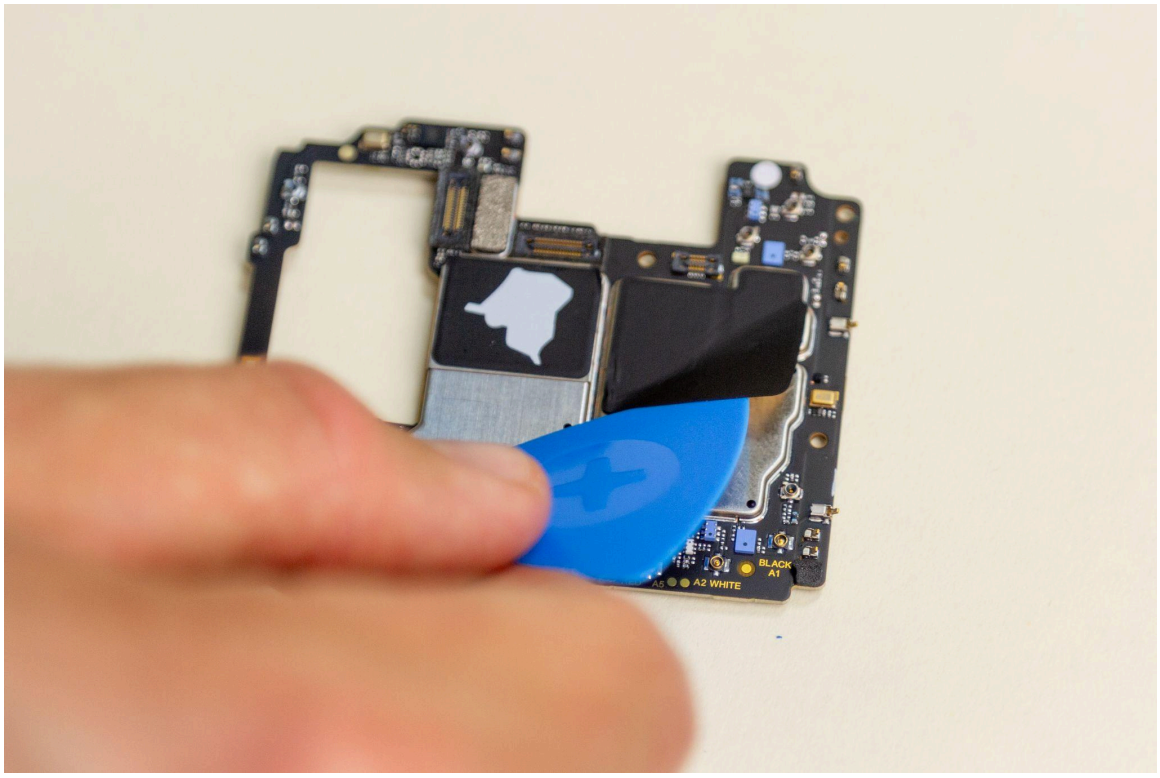
Step 1: Disassemble the device as described in steps (d) to (h)

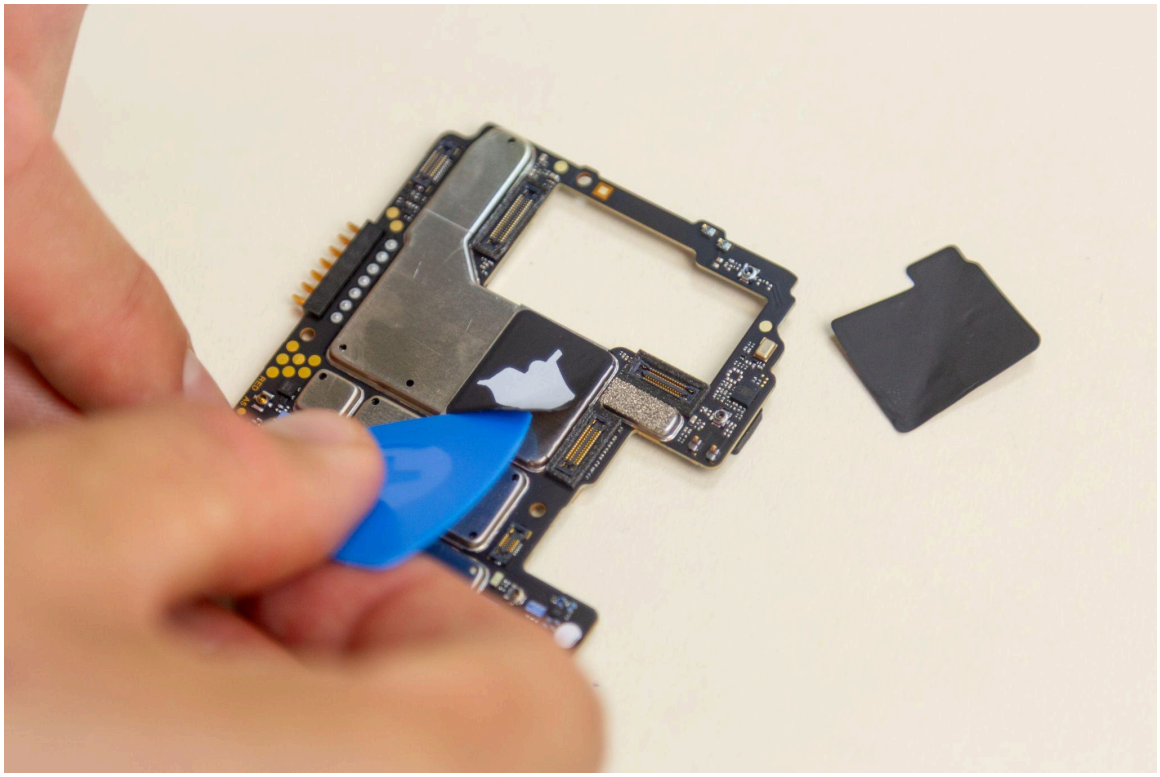
Step 2: Check the rear water marker



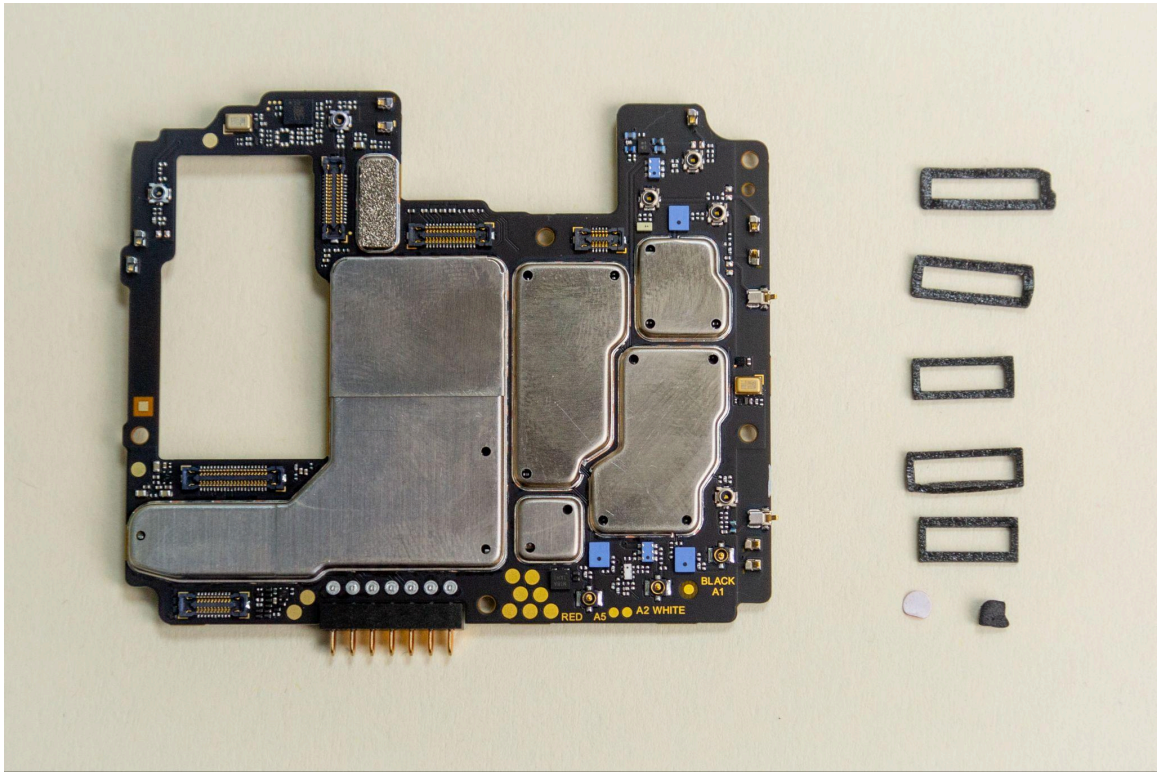


j. Remove the accessories from the main PCBA

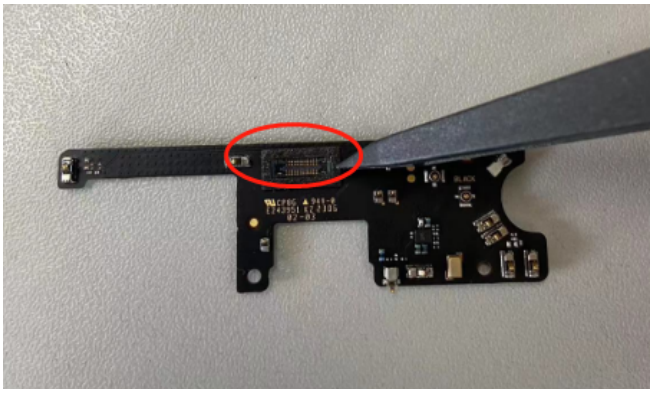


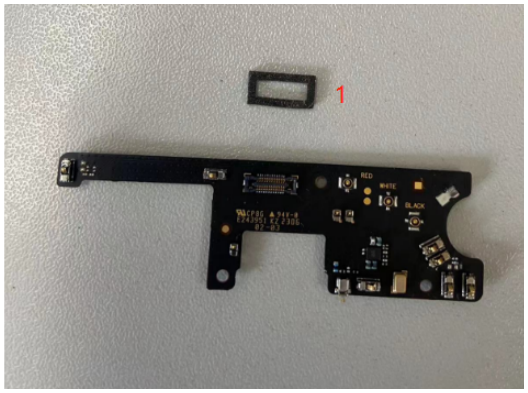


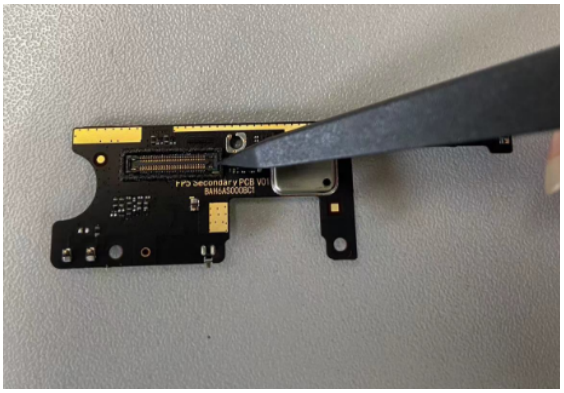
FAIRPHONE

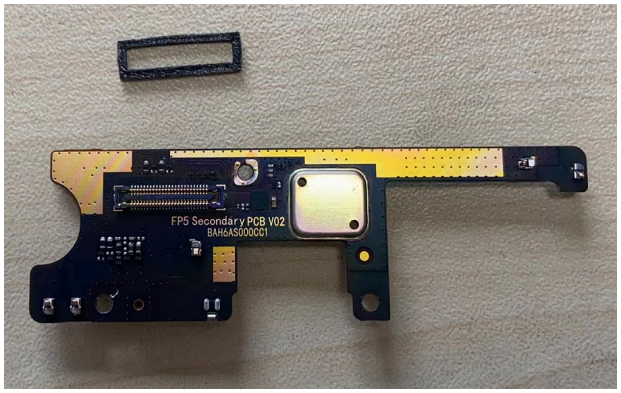


k. Remove accessories from the secondary PCBA









l. Complete disassembly

m. Additional resources

Fairphone Website (where you can find our spare parts)
Fairphone Support Page (where you can ask us questions)
Fairphone YouTube channel (with all video repair guides)

11. Material information for recyclers

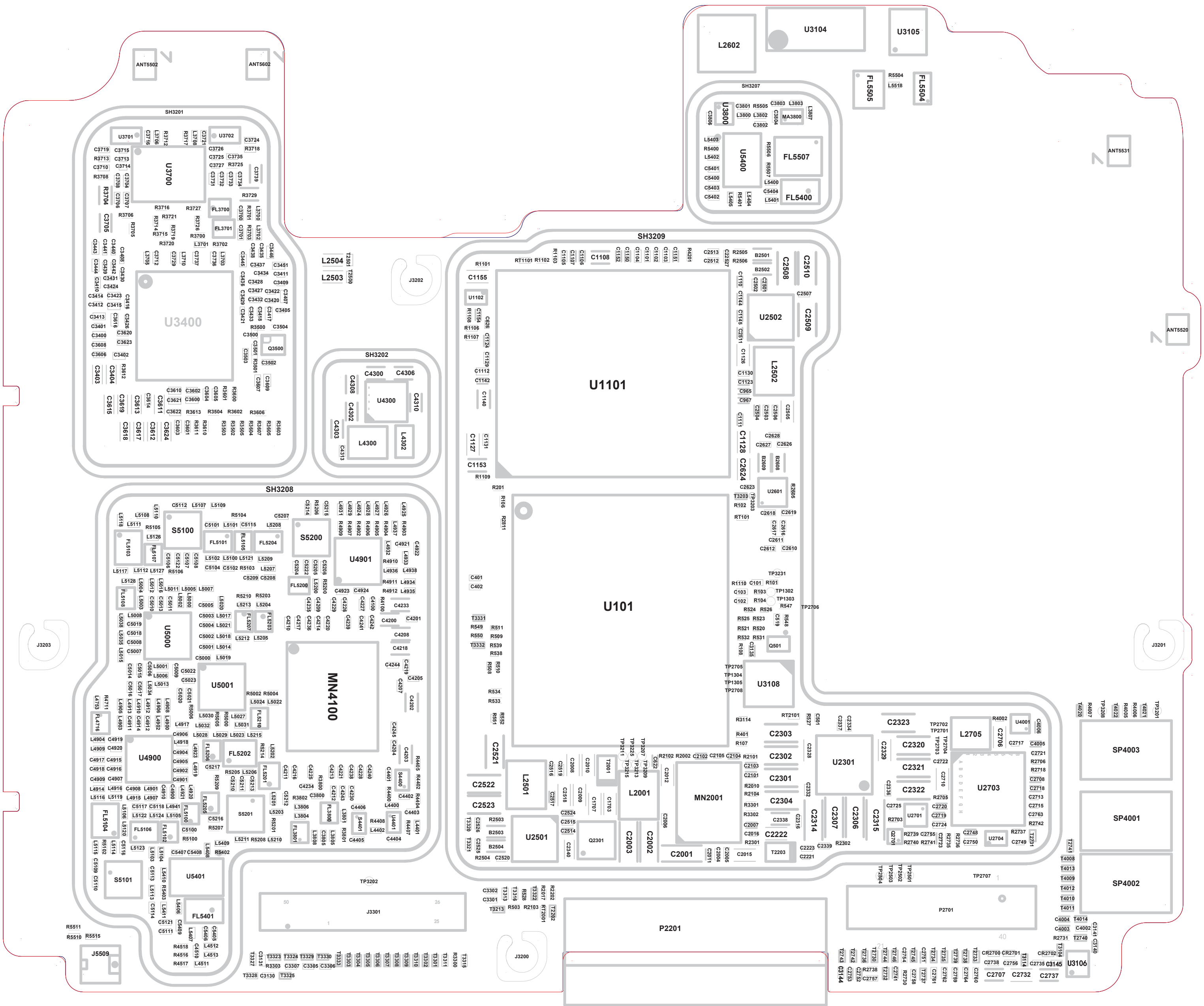
Below, you can find materials and information about the Fairphone 5. We have focused on the materials that we think are most important for recyclers and indicated where they are mostly situated. This weight information is to help recyclers estimate the value of recycling the phone. The exact weight of each material can vary due to the calculation method and the limitations of the analytical techniques.

