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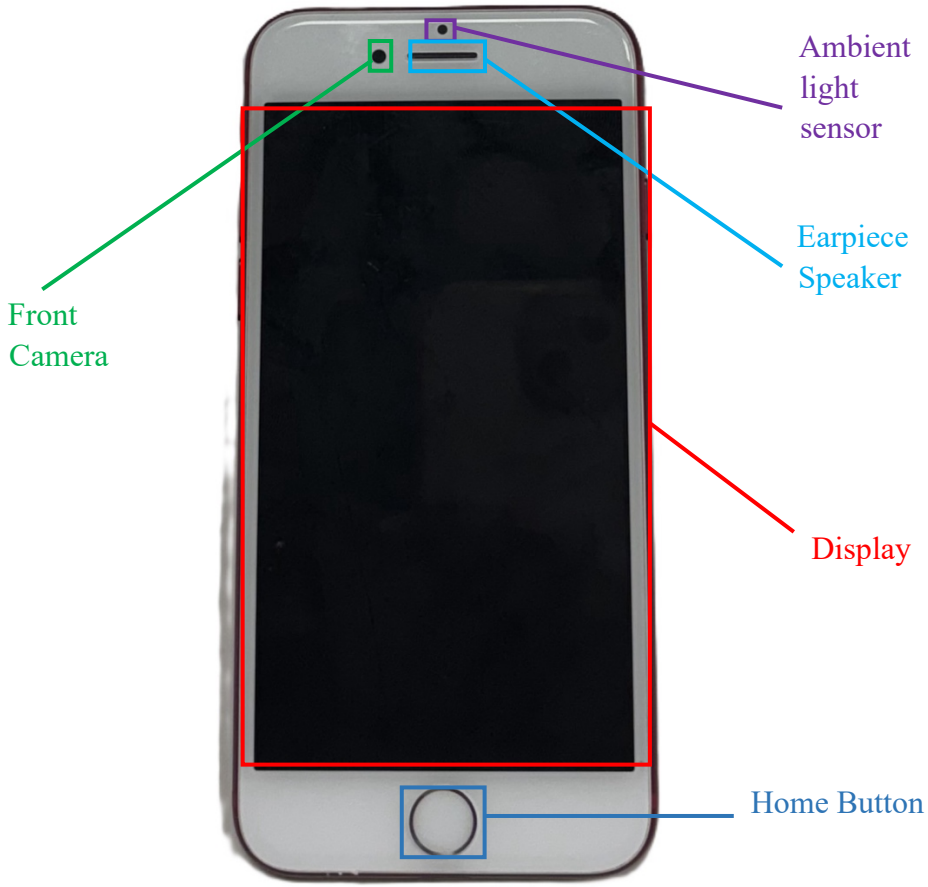
TEARDOWN REPORT

iPhone 7

Introduction

The iPhone 7, launched by Apple in September 2016, marked a significant step forward in the evolution of the iPhone lineup. It introduced a refined design with improved performance, featuring the powerful A10 Fusion chip, water and dust resistance (IP67), and enhanced camera capabilities, including optical image stabilization on the rear 12 MP camera. The device also signaled a bold move by Apple with the removal of the traditional 3.5mm headphone jack, encouraging the adoption of wireless audio solutions. Available in several sleek finishes and storage capacities, the iPhone 7 set a new benchmark for durability and speed in smartphones at the time of its release.



Mobile Specifications

Feature	Description
Display	4.7-inch Retina HD display
Resolution	1334 x 750 pixels
Processor	Apple A10 Fusion chip
Rear Camera	12 MP with f/1.8 aperture, OIS
Front Camera	7 MP FaceTime HD camera
Storage Options	32GB, 128GB, 256GB
Operating System	iOS 10 (launch), upgradable to iOS 15
Water Resistance	IP67 certified (splash, water, and dust)
Audio	No headphone jack, stereo speakers
Battery Life	Up to 14 hours talk time
Home Button	Solid-state with Taptic Engine
Fingerprint Sensor	Touch ID
Build	Aluminum body with various color finishes
Connectivity	LTE, Wi-Fi, Bluetooth 4.2, NFC

Component Descriptions

Display

Feature	Specification
Display size	4.7 inches (diagonal)
Type	Retina HD, IPS LCD
Resolution	1334 x 750 pixels
Pixel density	326 ppi
Aspect ratio	16:9
Brightness	625 nits
Contrast ratio	1400:1
Color support	Wide color (P3)
Viewing angles	Dual-domain pixels
Protection	Ion-strengthened glass, oleophobic
Touch technology	Multi-Touch, 3D Touch

Front Camera

Feature	Specification
Sensor Resolution	7 megapixels
Aperture	f/2.2
Sensor Type	BSI CMOS (Sony Exmor RS, 1.0 µm pixel size)
Focal Length	2.87mm (32mm equivalent)
Video Recording	1080p HD at 30 fps
Flash	Retina Flash (uses display as flash)

Ambient light sensor

Feature	Specification & Details
Type	Ambient Light Sensor (ALS)
Location	Front of the device, n3ear the earpiece speaker and front camera
Primary Function	Measures ambient light levels to automatically adjust screen brightness and optimise display readability
Integration	Combined in a module with the proximity sensor
Sensor Technology	Conventional photodiode-based sensor (similar to iPhone 6s); not multi-spectral in iPhone 7
User Control	Works automatically when Auto-Brightness is enabled in iOS settings

Earpiece Speaker

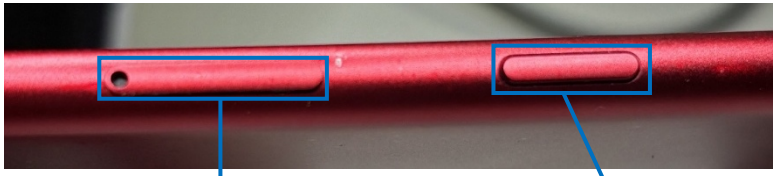
Feature	Specification & Details
Type	Earpiece (ear speaker, internal speaker)
Location	Top front of device, above the display, next to the front camera
Function	Delivers call audio to the ear; also acts as one channel in stereo sound for media playback
Build Quality	High-quality OEM part
Manufacturer	OEM suppliers (e.g., Elcotek); typically made in China