Material	CAS no.	Total mass in FP5 (g)	Components You can find mainly in these components	% of total mass in FP5	Modules The components belong to these modules	Modules
Tungsten	7440-10-0	0.75	Vibration Mechanism	99%	PCBA	PCBA
Tin	7440-10-0	0.87	Solder paste in PCBA	51%	PCBA	PCBA
			Solder paste in Battery	25%	Battery	Battery
Aluminum	7429-90-5	38.69	Mid-frame	94.40%	Mid-frame	Mid-frame
Rare Earth Elements	see rare earth	0.15	Speaker, Vibration Mechanism, cameras	100%	Loudspeaker, cameras	Loudspeaker, cameras
Nickel	7440-02-0	3.05	Shields Copper alloy	41.50%	PCBA	PCBA
			Battery cell	16.80%	Battery	Battery
			Battery steel sheet	19.50%	Battery	Battery
Zinc	7440-10-0	1.03	Shields Copper alloy	94%	PCBA	PCBA
Copper	7440-50-8	16.85	Shields Copper alloy	25.60%	PCBA	PCBA
			PCB	28.40%	PCBA	PCBA
			Battery	6.10%	Battery	Battery
			Copper foil	9.00%	Display	Display
Magnesium	7439-95-4	4.96	Display frame	91.00%	Display	Display
Gold	7440-57-5	0.023	Cameras, PCB, connectors, etc.	100.00%	Almost all modules	Almost all modules
Plastics	PC+30%G	3.06	FP5-display-frame	100%	Display	Display

FAIRPHONE

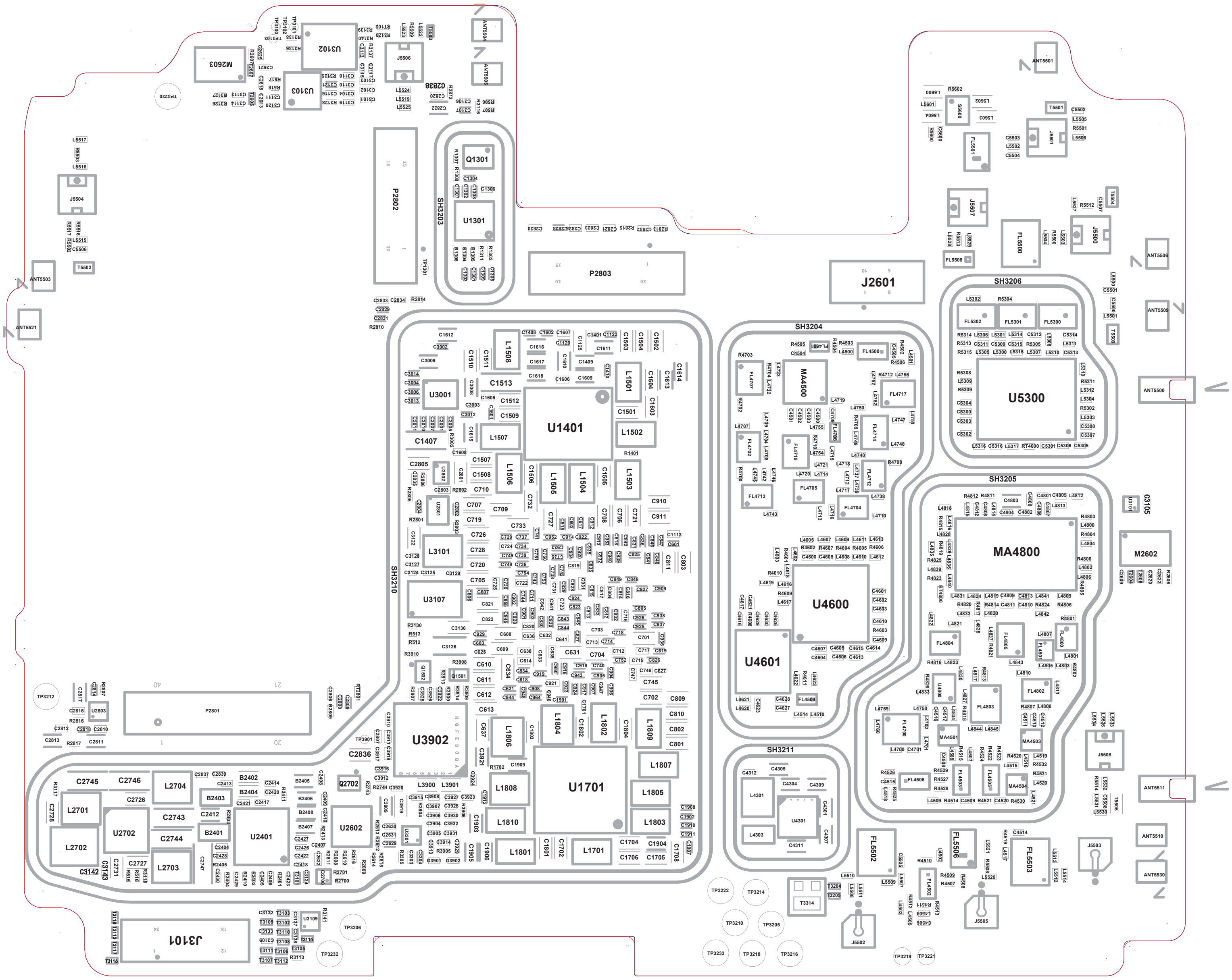
	F					
	PBT+30% GF	5.75	FP5-middle-frame		mid-frame	mid-frame
	PC	5.33	FP5-top-antenna -cover		Top Unit	Top Unit
	PC	0.56	FP5-camera-island		Main Camera, Ultra-Wide Camera	Main Camera, Ultra-Wide Camera
	PC	0.17	FP5-connector-cover		PCBA	PCBA
	PC	0.44	FP5-rf-cable-frame		RF cable	RF cable
	PC	1.9400000	FP5-SPK-cover		Loudspeaker	Loudspeaker
	PC	12.68	FP5-Back-cover		Back Cover	Back Cover
	PC/ABS	2.32	FP5- battery frame		Battery	Battery
Indium	7440-74-6	0.00	Display panel	76.80%	Display	Display
Cobalt	7440-48-4	12.32	battery	99.80%	Battery	Battery
Lithium	7439-93-2	1.47	battery	98.80%	Battery	Battery
Silver	7440-22-4	0.083	Solder paste	22%	PCBA	PCBA
			battery package	14%	Battery	Battery
			passives	19%	PCBA	PCBA
Mica	12001-26-2	0.01700	BTB connector	100%	PCBA	PCBA
Palladium	7440-05-03	0.00	ICs, passive	100%	PCBA	PCBA
Platinum	7440-06-04	0.00	ICs	100%	PCBA	PCBA

TOP



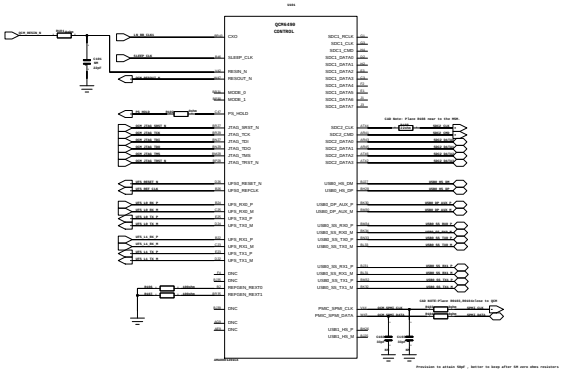
U1101
U101
MN4100
MN2001
U3400
U3700
U4300
U4900
U4901
U5000
U5001
U5401
S5100
S5200
S5101
S5201
U2301
U2501
U2502
U2703
U3108
U3104
U3105
U5400
U3800
L2602
FL5507
FL5400
FL5505
FL5504
SP4003
SP4001
SP4002
P2201
P2701
J3301
J5509
SH3201
SH3202
SH3207
SH3208
SH3209

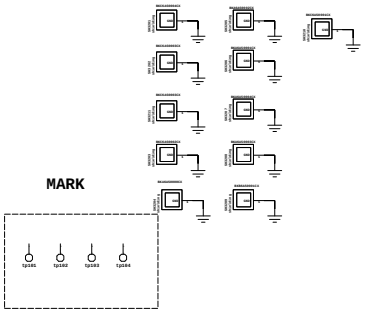
BOT



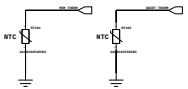
M2603
U3102
U3103
J5506
ANT5504
ANT5505
J5504
ANT5503
ANT5521
P2802
SH3203
Q1301
U1301
P2803
J2601
SH3206
U5300
ANT5501
J5507
FL5500
J5500
ANT5506
ANT5509
ANT5500
SH3210
SH3204
U1401
U3001
L3101
U3107
MA4500
U4600
U4601
SH3205
MA4800
M2602
P2801
U3902
U1701
SH3211
L2701
L2702
U2702
U2401
L2703
L2704
U2602
J3101
FL5502
FL5506
FL5503
J5508
ANT5511
ANT5510
ANT5530
J5503
J5502
J5505

QCM6490 CONTROL





Kodiak - Thermistors

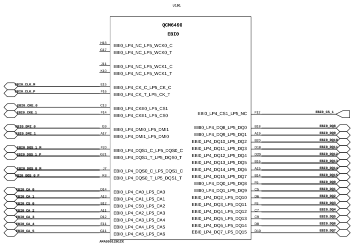


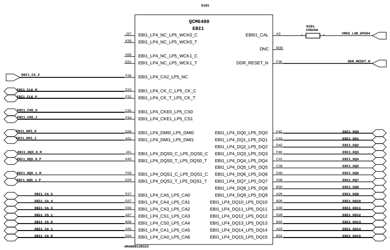
RT101:Place Near MSM

RT102:Place away from PMIC and heat-sources

20230216

QCM6490 EBI


U101
QCM6490
EBI0
H18 EBI0_LP4_NC_LP5_WCK0_C
G17 EBI0_LP4_NC_LP5_WCK0_T
J11 EBI0_LP4_NC_LP5_WCK1_C
K10 EBI0_LP4_NC_LP5_WCK1_T
EBI0_CLK_M E15 EBI0_LP4_CK_C_LP5_CK_C
EBI0_CLK_P F16 EBI0_LP4_CK_T_LP5_CK_T
EBI0_CKE_0 C13 EBI0_LP4_CKE0_LP5_CS1
EBI0_CKE_1 F14 EBI0_LP4_CKE1_LP5_CS0
EBI0_DMI_0 G9 EBI0_LP4_DMI0_LP5_DMI1
EBI0_DMI_1 A17 EBI0_LP4_DMI1_LP5_DMI0
EBI0_DQS_1_M F20 EBI0_LP4_DQS1_C_LP5_DQS0_C
EBI0_DQS_1_P G21 EBI0_LP4_DQS1_T_LP5_DQS0_T
EBI0_DQS_0_M J7 EBI0_LP4_DQS0_C_LP5_DQS1_C
EBI0_DQS_0_P K8 EBI0_LP4_DQS0_T_LP5_DQS1_T
EBI0_CA_0 D14 EBI0_LP4_CA0_LP5_CA0
EBI0_CA_1 A13 EBI0_LP4_CA1_LP5_CA1
EBI0_CS_0 B12 EBI0_LP4_CS0_LP5_CA2
EBI0_CA_2 A11 EBI0_LP4_CA2_LP5_CA3
EBI0_CA_3 D12 EBI0_LP4_CA3_LP5_CA4
EBI0_CA_4 E11 EBI0_LP4_CA4_LP5_CA5
EBI0_CA_5 G11 EBI0_LP4_CA5_LP5_CA6
EBI0_LP4_CS1_LP5_NC F12 EBI0_CS_1
EBI0_LP4_DQ8_LP5_DQ0 B18 EBI0_DQ8
EBI0_LP4_DQ9_LP5_DQ1 A19 EBI0_DQ9
EBI0_LP4_DQ10_LP5_DQ2 B20 EBI0_DQ10
EBI0_LP4_DQ11_LP5_DQ3 D18 EBI0_DQ11
EBI0_LP4_DQ12_LP5_DQ4 D20 EBI0_DQ12
EBI0_LP4_DQ13_LP5_DQ5 B16 EBI0_DQ13
EBI0_LP4_DQ14_LP5_DQ6 A15 EBI0_DQ14
EBI0_LP4_DQ15_LP5_DQ7 B14 EBI0_DQ15
EBI0_LP4_DQ0_LP5_DQ8 F6 EBI0_DQ0
EBI0_LP4_DQ1_LP5_DQ9 C5 EBI0_DQ1
EBI0_LP4_DQ2_LP5_DQ10 D6 EBI0_DQ2
EBI0_LP4_DQ3_LP5_DQ11 F8 EBI0_DQ3
EBI0_LP4_DQ4_LP5_DQ12 C7 EBI0_DQ4
EBI0_LP4_DQ5_LP5_DQ13 C9 EBI0_DQ5
EBI0_LP4_DQ6_LP5_DQ14 D8 EBI0_DQ6
EBI0_LP4_DQ7_LP5_DQ15 D10 EBI0_DQ7
AMA0001201CX


U101
QCM6490
EBI1
J37 EBI1_LP4_NC_LP5_WCK0_C
K38 EBI1_LP4_NC_LP5_WCK0_T
H30 EBI1_LP4_NC_LP5_WCK1_C
G31 EBI1_LP4_NC_LP5_WCK1_T
EBI1_CA_2 F36 EBI1_LP4_CA2_LP5_NC
EBI1_CLK_M E33 EBI1_LP4_CK_C_LP5_CK_C
EBI1_CLK_P F32 EBI1_LP4_CK_T_LP5_CK_T
EBI1_CKE_0 C35 EBI1_LP4_CKE0_LP5_CS0
EBI1_CKE_1 F34 EBI1_LP4_CKE1_LP5_CS1
EBI1_DMI_0 G39 EBI1_LP4_DMI0_LP5_DMI0
EBI1_DMI_1 A31 EBI1_LP4_DMI1_LP5_DMI1
EBI1_DQS_0_M J41 EBI1_LP4_DQS0_C_LP5_DQS0_C
EBI1_DQS_0_P K40 EBI1_LP4_DQS0_T_LP5_DQS0_T
EBI1_DQS_1_M F28 EBI1_LP4_DQS1_C_LP5_DQS1_C
EBI1_DQS_1_P G29 EBI1_LP4_DQS1_T_LP5_DQS1_T
EBI1_CA_5 E37 EBI1_LP4_CA5_LP5_CA0
EBI1_CA_4 G37 EBI1_LP4_CA4_LP5_CA1
EBI1_CA_3 D36 EBI1_LP4_CA3_LP5_CA2
EBI1_CS_1 A37 EBI1_LP4_CS1_LP5_CA3
EBI1_CS_0 B36 EBI1_LP4_CS0_LP5_CA4
EBI1_CA_1 A35 EBI1_LP4_CA1_LP5_CA5
EBI1_CA_0 D34 EBI1_LP4_CA0_LP5_CA6
EBI01_CAL A3 R201 240ohm VREG_L3B_0P504
DNC M30
DDR_RESET_N F26 DDR_RESET_N
EBI1_LP4_DQ0_LP5_DQ0 F42 EBI1_DQ0
EBI1_LP4_DQ1_LP5_DQ1 C43 EBI1_DQ1
EBI1_LP4_DQ2_LP5_DQ2 D42 EBI1_DQ2
EBI1_LP4_DQ3_LP5_DQ3 F40 EBI1_DQ3
EBI1_LP4_DQ4_LP5_DQ4 C41 EBI1_DQ4
EBI1_LP4_DQ5_LP5_DQ5 C39 EBI1_DQ5
EBI1_LP4_DQ6_LP5_DQ6 D40 EBI1_DQ6
EBI1_LP4_DQ7_LP5_DQ7 D38 EBI1_DQ7
EBI1_LP4_DQ8_LP5_DQ8 B30 EBI1_DQ8
EBI1_LP4_DQ9_LP5_DQ9 A29 EBI1_DQ9
EBI1_LP4_DQ10_LP5_DQ10 B28 EBI1_DQ10
EBI1_LP4_DQ11_LP5_DQ11 D30 EBI1_DQ11
EBI1_LP4_DQ12_LP5_DQ12 D28 EBI1_DQ12
EBI1_LP4_DQ13_LP5_DQ13 B32 EBI1_DQ13
EBI1_LP4_DQ14_LP5_DQ14 A33 EBI1_DQ14
EBI1_LP4_DQ15_LP5_DQ15 B34 EBI1_DQ15
AMA0001201CX