Touch ID

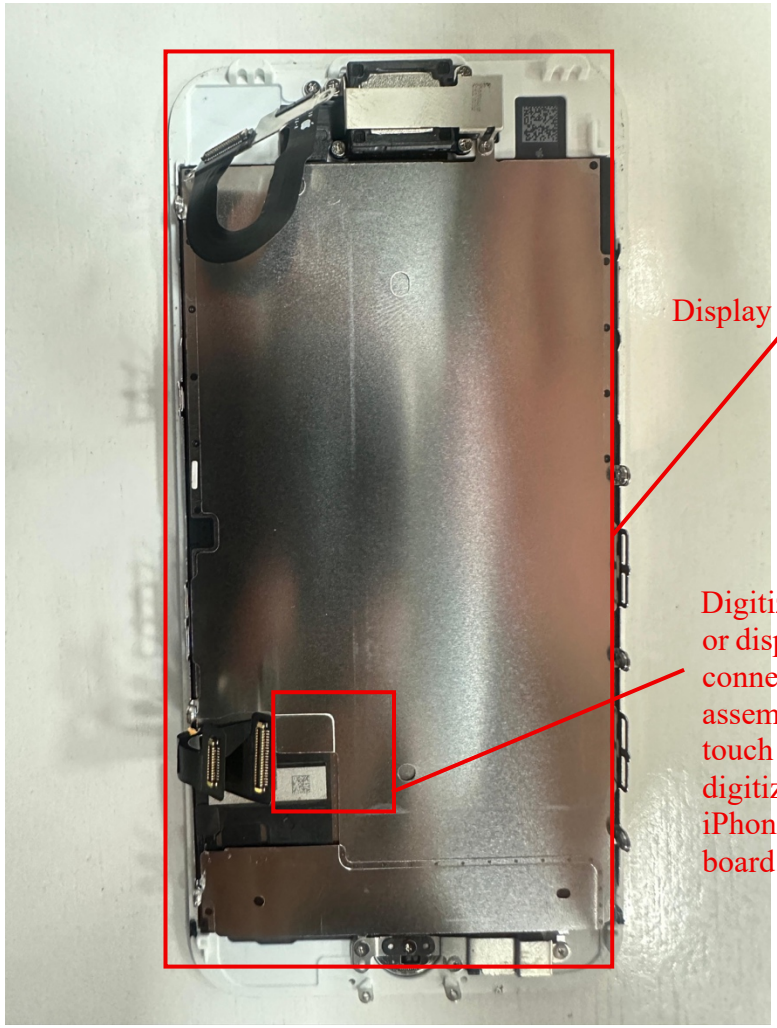
Feature	Specification & Details
Location	Integrated into the Home button on the front of the device
Sensor Technology	Capacitive touch sensor; reads sub-epidermal skin layers
Sensor Thickness and resolution	170 μm and 500 pixels per inch (ppi)
Detection Ring	Stainless steel ring detects the presence of a finger without requiring a press
Button Material	Laser-cut sapphire crystal for scratch resistance
Orientation	360-degree readability (can recognize a fingerprint in any orientation)
Security Architecture	Fingerprint data is converted to a mathematical representation and stored in the Secure Enclave
Authentication Uses	Device unlocking, Apple Pay, App Store/iTunes purchases, password autofill, and supported third-party apps
Privacy	Fingerprint data never leaves the device or is backed up to Apple servers or iCloud

Rear Camera

Feature	Specification
Sensor Resolution	12 megapixels
Sensor Type	2nd-generation Sony Exmor RS, BSI CMOS
Aperture	f/1.8
Focal Length	28mm equivalent (wide angle)
Sensor Size	1/3.0"
Pixel Size	1.22 µm
Lens Elements	Six-element lens
Flash	Quad-LED True Tone flash

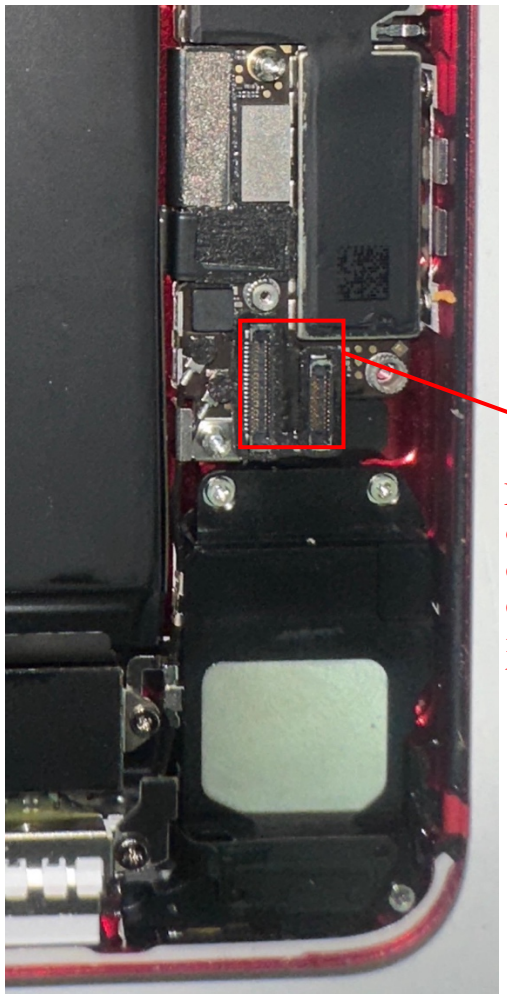


Internal Components of iPhone 7

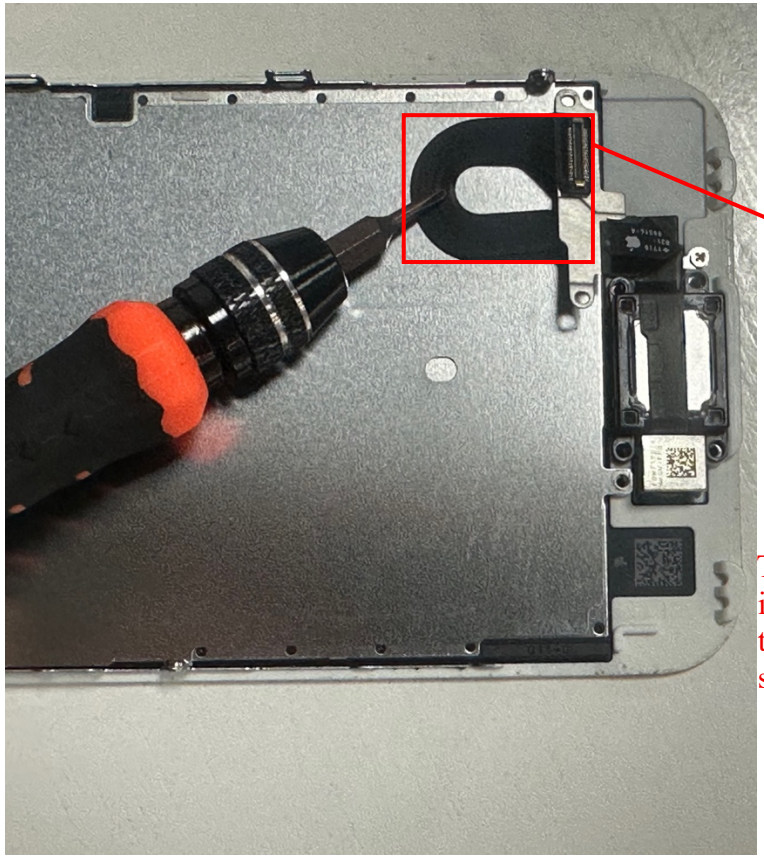


Display of the iPhone 7

Digitizer flex cable or display data cable connects the display assembly (LCD and touch screen digitizer) to the iPhone 7's logic board.



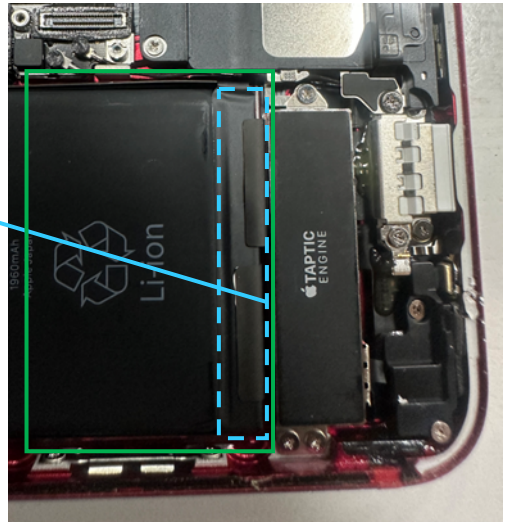
Digitizer flex cable or display digital cable are connected to iPhone 7's logic board



Front camera sensor cable

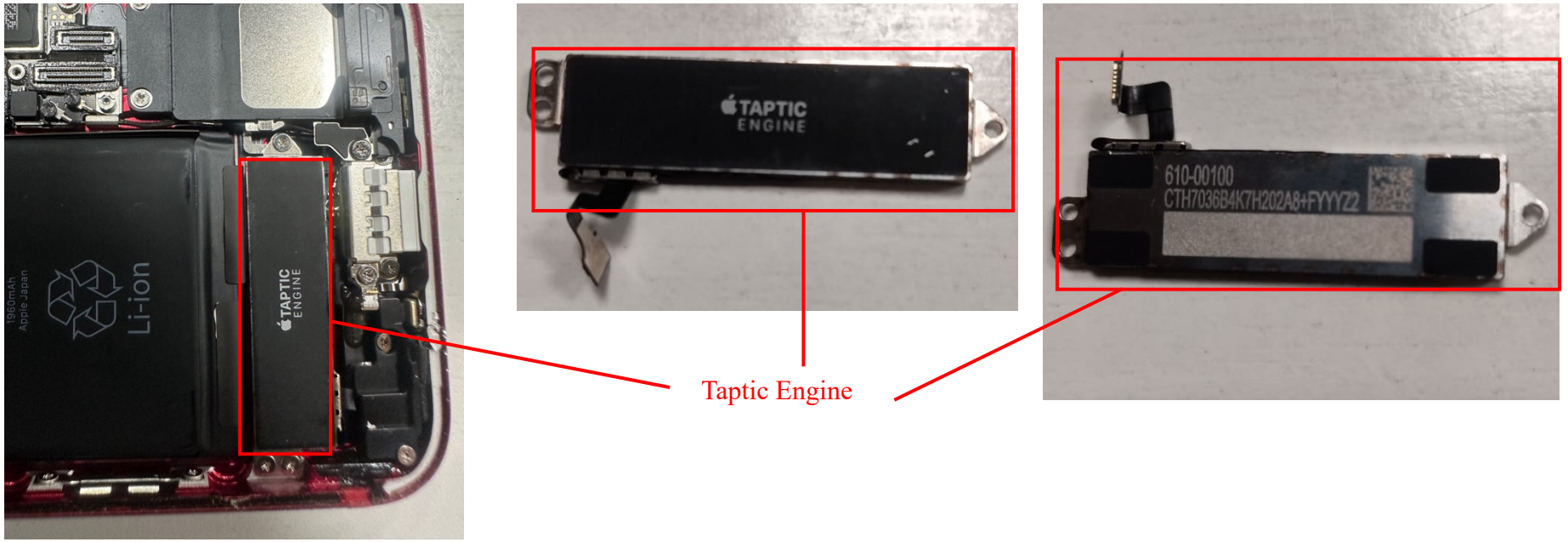
The main body of the iPhone 7 after separating the display of the smartphone

Two black adhesive strips under the battery



Battery Specifications

Feature	Specification
Type	Lithium-ion (Li-ion), rechargeable, non-removable
Capacity	1960 mAh (milliampere-hour)
Watt-Hour Rating	7.45 Wh
Voltage	3.8 V
Battery Model Number	Apple Part No: 616-00257

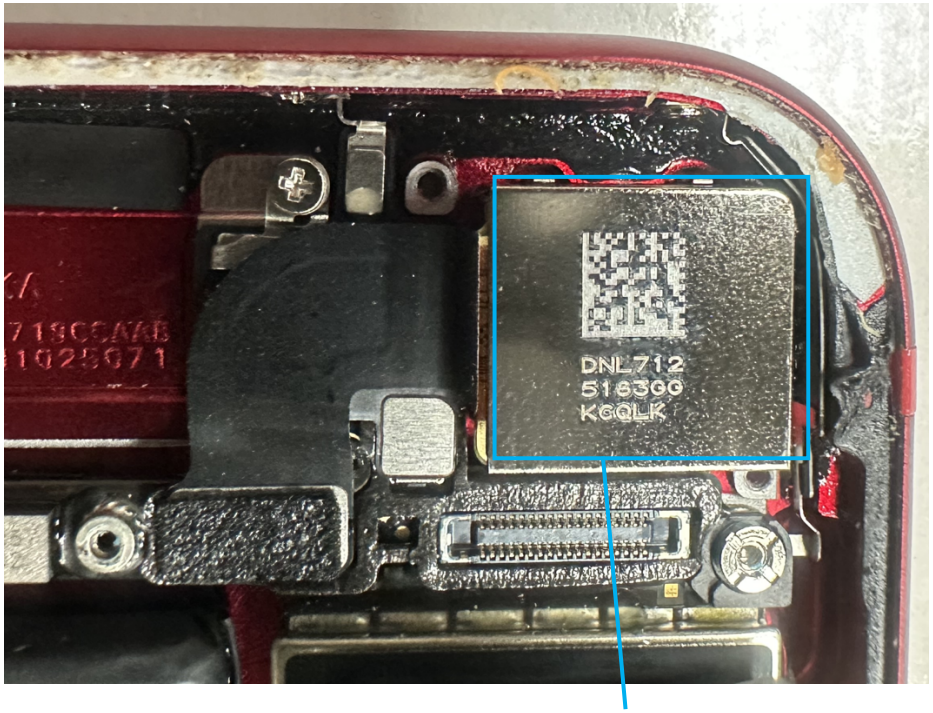


Taptic Engine Specifications:

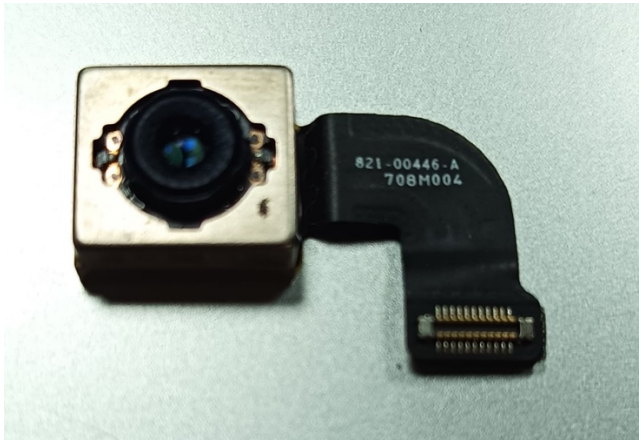
Feature	Specification & Details
Component Name	Taptic Engine (Linear Resonant Actuator, LRA)
Location	Lower internal section of the iPhone 7, beneath the battery and near the home button
Function	Provides precise haptic feedback for system interactions, notifications, and simulates the Home button press
Dimensions	Approx. 18 mm x 9 mm x 3.5 mm
Voltage	3.8V
Apple Part Number	610-00100
Serial/Batch Number	CTH7036B4K7H202A8+FYYYZ2