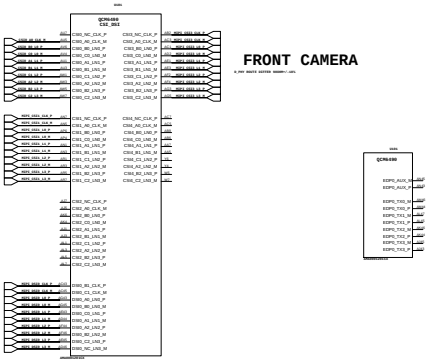
SM7325 DSI/CSI

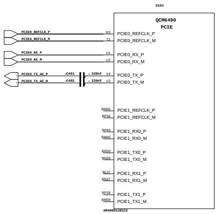
50M OIS CAMERA-C-PHY

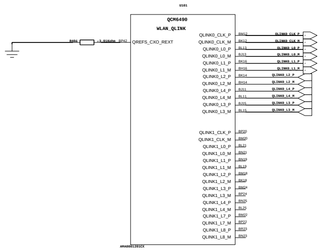
50M UW CAMERA

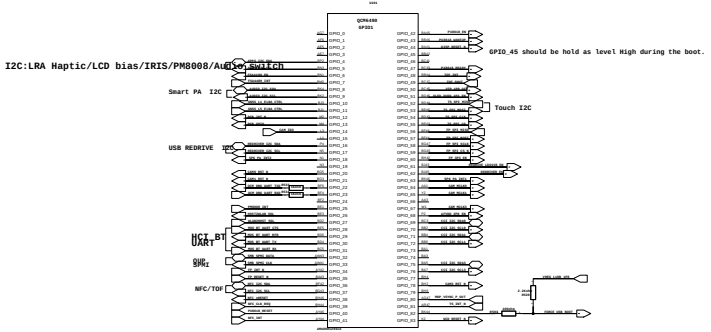
LCD

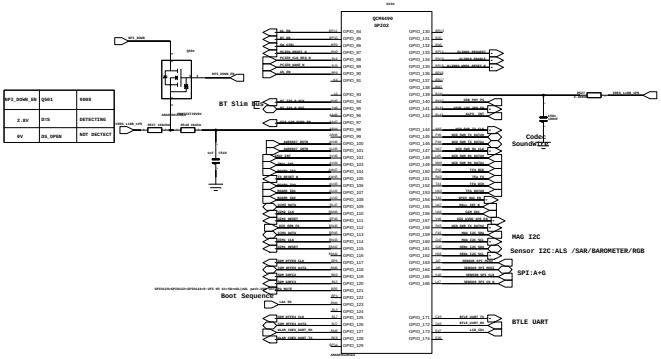
FRONT CAMERA




U101
QCM6490
PCIE
PCIE0_REFCLK_P
PCIE0_REFCLK_M
PCIE0_RX_P
PCIE0_RX_M
PCIE0_TX_AC_P
PCIE0_TX_AC_M
C401
C402
220nF
220nF
R3 PCIE0_REFCLK_P
T2 PCIE0_REFCLK_M
U1 PCIE0_RX_P
U3 PCIE0_RX_M
V4 PCIE0_TX_P
V2 PCIE0_TX_M
BM36 PCIE1_REFCLK_P
BP36 PCIE1_REFCLK_M
BP40 PCIE1_RX0_P
BM40 PCIE1_RX0_M
BR39 PCIE1_TX0_P
BN39 PCIE1_TX0_M
BL37 PCIE1_RX1_P
BN37 PCIE1_RX1_M
BP38 PCIE1_TX1_P
BM38 PCIE1_TX1_M
AMA0001201CX


U101
QCM6490
WLAN_QLINK
R401
3.01Kohm
BP42 QREFS_CXO_REXT
QLINK0_CLK_P BM12 QLINK0_CLK_P
QLINK0_CLK_M BK12 QLINK0_CLK_M
QLINK0_L0_P BL13 QLINK0_L0_P
QLINK0_L0_M BJ13 QLINK0_L0_M
QLINK0_L1_P BK16 QLINK0_L1_P
QLINK0_L1_M BH16 QLINK0_L1_M
QLINK0_L2_P BK14 QLINK0_L2_P
QLINK0_L2_M BH14 QLINK0_L2_M
QLINK0_L4_P BJ11 QLINK0_L4_P
QLINK0_L4_M BL11 QLINK0_L4_M
QLINK0_L3_P BJ15 QLINK0_L3_P
QLINK0_L3_M BL15 QLINK0_L3_M
QLINK1_CLK_P BP20
QLINK1_CLK_M BM20
QLINK1_L0_P BL21
QLINK1_L0_M BN21
QLINK1_L1_P BN19
QLINK1_L1_M BL19
QLINK1_L2_P BM18
QLINK1_L2_M BK18
QLINK1_L3_P BM24
QLINK1_L3_M BP24
QLINK1_L4_P BN25
QLINK1_L4_M BL25
QLINK1_L7_P BM22
QLINK1_L7_M BP22
QLINK1_L8_P BR23
QLINK1_L8_M BN23
AMA0001201CX

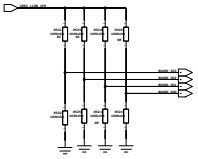




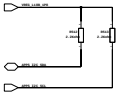
SPI_DOWN_EN	QSM1	9999
2.85V	DTS	DETECTING
0V	DS_OPEN	NOT DECTECT

I2C PULL- UP RESISTORS

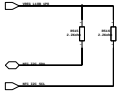
Board ID0	Board ID2	Board ID1	Board ID0	Options
0	0	0	0	V00
0	0	0	1	V01
0	0	1	0	V02
0	1	0	0	V03
0	0	1	1	
0	1	0	1	
0	1	1	0	
0	1	1	1	
0	0	0	0	



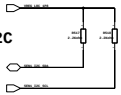
APPS



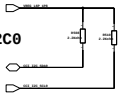
NFC I2C



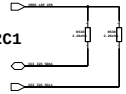
SENSOR1 I2C



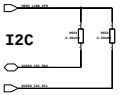
CCI I2C0



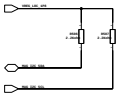
CCI I2C1



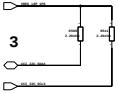
AUDIOI I2C



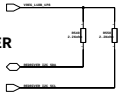
MAG I2C1

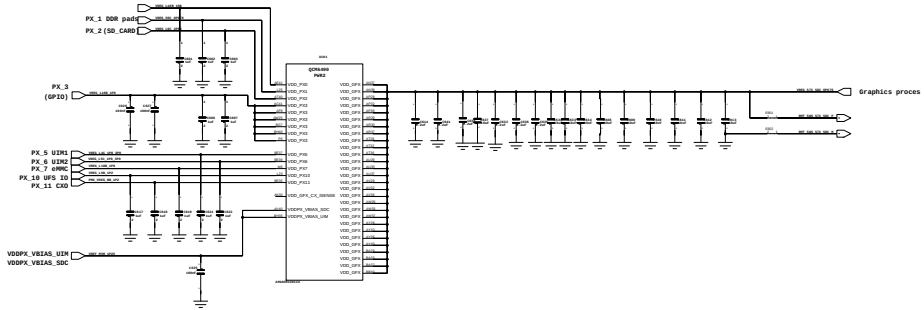


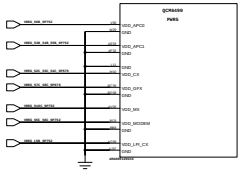
CCI I2C 3

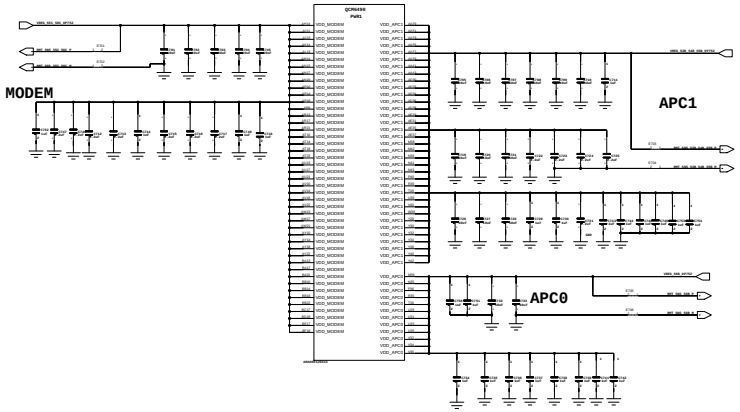


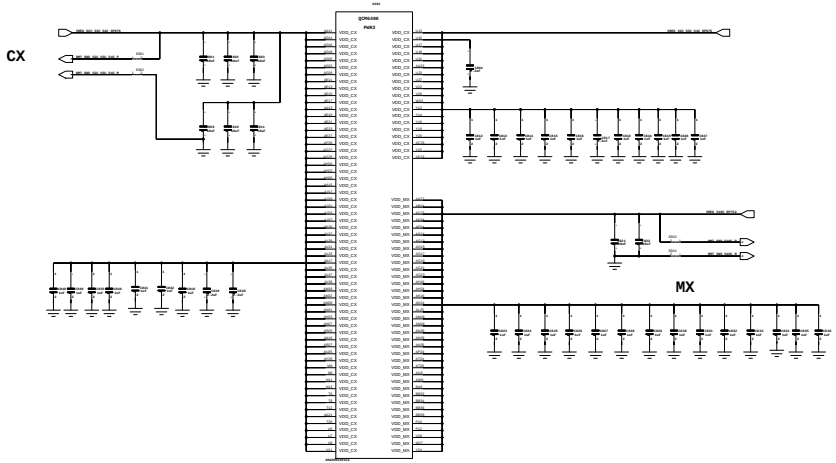
REDRIVER

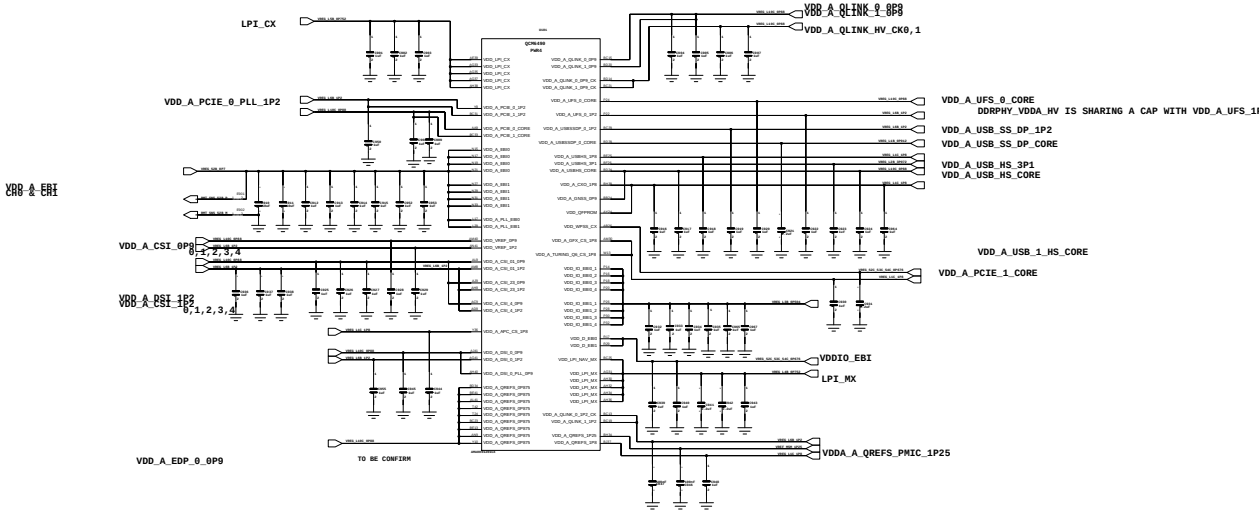


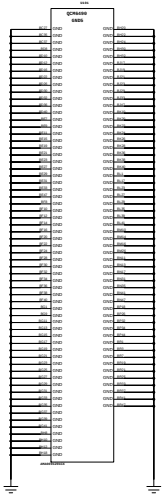

PX_1 DDR pad
PX_2(SD_CARD
PX_3
(GPIO)
PX_5 UIM1
PX_6 UIM2
PX_7 eMMC
PX_10 UFS IO
PX_11 CXO
VDDPX_VBIAS_UIM
VDDPX_VBIAS_SDC
QCR6490
PWR2
Graphics proces

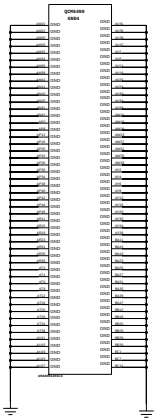

QCR6490
PWR5

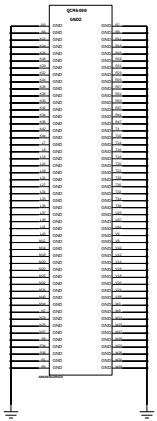

MODEM
APC1
APC0

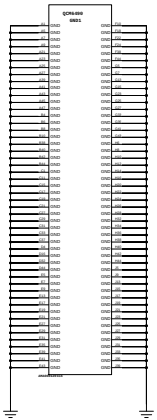

CX
MX
QCM6490
Part 3

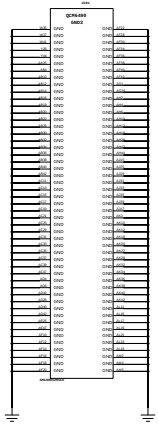

LPI_CX
VDD_A_PCIE_0_PLL_1P2
VDD_A_EBI
CH0 & CH1
VDD_A_CSI_0P9
0,1,2,3,4
VDD_A_DSI_1P2
VDD_A_CSI_1P2
0,1,2,3,4
VDD_A_EDP_0_0P9
TO BE CONFIRM
VDD_A_QLINK_0_0P9
VDD_A_QLINK_1_0P9
VDD_A_QLINK_HV_CK0,1
VDD_A_UFS_0_CORE
DDRPHY_VDDA_HV IS SHARING A CAP WITH VDD_A_UFS_1P2
VDD_A_USB_SS_DP_1P2
VDD_A_USB_SS_DP_CORE
VDD_A_USB_HS_3P1
VDD_A_USB_HS_CORE
VDD_A_USB_1_HS_CORE
VDD_A_PCIE_1_CORE
VDDIO_EBI
LPI_MX
VDDA_A_QREFS_PMIC_1P25