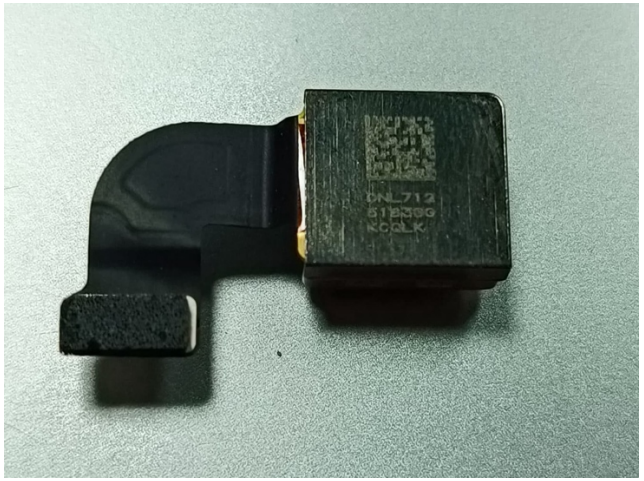
Battery module

Rear Camera



Rear Camera module

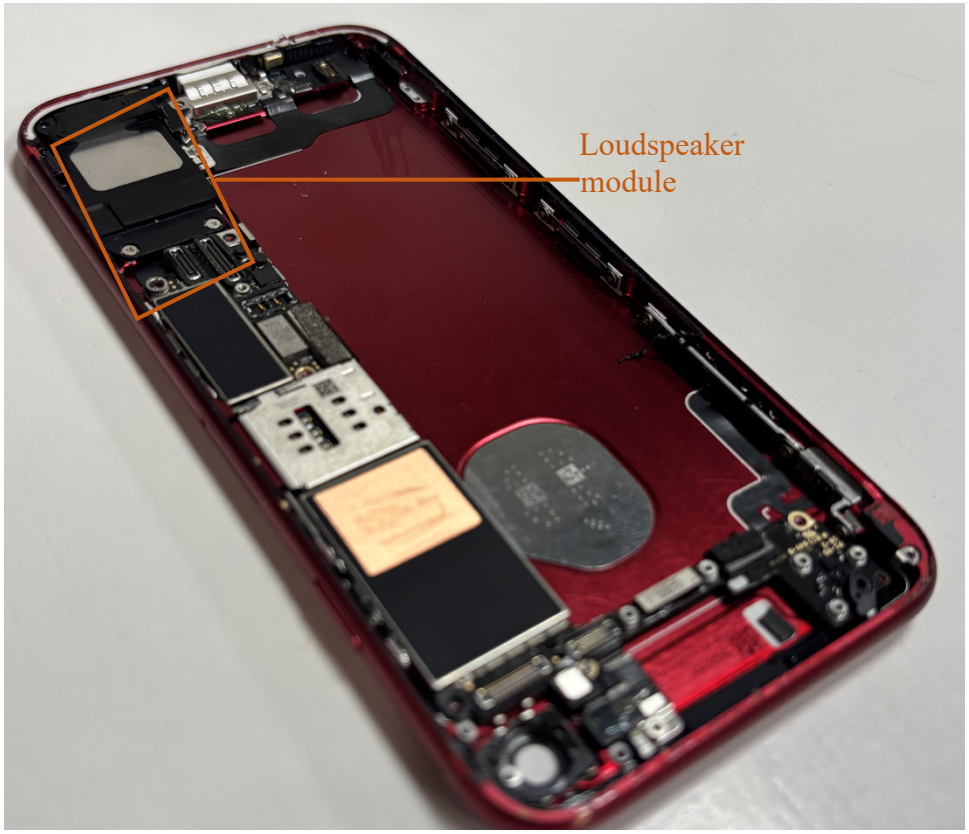


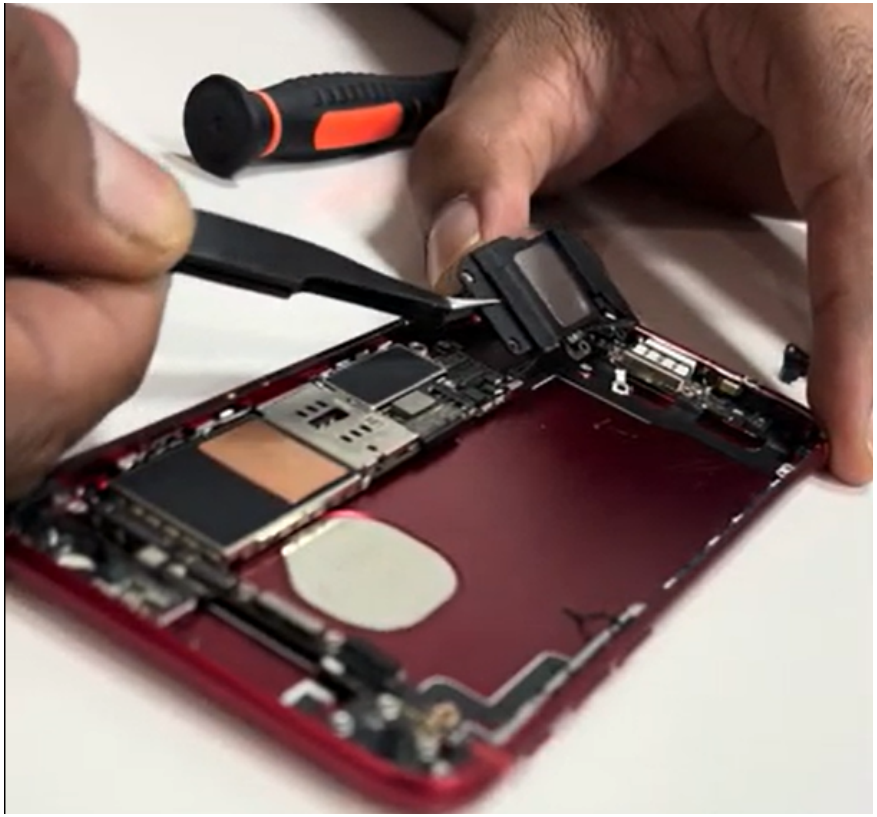


Rear Camera Specifications

Feature	Specification
Sensor Resolution	12 megapixels
Sensor Type	2nd-generation Sony Exmor RS, BSI CMOS
Aperture	f/1.8
Focal Length	28mm equivalent (wide angle)
Sensor Size	1/3.0"
Pixel Size	1.22 µm
Lens Elements	Six-element lens
Flash	Quad-LED True Tone flash

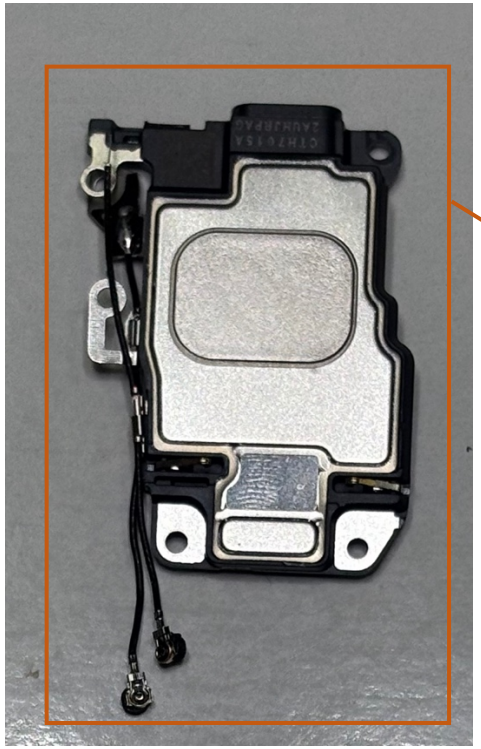
Loudspeaker





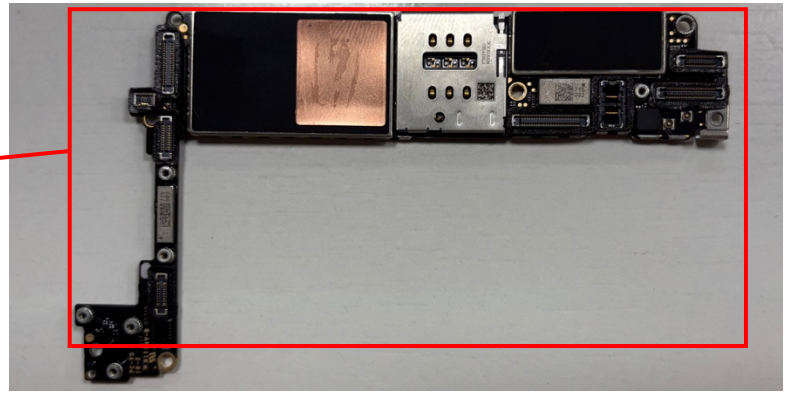
Loudspeaker Specifications:

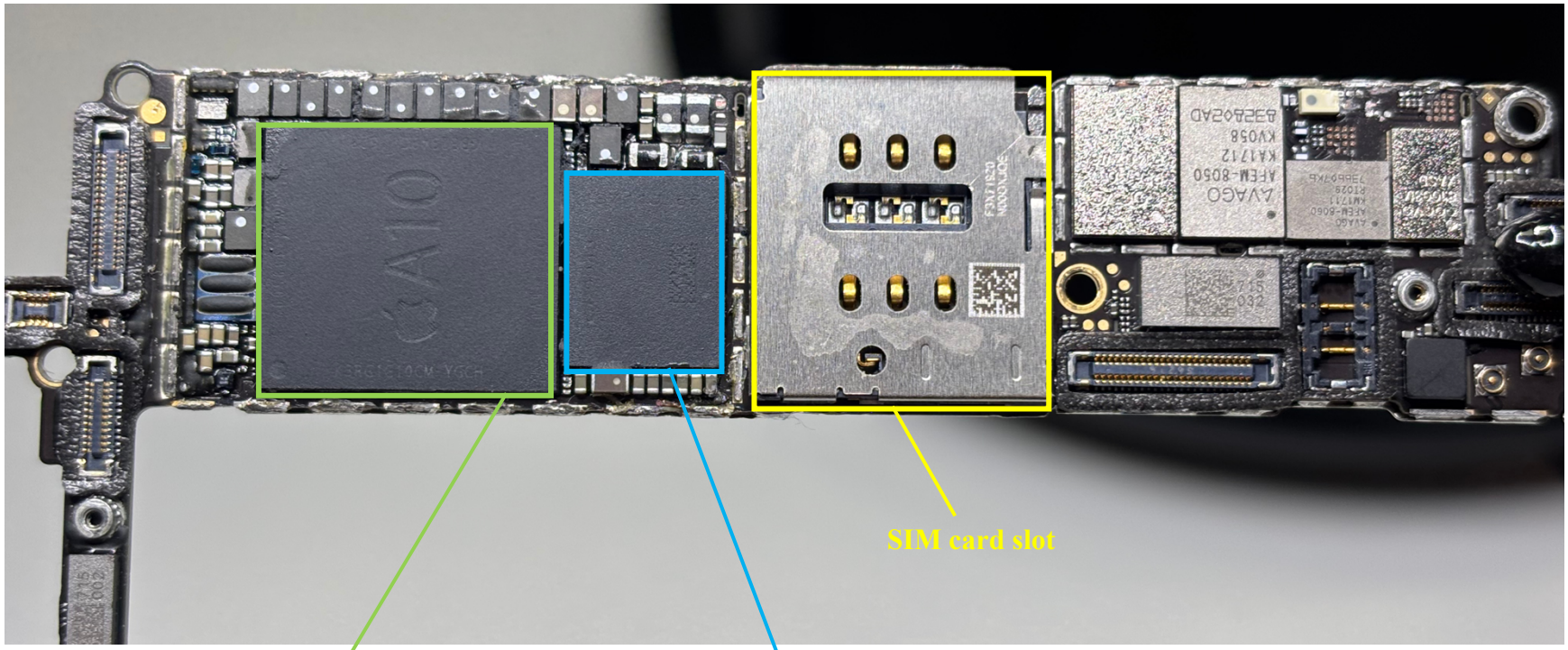
Feature	Specification & Details
Type	Rectangular, dynamic speaker
Location	Lower right side of the iPhone 7 chassis
Connector	Spring contacts and antenna cable connectors
Material	Metal shield, plastic housing, mesh for dust/water resistance
Output Levels	Voice: 67 dB Noise: 73 dB Ring: 75 dB
Impedance	~8 Ohms
Power Handling	~1W peak