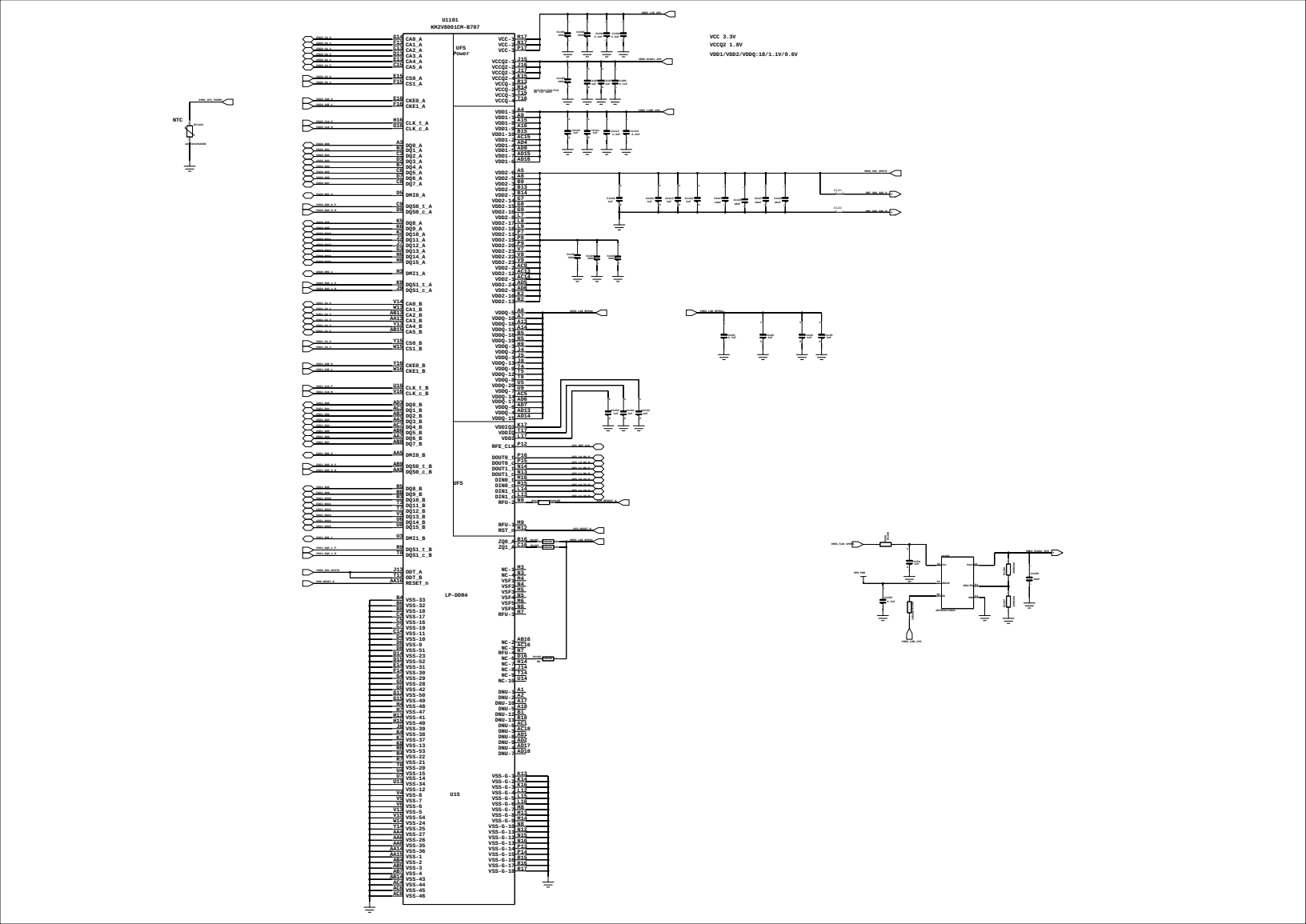

QCN6490
GND5

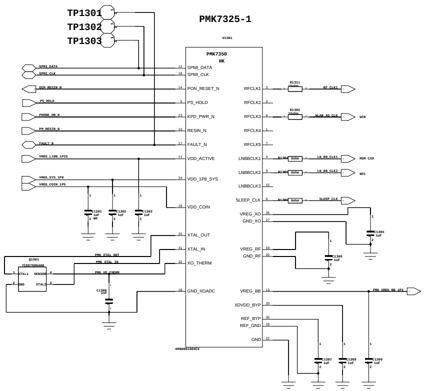

QCN6490
GND4

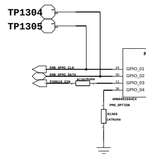

QCN6490
GND2


QCN6490
GND1


QCN6490
GND3

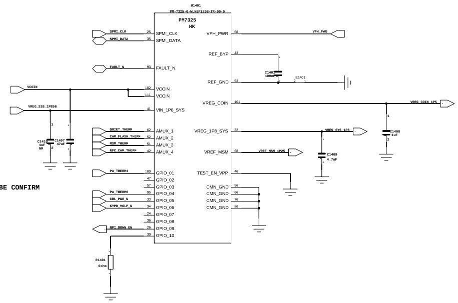

U1101
KM2V8001CM-B707
UFS Power
VCC 3.3V
VCCQ2 1.8V
VDD1/VDD2/VDDQ:1B/1.1V/0.6V
UFS
LP-DDR4
U15
NTC


TP1301
TP1302
TP1303
PMK7325-1
U1301
PMK7350
HK
SPMI_DATA
SPMI_CLK
QCM_RESIN_N
PS_HOLD
PHONE_ON_N
PM_RESIN_N
FAULT_N
VREG_L10B_1P25
VREG_SYS_1P8
VREG_COIN_1P5
SPMI_DATA
SPMI_CLK
PON_RESET_N
PS_HOLD
KPD_PWR_N
RESIN_N
FAULT_N
VDD_ACTIVE
VDD_1P8_SYS
VDD_COIN
XTAL_OUT
XTAL_IN
XO_THERM
GND_XOADC
RFCLK1
RFCLK2
RFCLK3
RFCLK4
RFCLK5
LNBBCLK1
LNBBCLK2
LNBBCLK3
SLEEP_CLK
VREG_XO
GND_XO
VREG_RF
GND_RF
VREG_BB
XDVDD_BYP
REF_BYP
REF_GND
GND
AMN0001804CX
C1301 1uF NM
C1302 1uF
C1303 1uF
Q1301
7C007680A00
XTAL1
SENSOR
GND
XTAL2
PMK_XTAL_OUT
PMK_XTAL_IN
PMK_XO_THERM
C1306 1nF
R1311 15ohm
RF_CLK1
R1302 15ohm
WLAN_XO_CLK
WCN
0ohm
LN_BB_CLK1
MSM CXO
LN_BB_CLK2
NFC
SLEEP_CLK
C1304 1uF
C1305 1uF
PMK_VREG_BB_1P2
C1307 1uF
C1308 1uF
C1309 1uF

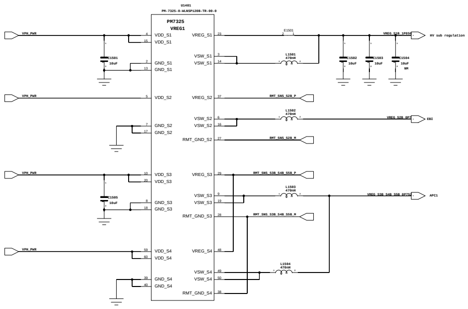


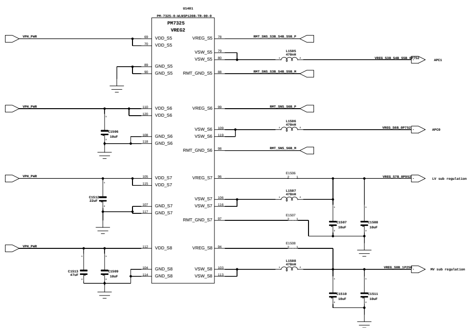
LPDDR4 Resistor tolerance must be 1%.

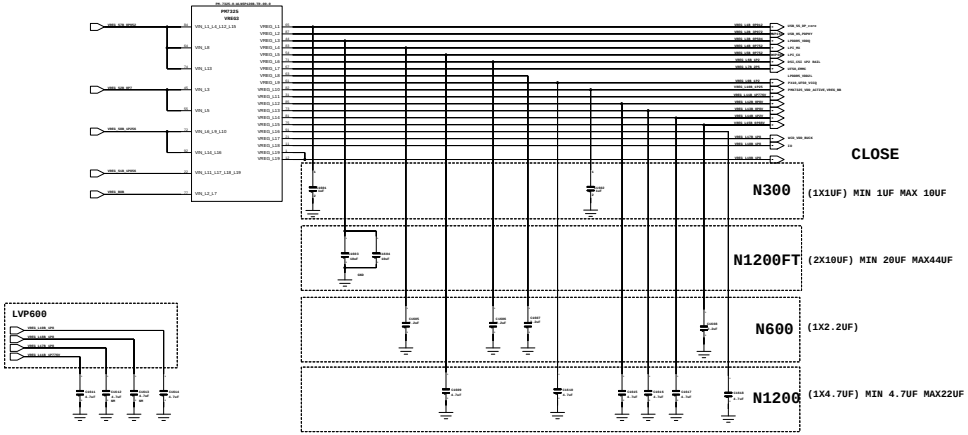
11300	SD CARD LDO ENABLED
147000	SKIP SD CARD LDO ENABLED



TO BE CONFIRM


U1401
PM-7325-0-WLNSP120B-TR-00-0
PM7325
VREG1
VPH_PWR
VDD_S1
GND_S1
C1501
10uF
VREG_S1
VSW_S1
E1501
L1501
470nH
C1502
10uF
C1503
10uF
C1504
10uF
NM
VREG_S1B_1P856
HV sub regulation
VDD_S2
GND_S2
VREG_S2
RMT_SNS_S2B_P
VSW_S2
L1502
470nH
VREG_S2B_0P7
EBI
RMT_GND_S2
RMT_SNS_S2B_M
VDD_S3
GND_S3
C1505
10uF
VREG_S3
RMT_SNS_S3B_S4B_S5B_P
VSW_S3
L1503
470nH
VREG_S3B_S4B_S5B_0P752
APC1
RMT_GND_S3
RMT_SNS_S3B_S4B_S5B_M
VDD_S4
GND_S4
VREG_S4
VSW_S4
L1504
470nH
RMT_GND_S4


U1401
PM-7325-0-WLNSP120B-TR-00-0
PM7325
VREG2
VPH_PWR
VDD_S5
GND_S5
VREG_S5
RMT_SNS_S3B_S4B_S5B_P
VSW_S5
L1505
470nH
VREG_S3B_S4B_S5B_0P752
APC1
RMT_GND_S5
RMT_SNS_S3B_S4B_S5B_M
VDD_S6
GND_S6
C1506
10uF
VREG_S6
RMT_SNS_S6B_P
VSW_S6
L1506
470nH
VREG_S6B_0P752
APC0
RMT_GND_S6
RMT_SNS_S6B_M
VDD_S7
GND_S7
C1512
22uF
VREG_S7
E1506
VSW_S7
L1507
470nH
RMT_GND_S7
E1507
C1507
10uF
C1508
10uF
VREG_S7B_0P952
LV sub regulation
VDD_S8
GND_S8
C1513
47uF
C1509
10uF
VREG_S8
E1508
VSW_S8
L1508
470nH
VREG_S8B_1P256
MV sub regulation
C1510
10uF
C1511
10uF

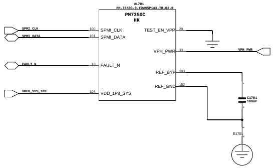


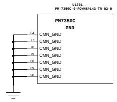
DON' T HAVE TO

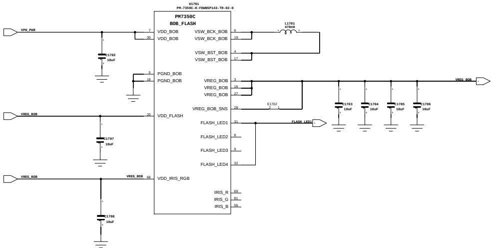
MVP150 MIN 0.47UF,MAX 5UF

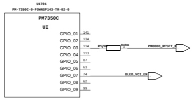
MVP600 MIN 4.7UF,MAX 23.5UF

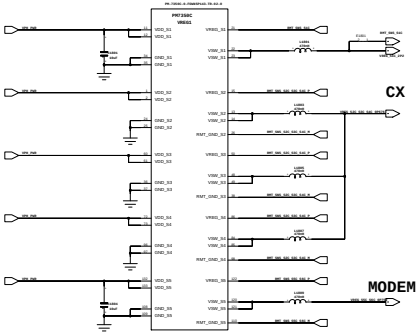
LVP600 MIN 0.47UF,MAX

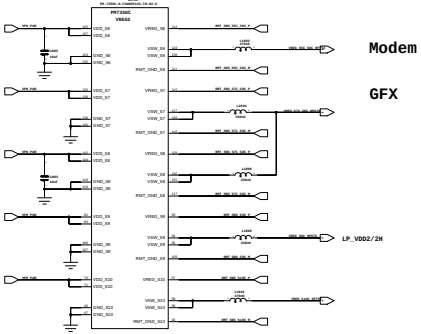

U1701
PM-7350C-0-FOWNSP143-TR-02-0
PM7350C
HK
SPMI_CLK
SPMI_DATA
FAULT_N
VREG_SYS_1P8
100 SPMI_CLK
101 SPMI_DATA
10 FAULT_N
104 VDD_1P8_SYS
TEST_EN_VPP 29
VPH_PWR 33
REF_BYP 103
REF_GND 102
VPH_PWR
C1701
100nF
E1701


U1701
PM-7350C-0-FOWNSP143-TR-02-0
PM7350C
GND
64 CMN_GND
77 CMN_GND
78 CMN_GND
79 CMN_GND
88 CMN_GND
89 CMN_GND
90 CMN_GND

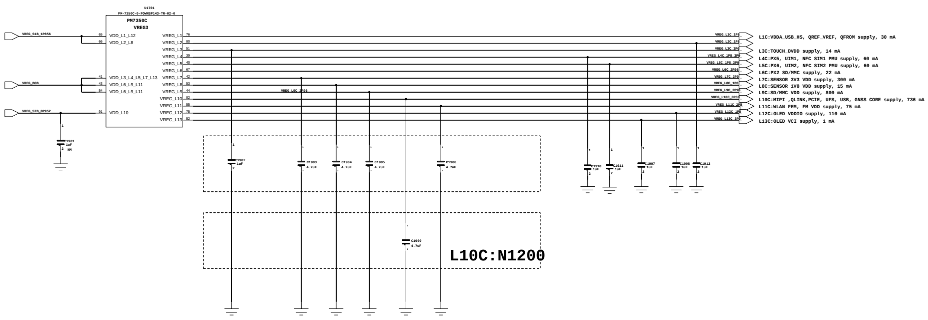

U1701
PM-7350C-0-FOWNSP143-TR-02-0
PM7350C
BOB_FLASH
VPH_PWR
C1702
10uF
7 VDD_BOB
30 VDD_BOB
5 PGND_BOB
18 PGND_BOB
VREG_BOB
20 VDD_FLASH
C1707
10uF
VREG_BOB
VREG_BOB
68 VDD_IRIS_RGB
C1708
10uF
VSW_BCK_BOB 6
VSW_BCK_BOB 19
VSW_BST_BOB 4
VSW_BST_BOB 17
VREG_BOB 3
VREG_BOB 16
VREG_BOB 27
VREG_BOB_SNS 28
FLASH_LED1 31
FLASH_LED2 8
FLASH_LED3 9
FLASH_LED4 32
IRIS_R 69
IRIS_G 81
IRIS_B 56
L1701
470nH
E1702
FLASH_LED1
C1703
10uF
C1704
10uF
C1705
10uF
C1706
10uF
VREG_BOB


U1701
PM-7350C-0-FOWNSP143-TR-02-0
PM7350C
UI
GPIO_01 141
GPIO_02 134
GPIO_03 114
GPIO_04 113
GPIO_05 87
GPIO_06 63
GPIO_07 74
GPIO_08 62
GPIO_09 99
0ohm
PM8008_RESET_N
OLED_VCI_EN

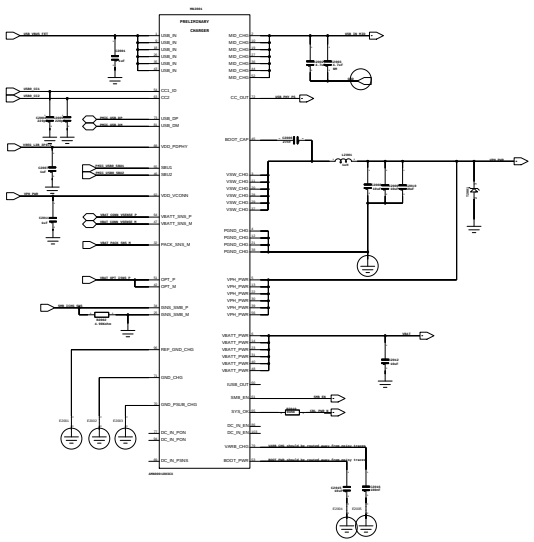

PM7350C
VREG1
CX
MODEM


PM7350C
VREG2
Modem
GFX
LP_VDD2/2H

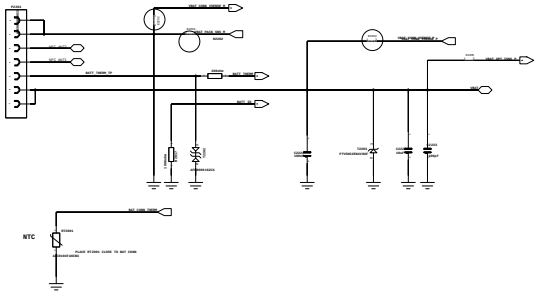
LDOs


U1701
PM-7350C-0-FOWNSP143-TR-02-0
PM7350C
VREG3
VREG_S1B_1P856
VREG_BOB
VREG_S7B_0P952
VDD_L1_L12
VDD_L2_L8
VDD_L3_L4_L5_L7_L13
VDD_L6_L9_L11
VDD_L6_L9_L11
VDD_L10
VREG_L1
VREG_L2
VREG_L3
VREG_L4
VREG_L5
VREG_L6
VREG_L7
VREG_L8
VREG_L9
VREG_L10
VREG_L11
VREG_L12
VREG_L13
C1901
1uF
NM
L1C:VDDA_USB_HS, QREF_VREF, QFROM supply, 30 mA
L3C:TOUCH_DVDD supply, 14 mA
L4C:PX5, UIM1, NFC SIM1 PMU supply, 60 mA
L5C:PX6, UIM2, NFC SIM2 PMU supply, 60 mA
L6C:PX2 SD/MMC supply, 22 mA
L7C:SENSOR 3V3 VDD supply, 300 mA
L8C:SENSOR 1V8 VDD supply, 15 mA
L9C:SD/MMC VDD supply, 800 mA
L10C:MIPI ,QLINK,PCIE, UFS, USB, GNSS CORE supply, 736 mA
L11C:WLAN FEM, FM VDD supply, 75 mA
L12C:OLED VDDIO supply, 110 mA
L13C:OLED VCI supply, 1 mA
L10C:N1200