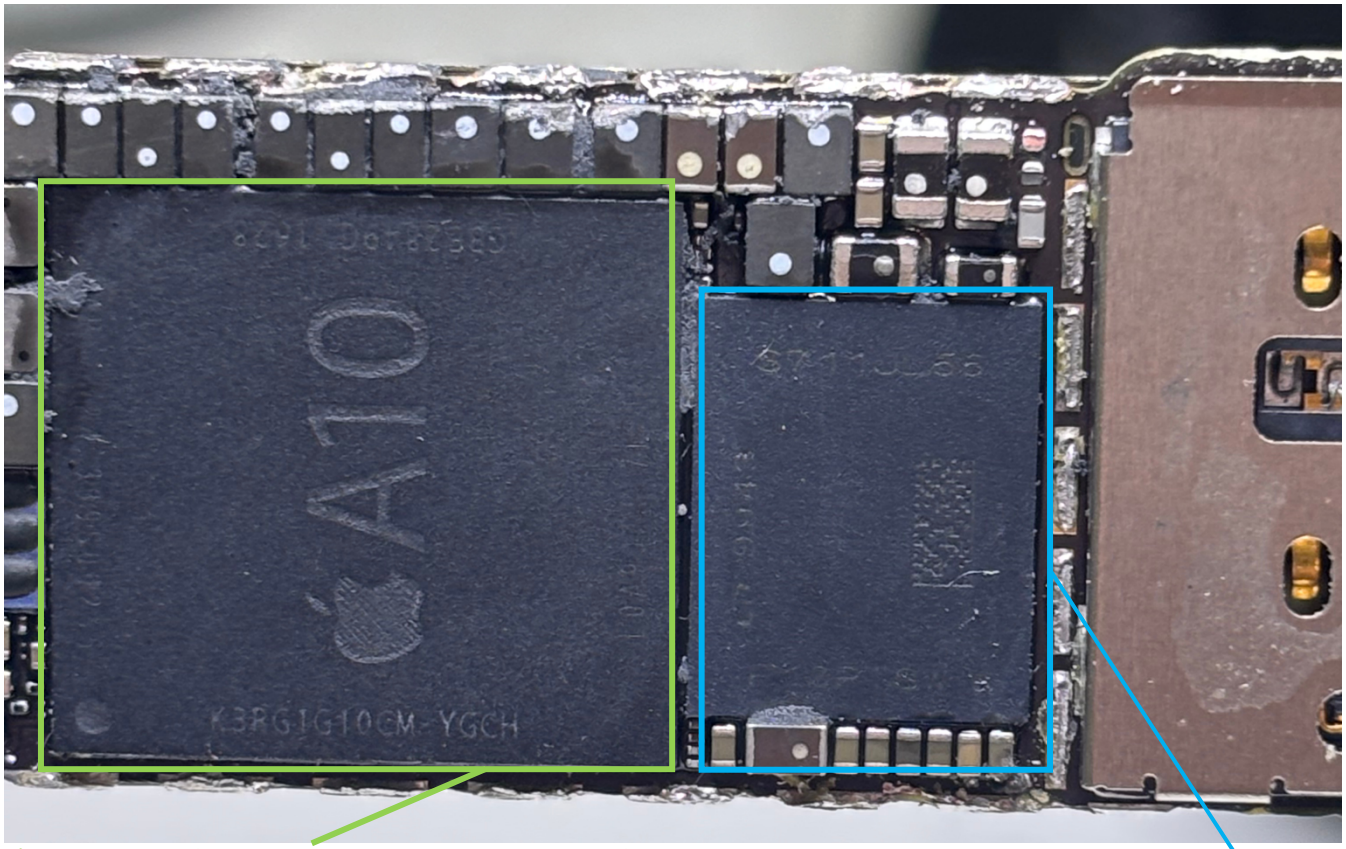


Logic Board

Top view of Logic board (first side)







Apple A10 Fusion APL1W24 SoC + Samsung 2 GB LPDDR4 RAM (as denoted by the markings K3RG1G10CM-YGCH)

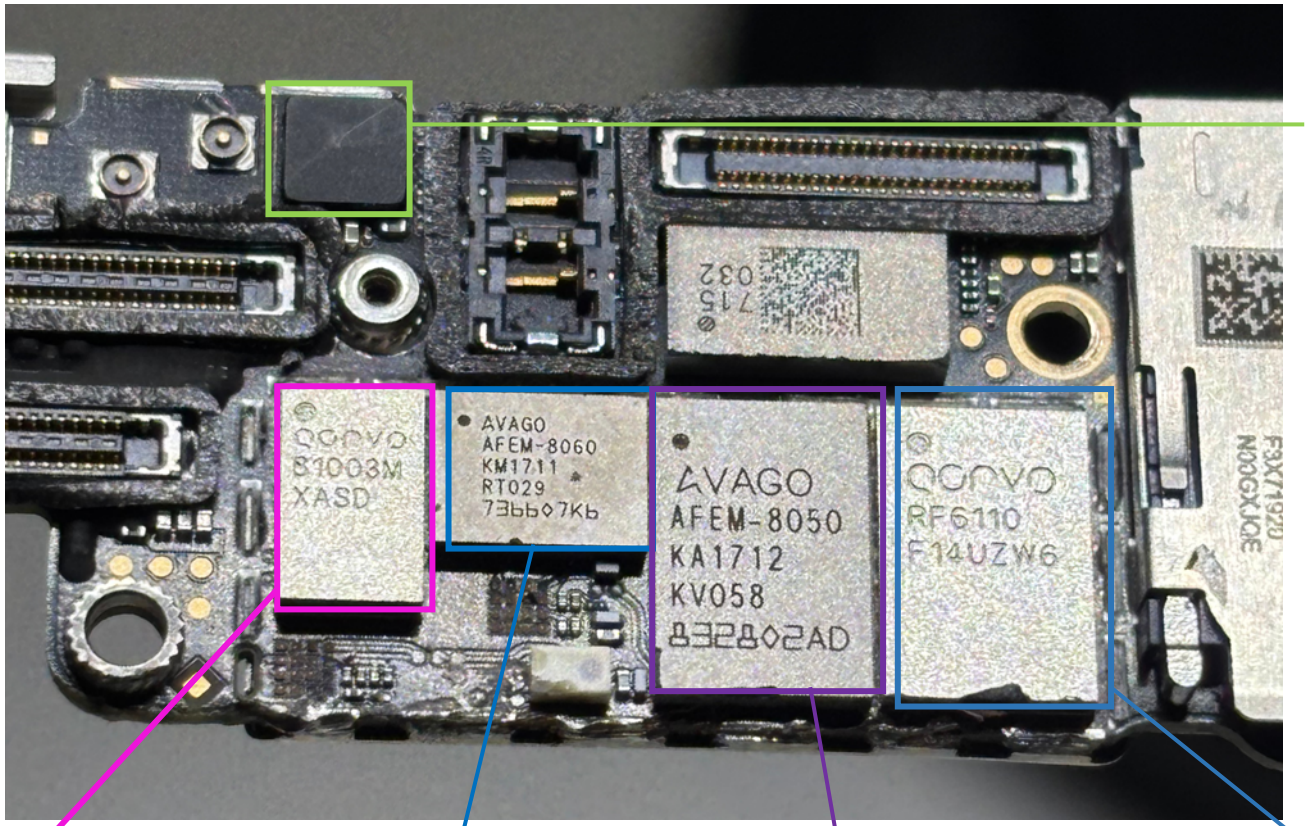
Qualcomm MDM9645MLTE Cat. 12 Modem

Apple A10 Fusion SoC specifications

Feature	Specification
Launch Date	September 7, 2016
Manufacturer	Apple (TSMC)
CPU	2x Hurricane (2.34 GHz) + 2x Zephyr (~1.1 GHz)
Architecture	64-bit ARMv8-A, quad-core (big.LITTLE style)
GPU	PowerVR Series7XT Plus (6-core, 900 MHz)
RAM Support	LPDDR4, up to 4 GB, 14.9 Gbit/s bandwidth
Caches	L1: 64+64 KB/core, L2: 3 MB, L3: 4 MB
Process Node	16 nm FinFET
Transistors	3.3 billion
Motion Coprocessor	Embedded M10
Successor	Apple A11 Bionic

Qualcomm MDM9645MLTE Cat. 12 Modem specifications:

Feature	Specification
Peak Download Speed	600 Mbps (Cat. 12)
Peak Upload Speed	100 Mbps (Cat. 13)
Carrier Aggregation	3x20 MHz DL, 2x20 MHz UL
MIMO	Up to 4x4 (DL)
QAM	256-QAM (DL), 64-QAM (UL)
LTE Technologies	FDD, TDD, LTE-U, LWA, Broadcast
Process Node	14 nm LPP
Supported Standards	WCDMA, TD-SCDMA, CDMA, EV-DO, GSM/EDGE
Wi-Fi/Bluetooth	Wi-Fi 5, Bluetooth 4.2
Navigation	GPS, GLONASS, Beidou, Galileo



InvenSense Accelerometer ICM-20600

QORVO 81003M XASD RF (Radio Frequency) Front-End Module

Avago AFEM-8060 Power Amplifier Module

Avago AFEM-8050 Power Amplifier Module

QORVO RF6110 F14UZW6 RF Transceiver

QORVO 81003M XASD RF (Radio Frequency) Front-End Module

Feature	Specifications
Part Number	81003M
Manufacturer	Qorvo
Type	RF Power Amplifier Module (PAM) / Front-End Module (FEM)
Function	Amplifies and switches LTE/4G RF signals for multiple bands
Integration	Contains power amplifiers, switches, and filters for cellular communication
Package	Compact multi-chip module
Application	LTE/4G cellular communication

Avago AFEM-8060 Power Amplifier Module

Feature	Specification
Manufacturer	Avago Technologies (Broadcom Inc.)
Function	RF Power Amplifier Module for mobile devices
Supported Bands	Multiple LTE, 3G, and 2G frequency bands (multi-band support)
Integration	Combines power amplifiers, filters, and switches in a single compact module
Role	Cellular RF front-end (transmit/receive amplification and filtering)
Markings	KM1711 RT029 736607K6

Avago AFEM-8050 Power Amplifier Module

Feature	Specification
Manufacturer	Avago Technologies (Broadcom Inc.)
Function	RF Power Amplifier Module for mobile devices
Supported Bands	Multiple LTE, 3G, and 2G frequency bands (multi-band support)
Integration	Combines power amplifiers, filters, and switches in a single compact module
Role	Cellular RF front-end (transmit/receive amplification and filtering)
Markings	KA1712 KV058 832802AD

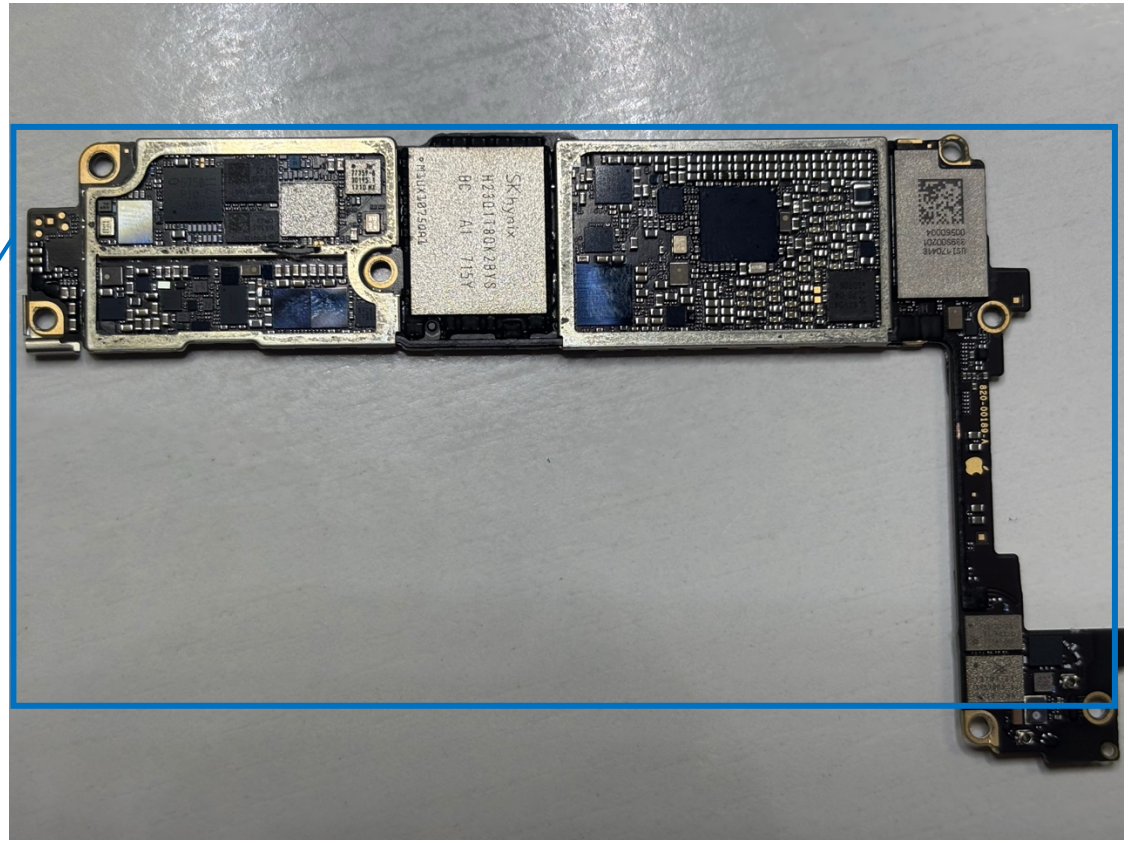
QORVO RF6110 F14UZW6 RF Transceiver Module