PM7250B_CHARGE/FG

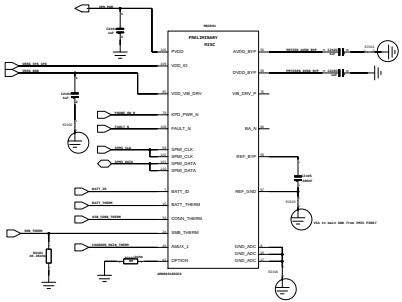


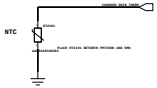
BATTERY CONNECTOR



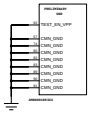
PON Configuration	OPTION Resistor Range
Micro USB,SPMI,FMB_DISABLE	R=(GND,1K,1.2K,2.2K,2.4K)
Micro USB,SPMI,FMB_ENABLE	R=(3.3K,3.6K,5.1K,5.6K)
Micro USB,I2C,FMB_DISABLE	R=(8.2K,10K,15K,16K)
Micro USB,I2C,FMB_ENABLE	R=(22K,27K,36K,39K)
Type-C,I2C,FMB_DISABLE	R=(56K,68K,91K,100K)
Type-C,I2C,FMB_ENABLE	R=(130K,150K,220K,240K)
Type-C,SPMI,FMB_ENABLE	R=(300K,330K,470K,560K)
Type-C,SPMI,FMB_DISABLE	R=(820K,910K,1.2M,Open)

PM7250B_HK

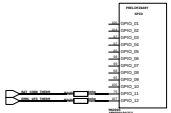




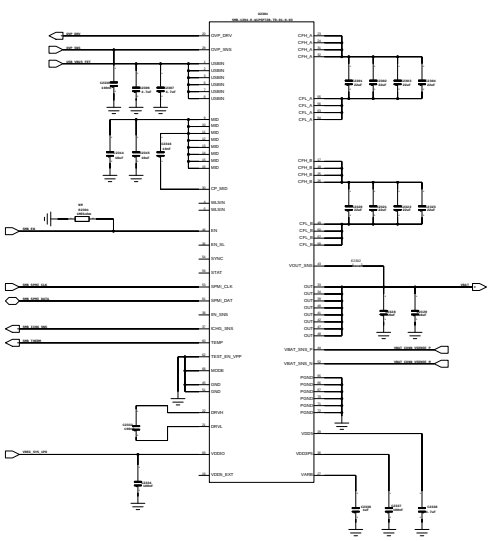
PM7250B_GND

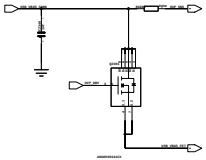


PM7250B_GPIO

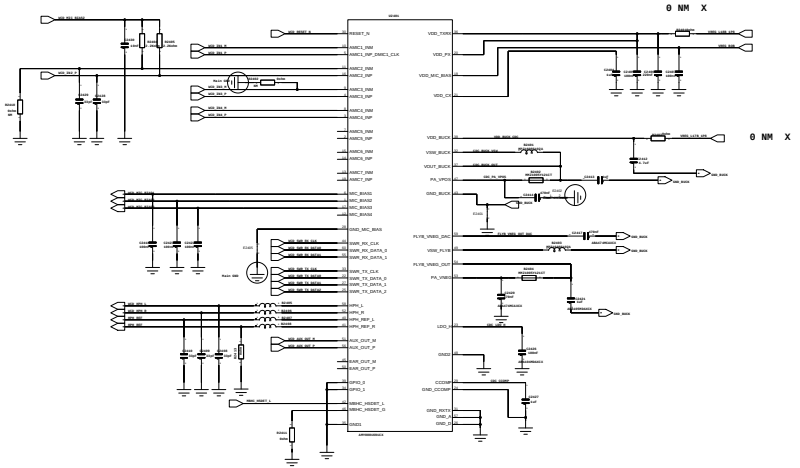


MASTER SMB1394

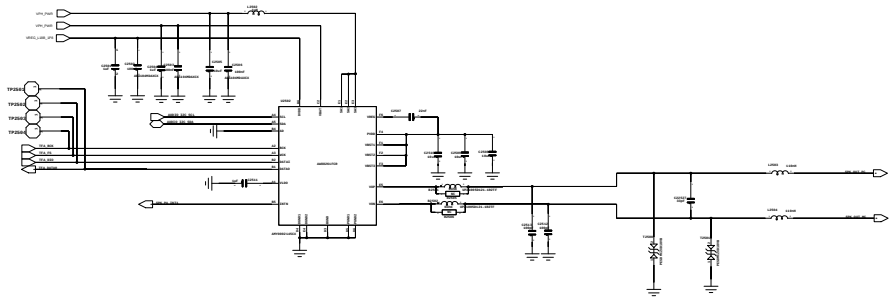




WCD9385

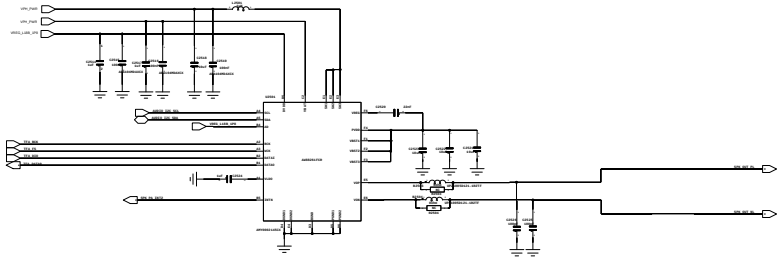


TOP RCV &SPEAKER SMART PA

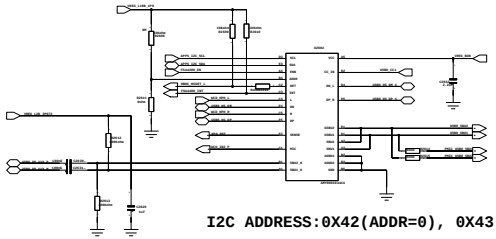


AD	Address(7-bit)
0	0x34
1	0x35

BOT SPEAKER SMART PA

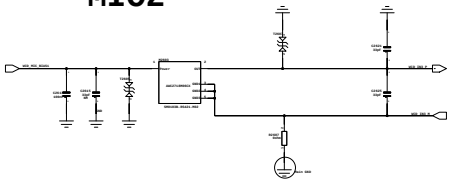


TYPEC AUDIO SWITCH

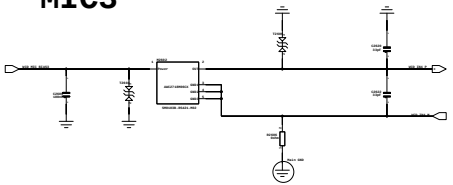


I2C ADDRESS:0X42(ADDR=0), 0X43(ADDR=1)

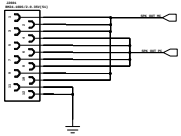
MIC2



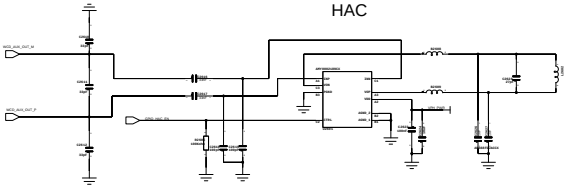
MIC3



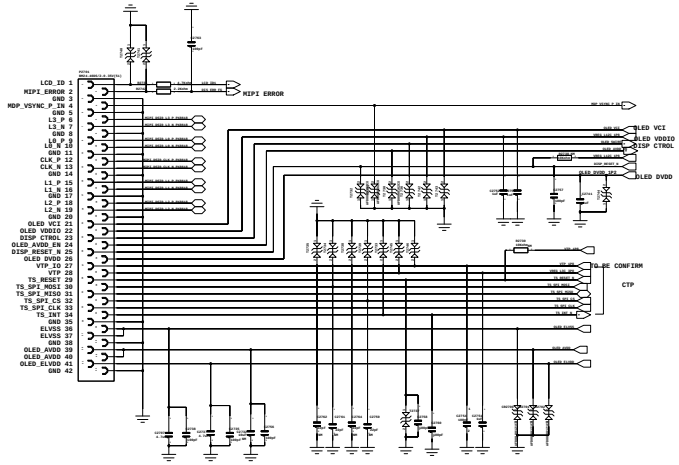
top speaker connector



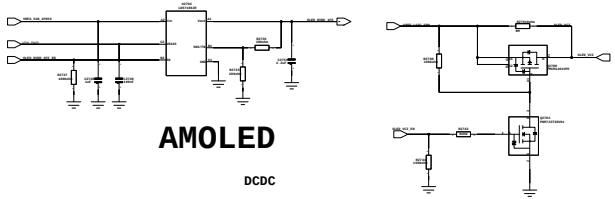
HAC



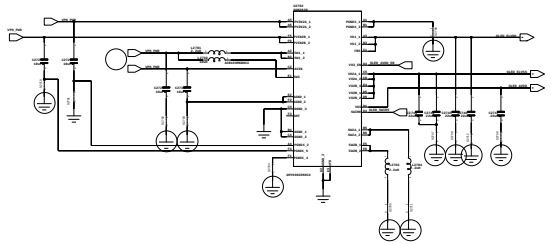
LCD CONN



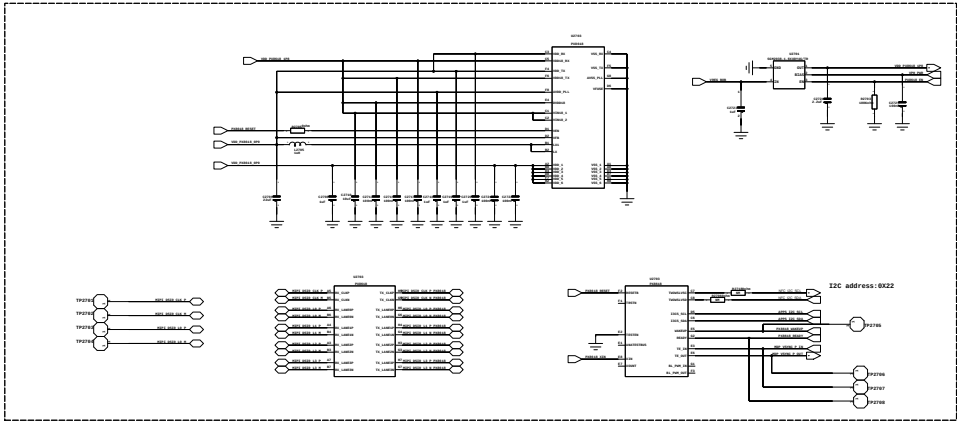
AMOLED



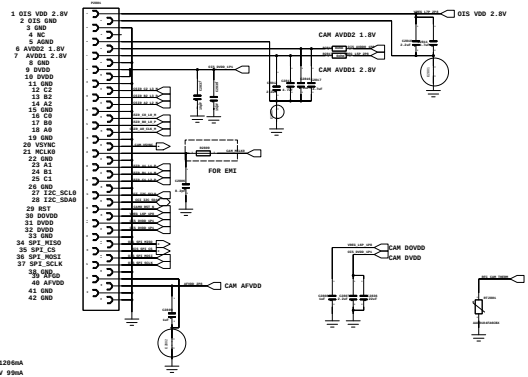
DCDC



IRIS6

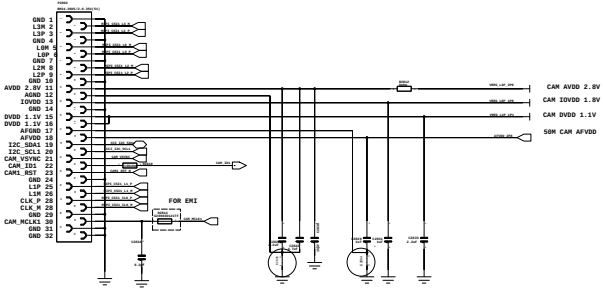


50M OIS CAMERA

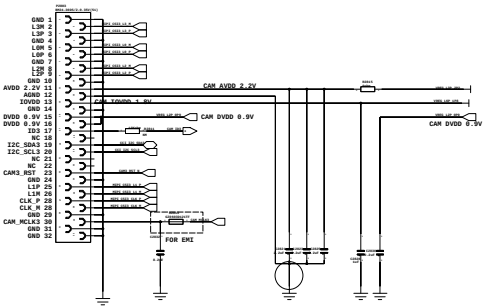


DVDD 1.0-1.2V 1200mA
AVDD28 2.7-2.9V 99mA
AVDD18 1.7-1.9V 74mA
DOVDD 1.7-1.9V 3.5mA

50M UW CAMERA

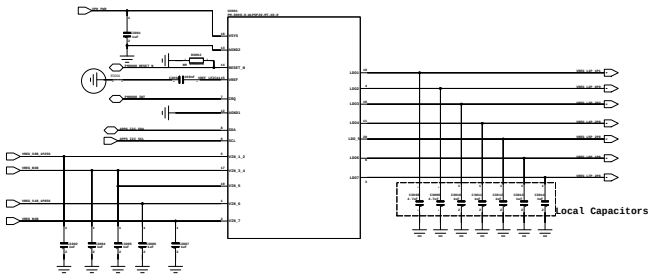


50M front camera

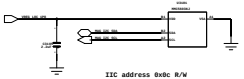


CAM_PM8008

Address:0X09

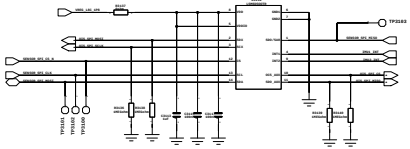


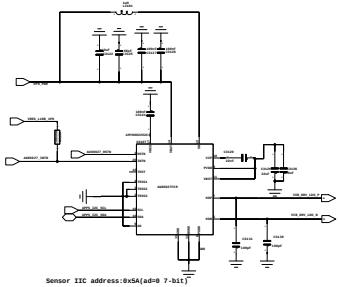
COMPASS



IIC address 0x0c R/W

A+GYRO

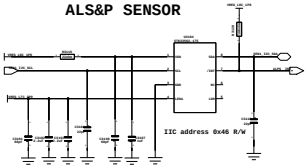




Sensor IIC address:0x5A(ad=0 7-bit)

VIBRATOR

ALS&P SENSOR

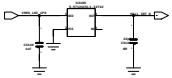


IIC address 0x46 R/W

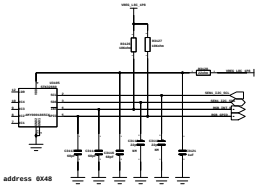
Barometer

IIC address 0x76

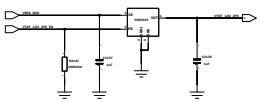
HALL



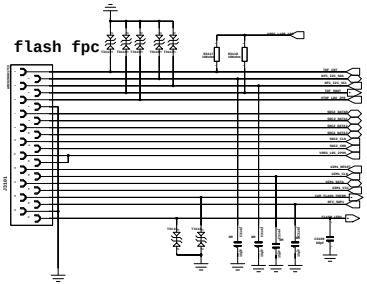
RGB SENSOR



IIC address 0X48

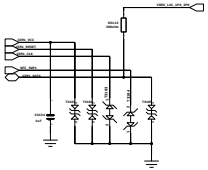


flash fpc

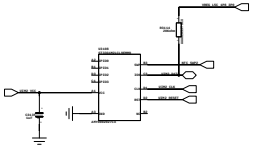


VL53L3 IIC address 0x52 0101001 R/W

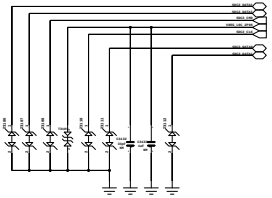
SIM CARD



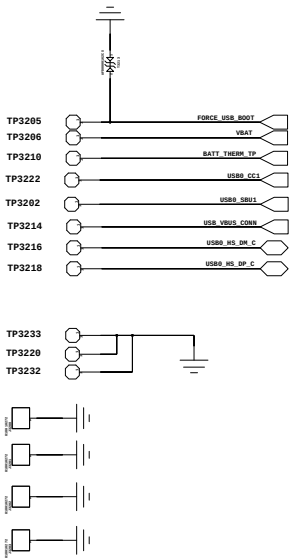
E-SIM2

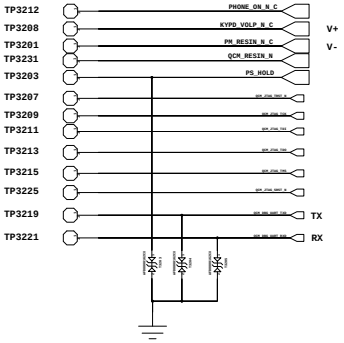


SD CARD

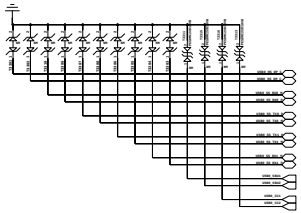


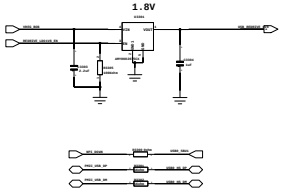
TP FOR NPI TEAM

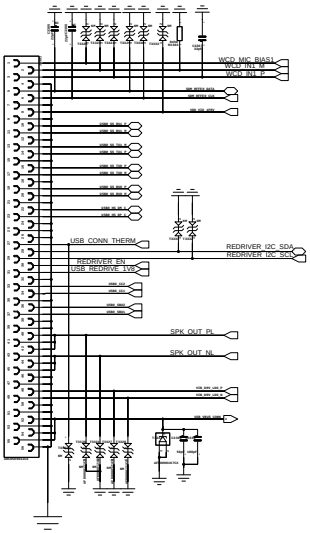


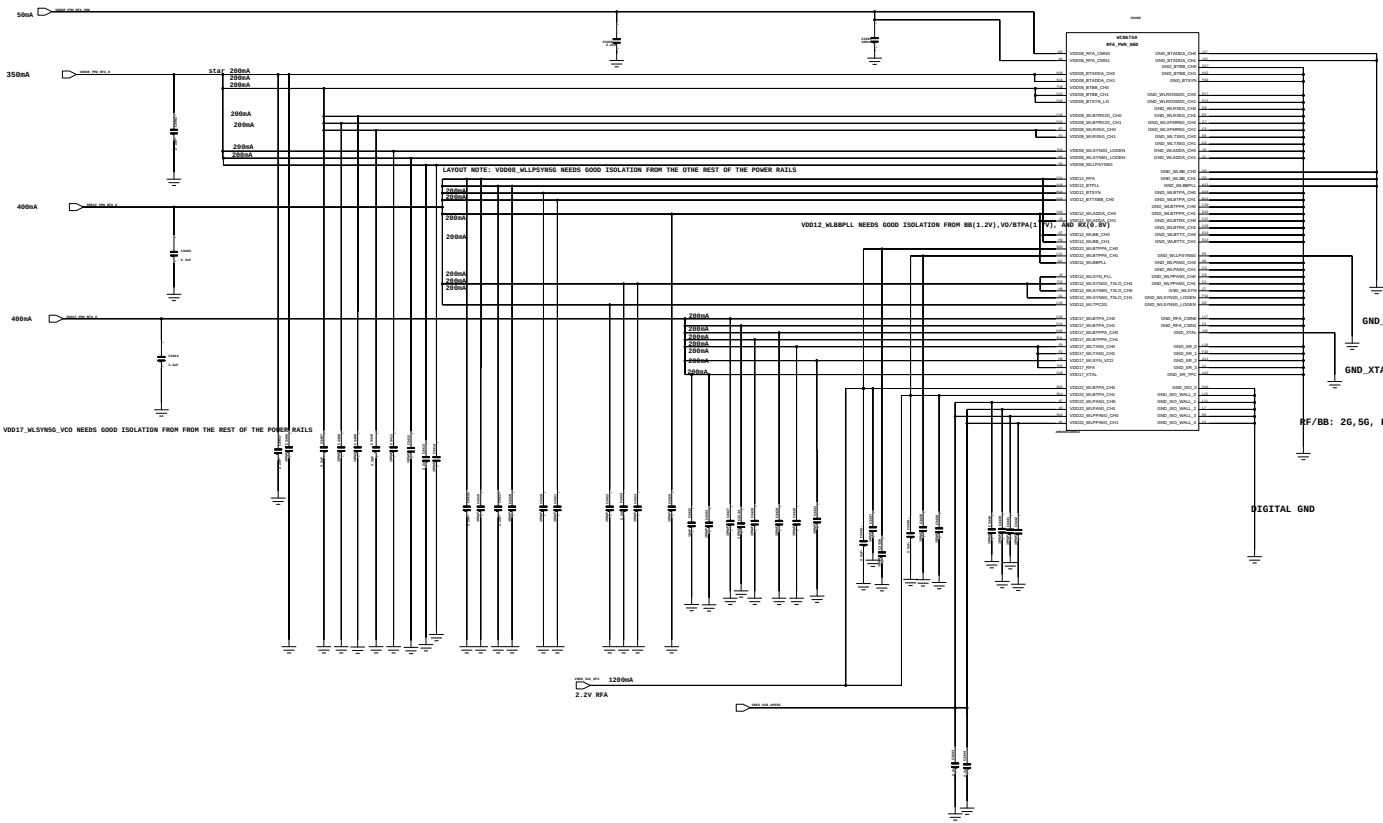


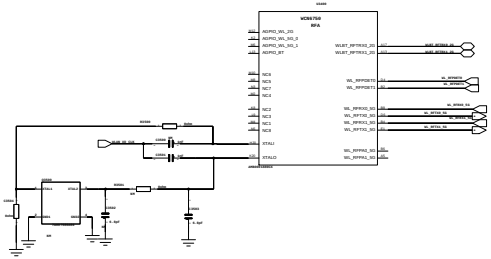
SUB CONN

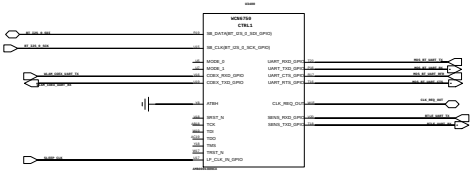


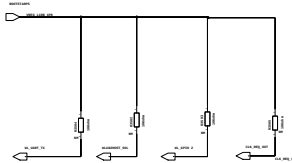

1.8V


WCD_MIC_BIAS1
WCD_IN1_P
USB_CONN_THERM
REDRIVER_I2C_SDA
REDRIVER_I2C_SCL
REDRIVER_EN
USB_REDRIVE_1V8
SPK_OUT_PL
SPK_OUT_NL

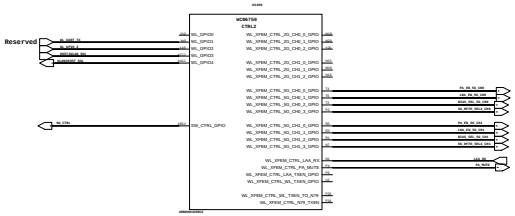

50mA
350mA
400mA
400mA
star 200mA
200mA
200mA
200mA
200mA
200mA
200mA
200mA
200mA
200mA
200mA
200mA
200mA
200mA
200mA
200mA
LAYOUT NOTE: VDD08_WLLPSYN5G NEEDS GOOD ISOLATION FROM THE OTHE REST OF THE POWER RAILS
VDD12_WLBBPLL NEEDS GOOD ISOLATION FROM BB(1.2V),VO/BTPA(1.7V) AND RX(0.8V)
VDD17_WLSYN5G_VCO NEEDS GOOD ISOLATION FROM FROM THE REST OF THE POWER RAILS
1200mA
2.2V RFA
ADC/DAC + BBPLL
GND_WLLPSYN5G
GND_XTAL
RF/BB: 2G,5G, BT
DIGITAL GND

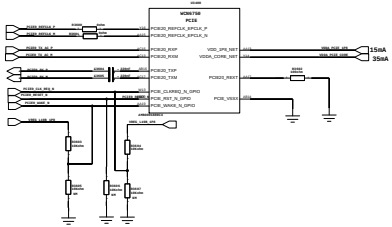


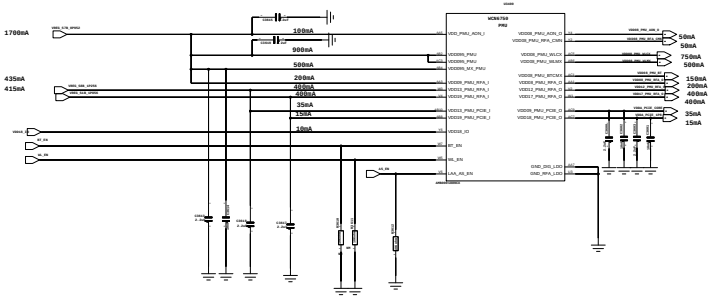


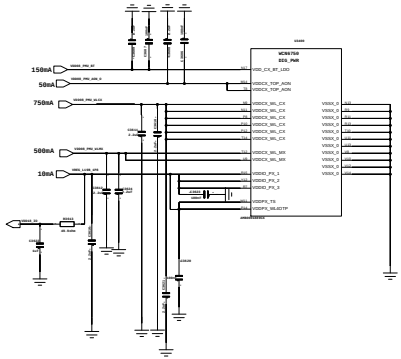


CLOCK CONFIGURATION 1) PMIC CLK TO WCN6750 XTALO R1504!R1502!R1503!NM 2)76.8MHZ XTAL TO WCN6750(CLK_CFG!1, CLK_SEL[0]!1, XO_TCXO_SEL!1) R1504!R1502!R1503!10K

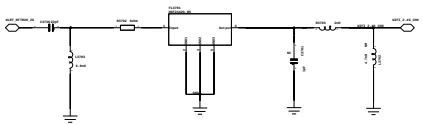



WCN6750
PCIE
15mA
35mA

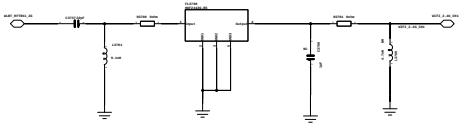

WCN6750
PMU
1700mA
100mA
900mA
500mA
435mA
415mA
200mA
400mA
35mA
15mA
10mA
50mA
75mA
150mA
40mA

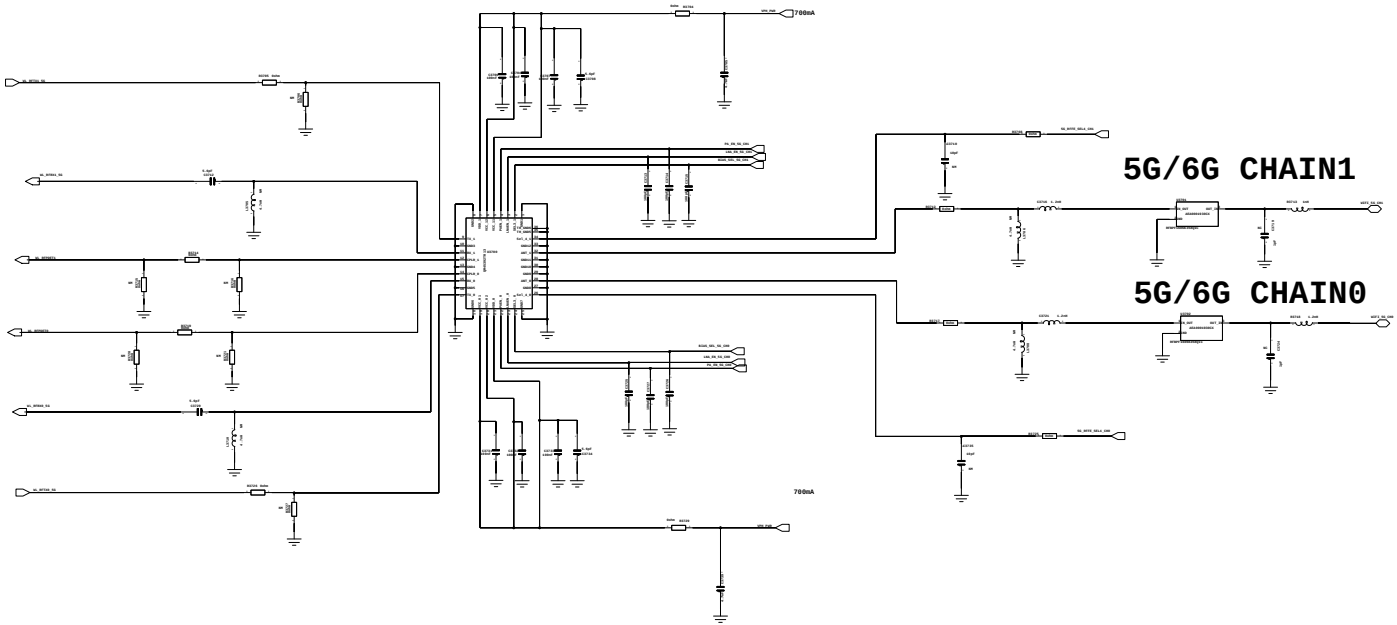

WCN6750
SDIO_PWR
150mA
50mA
75mA
500mA
10mA

2.4G CHAIN0



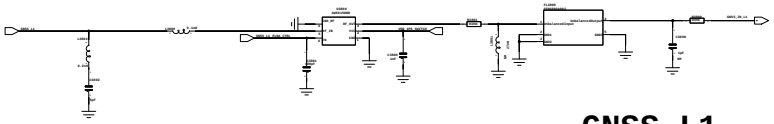
2.4G CHAIN1





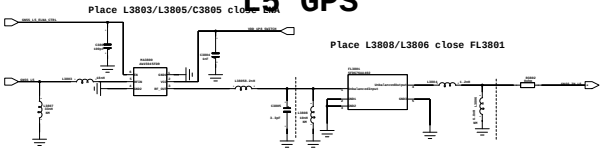
5G/6G CHAIN1

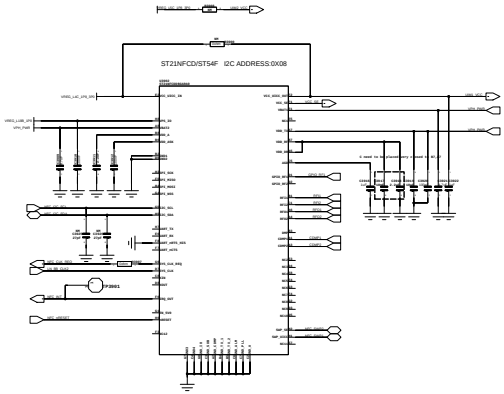
5G/6G CHAIN0

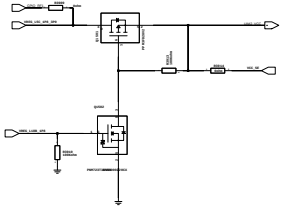


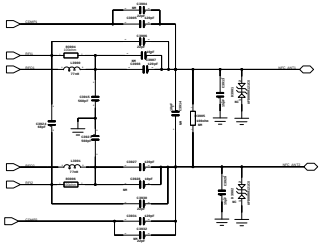
GNSS L1

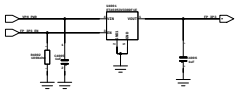
L5 GPS



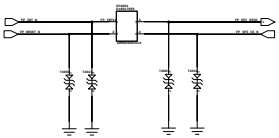

ST21NFCD/ST54F I2C ADDRESS:0X08

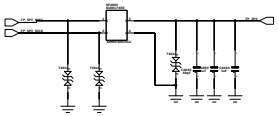




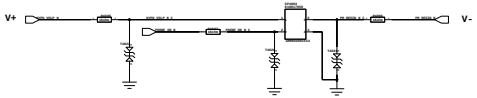


FP

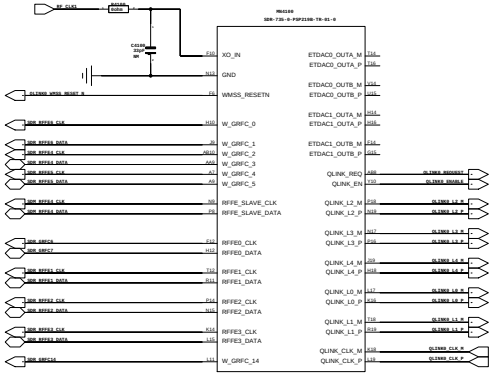


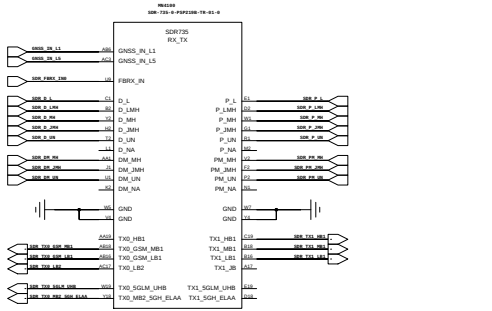


sidekey BTB



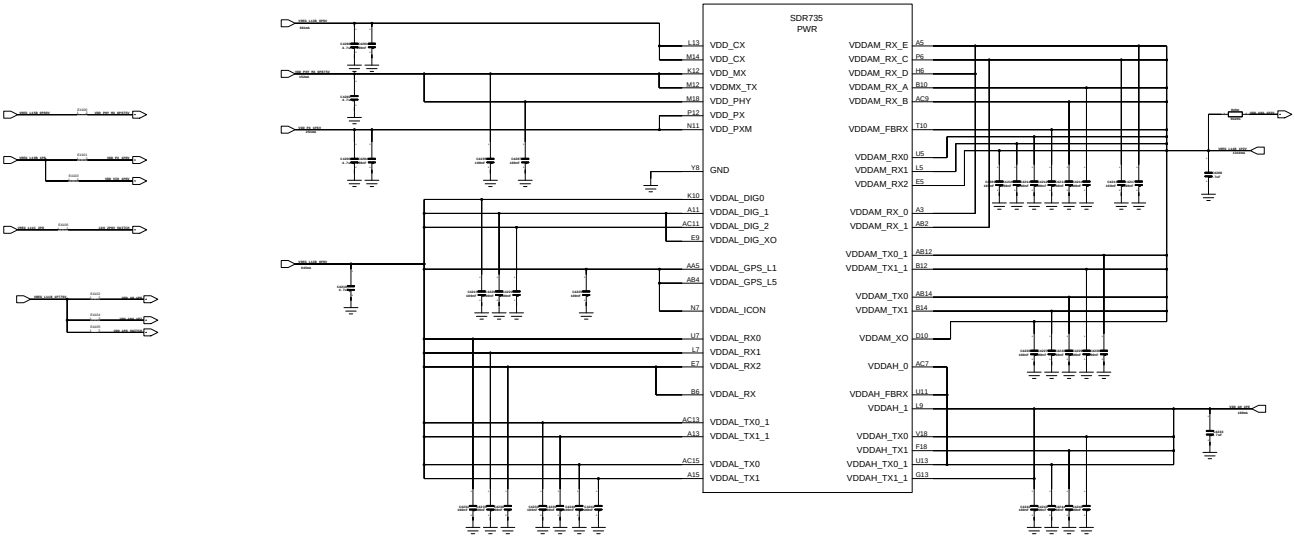
SDR735 CONTROL

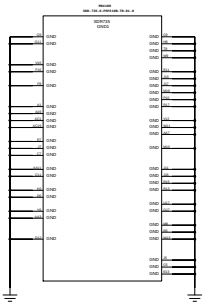


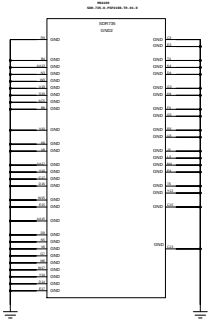


SDR735 POWER

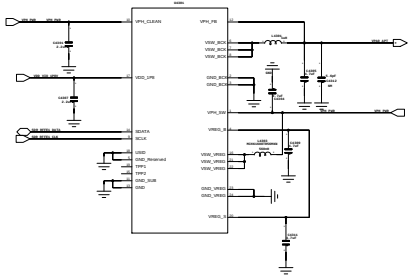
MS4180
AMR00001130X



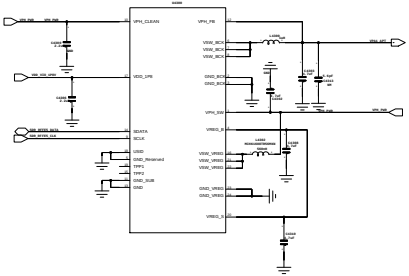




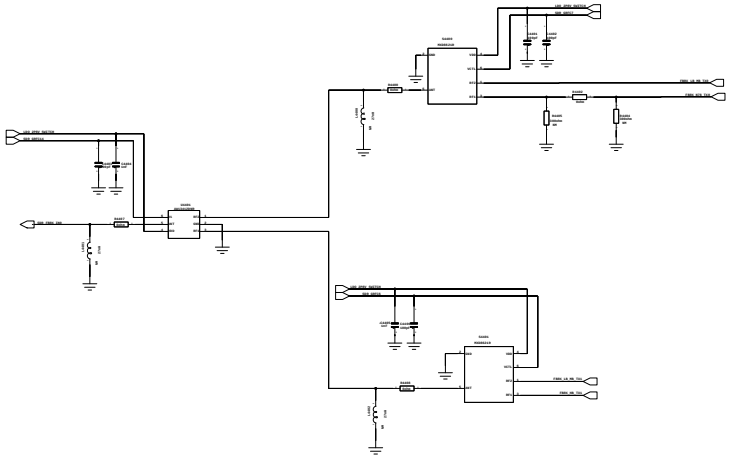
QET6105 0#

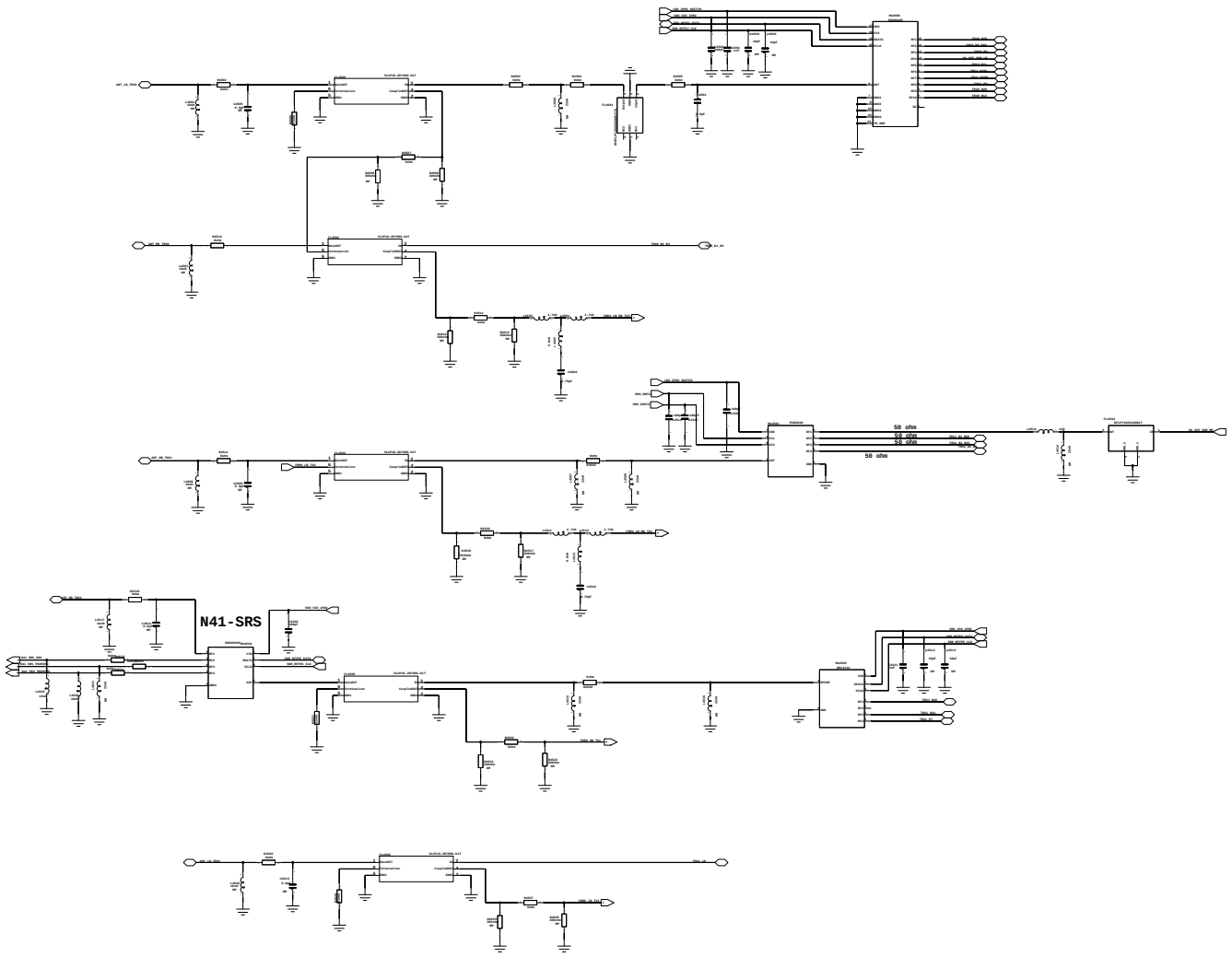


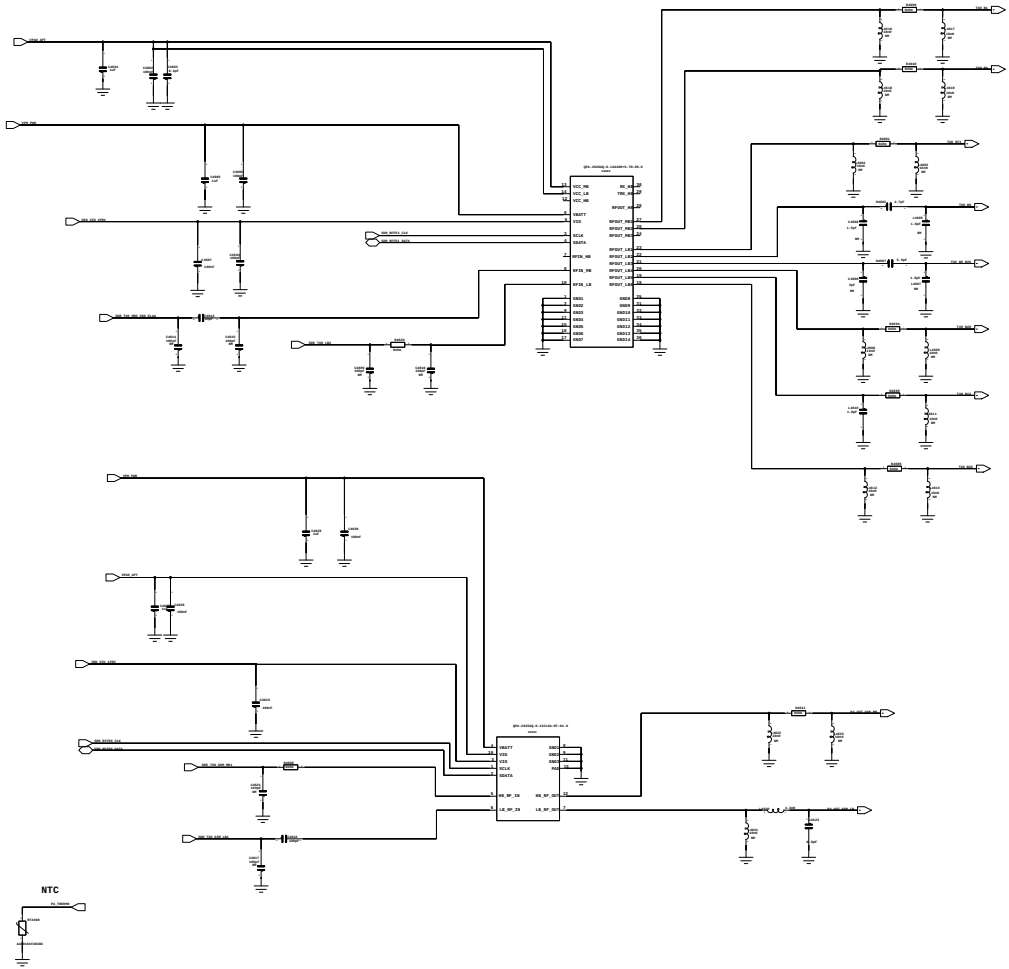
QET6105 1#



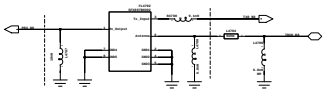
FBRX SWITCH



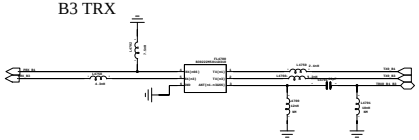

50 ohm
50 ohm
50 ohm
50 ohm
N41-SRS


NTC

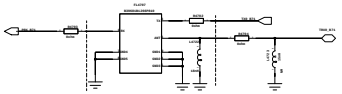
B8 TRX



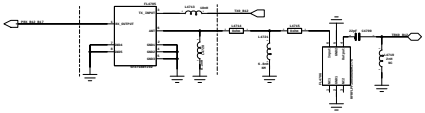
B1 TRX
B3 TRX



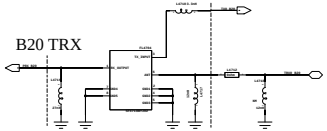
B71 TRX



B12 TRX

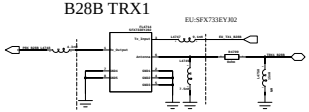


B20 TRX

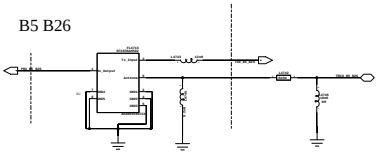


B28B TRX1

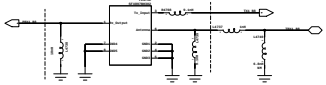
EU:SFX733EYJ02



B5 B26

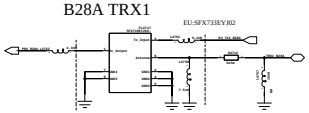


B8 TRX1

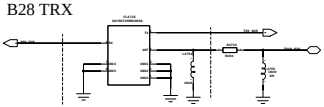


B28A TRX1

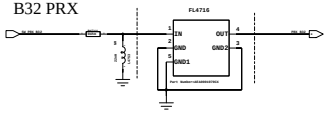
EU:SFX733EYJ02

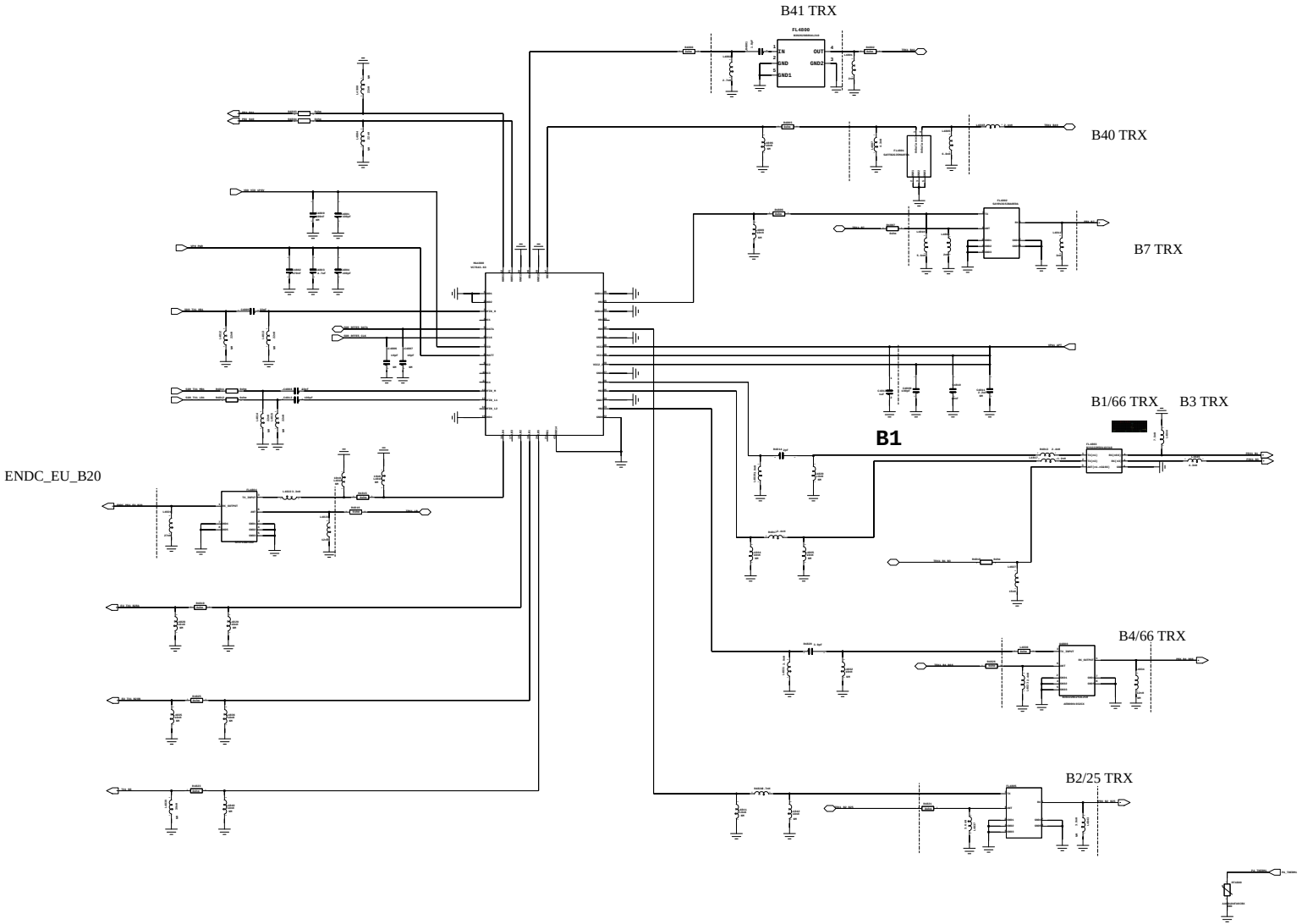


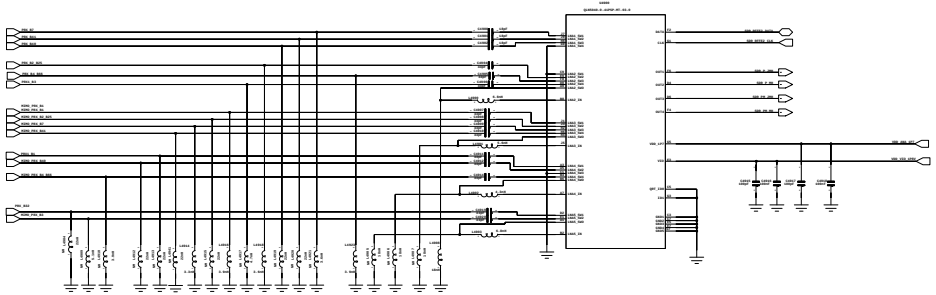
B28 TRX

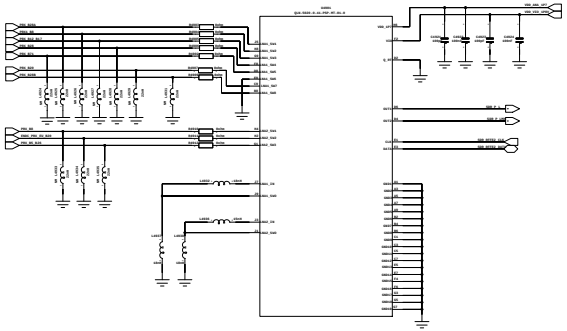


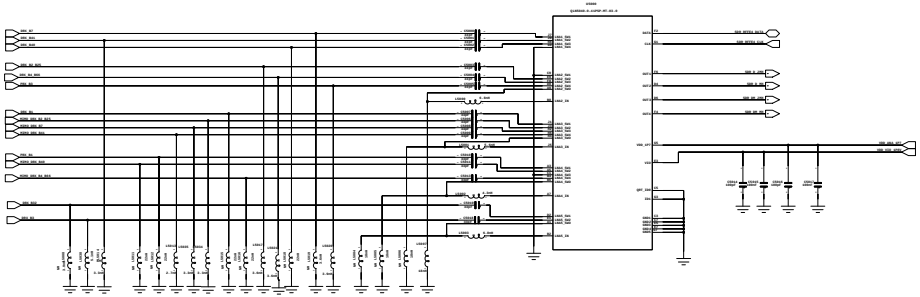
B32 PRX

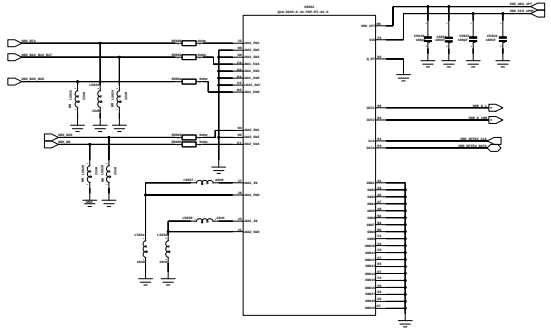



B41 TRX
B40 TRX
B7 TRX
B1/66 TRX
B3 TRX
B1
ENDC_EU_B20
B4/66 TRX
B2/25 TRX

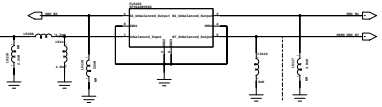




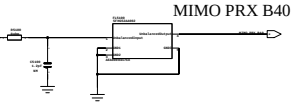




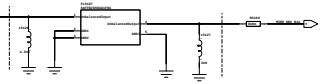
MIMO DRX B7_DRX_1_3



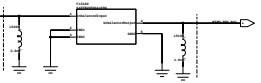
MIMO PRX B40



MIMO DRX B41

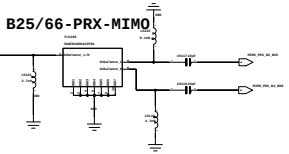


MIMO PRX B41

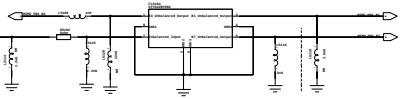


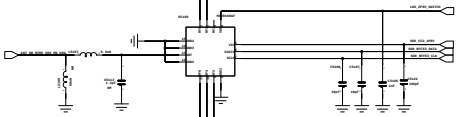
B2_B4_B25_B66

B25/66-PRX-MIMO



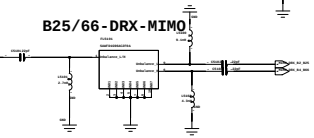
MIMO PRX B7_1_3



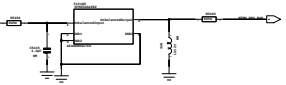


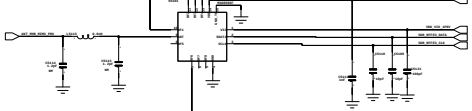
N41 SRS_DRXMIMO

B25/66-DRX-MIMO



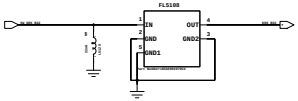
MIMO DRX B40



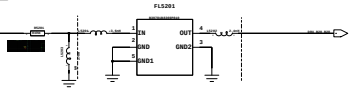


N41 SRS_PRXMIMO

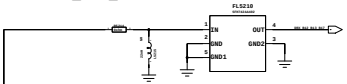
B32 DRX



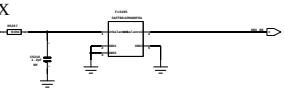
B20_B28 DRX



B12_B13_B17 DRX

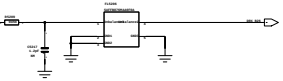


B8 DRX

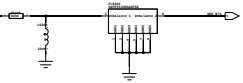


B26 DRX

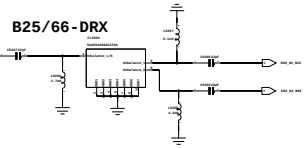
EU:SAFFB881MAN0F0A
NA:SAFFB876MAA0F0A



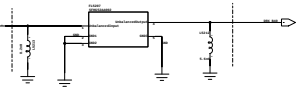
B71 DRX



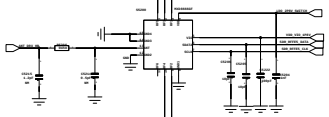
B25/66-DRX



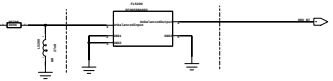
B40 DRX



B41 DRX

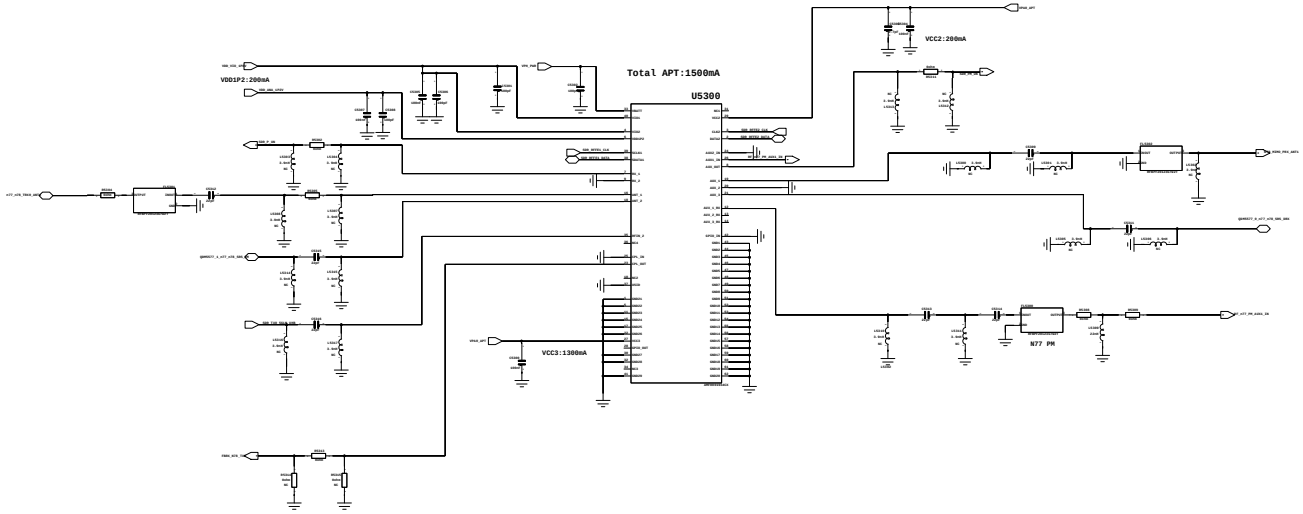


B7 DRX

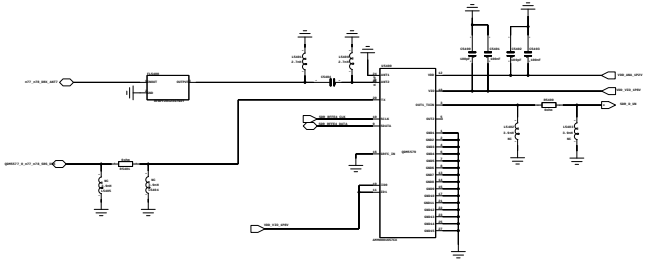


N41 SRS_DRX

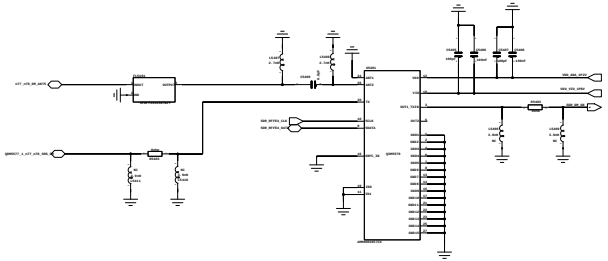
QPM2980AQ


Total APT:1500mA
U5300
VCC2:200mA
VDD1P2:200mA
VCC3:1300mA
N77 PM

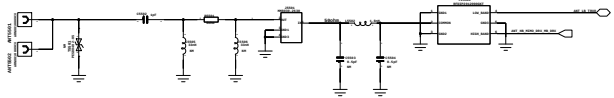
QDM5577_#0_DRX



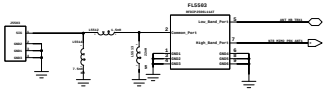
QDM5577_#1_DM



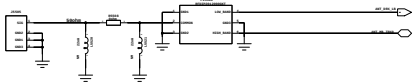
ANT0



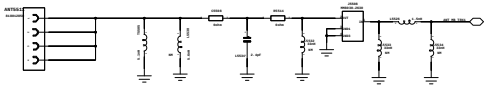
ANT1



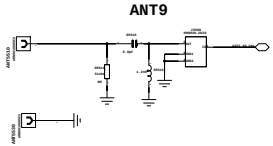
ANT2



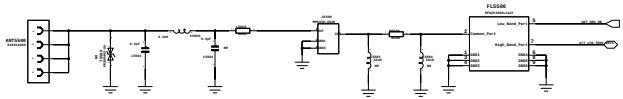
ANT3



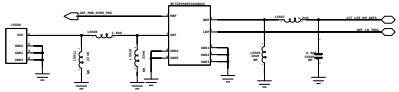
ANT9



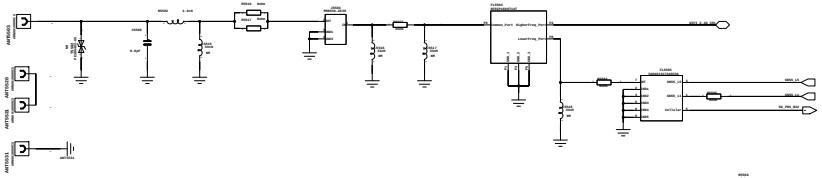
ANT4



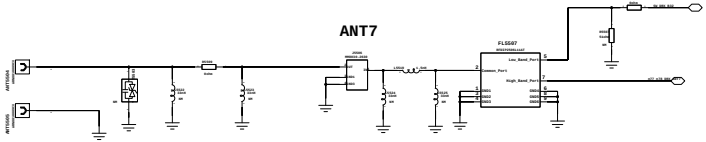
ANT5



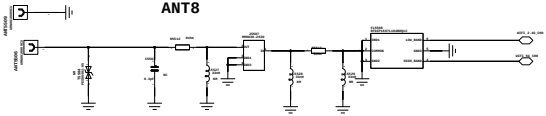
ANT6

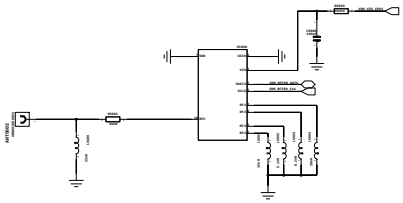


ANT7

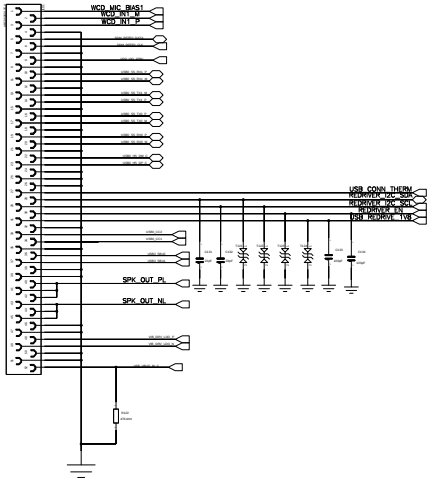


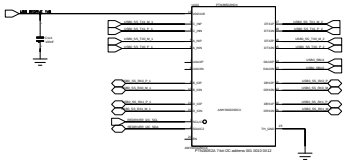
ANT8





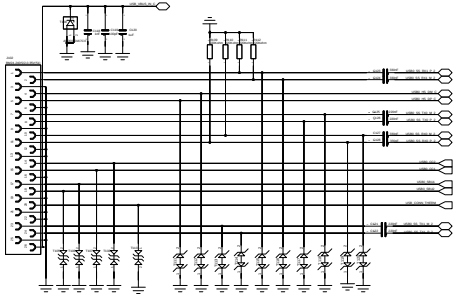
SUB BOARD CONN





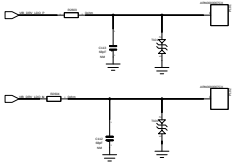
TP100

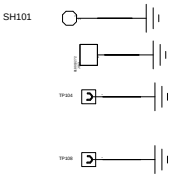
USB BTB



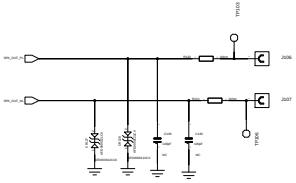
Place close to USB Connector.

VIBRATOR

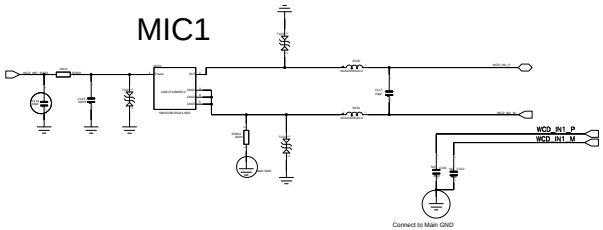




SPEAKER

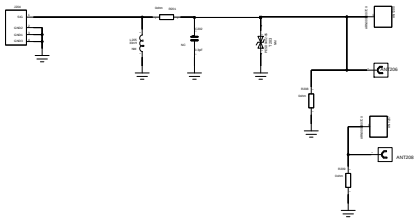


MIC1

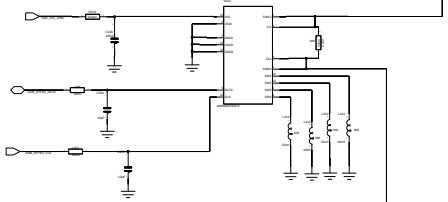


2022-10-20

ANT1



ANT2



ANT5