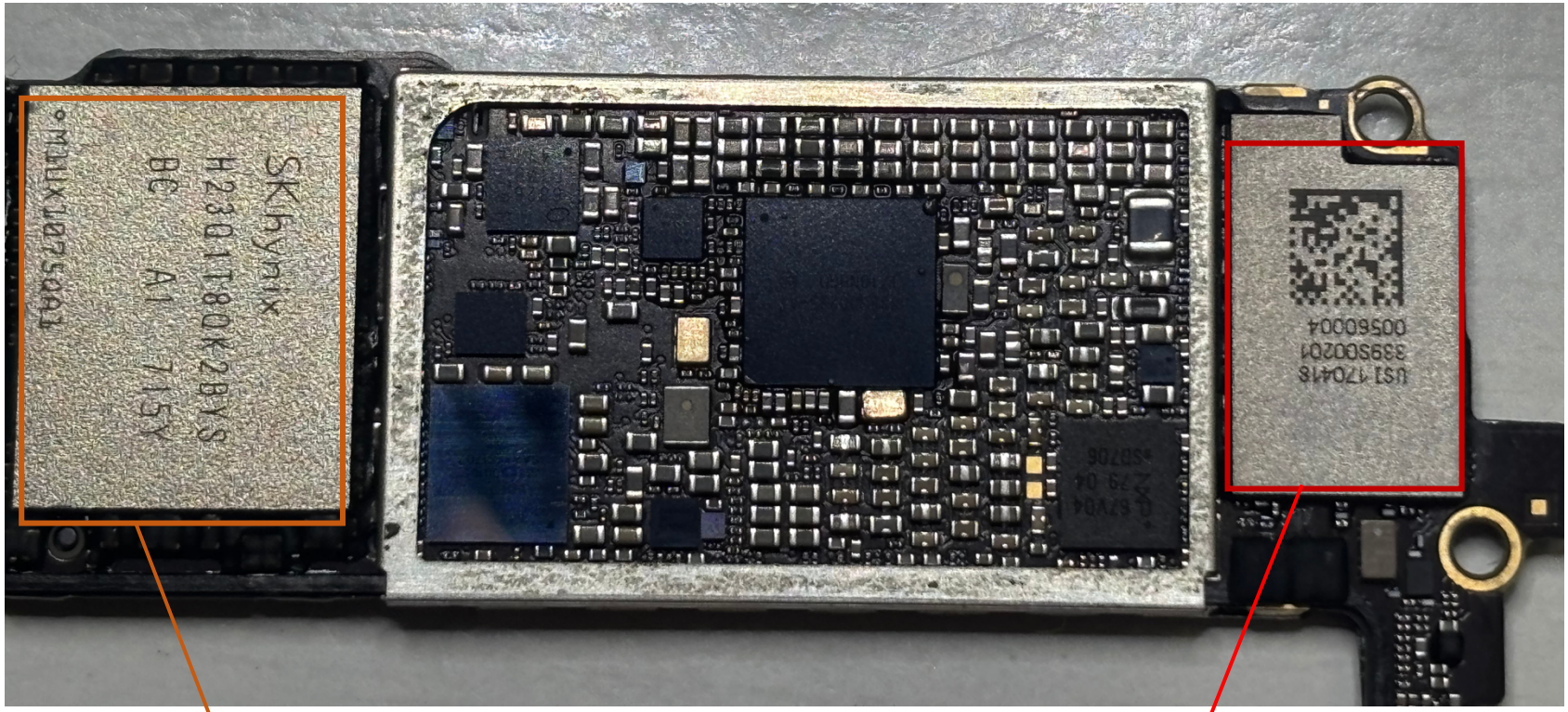
Feature	Specifications
Part Number	RF6110
Manufacturer	Qorvo
Type	RF Front-End Module / Transceiver
Function	Band switching, amplification, and filtering for LTE/4G signals
Integration	Multi-band, multi-mode support for worldwide cellular networks
Package	Compact RF module
Application	LTE/4G cellular communication

InvenSense Accelerometer ICM-20600

Feature	Specification
Manufacturer	Invensense (now part of TDK)
Sensor Type	3-axis MEMS accelerometer
Typical Model	MPU-6050 (or similar)
Measurement Range	±2g, ±4g, ±8g, ±16g (programmable)
Output Resolution	16-bit ADC
Power Consumption	~500 µA (normal), down to 10 µA (low-power)
Package Size	4 × 4 × 0.9 mm QFN
Interfaces	I2C, SPI
Additional Features	Tap detection, orientation detection, temperature sensor, programmable interrupts, high shock tolerance (up to 10,000g)
Integration	Often combined with 3-axis gyroscope (6-axis IMU)

Bottom view of the Logic Board





SK Hynix
H23Q1T8QK2BYS
Flash Memory

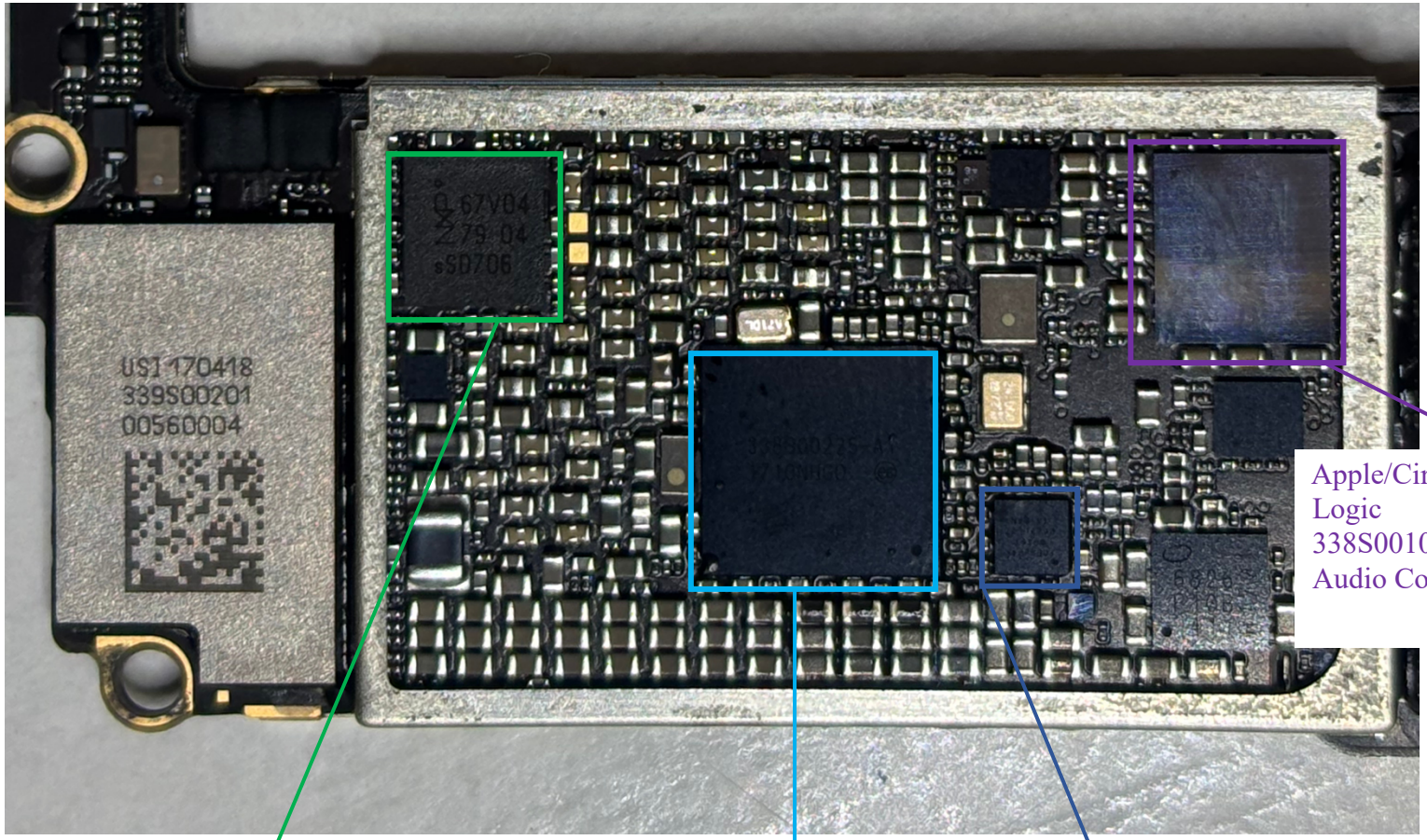
Murata 339S00201
Wi-Fi/Bluetooth
Module

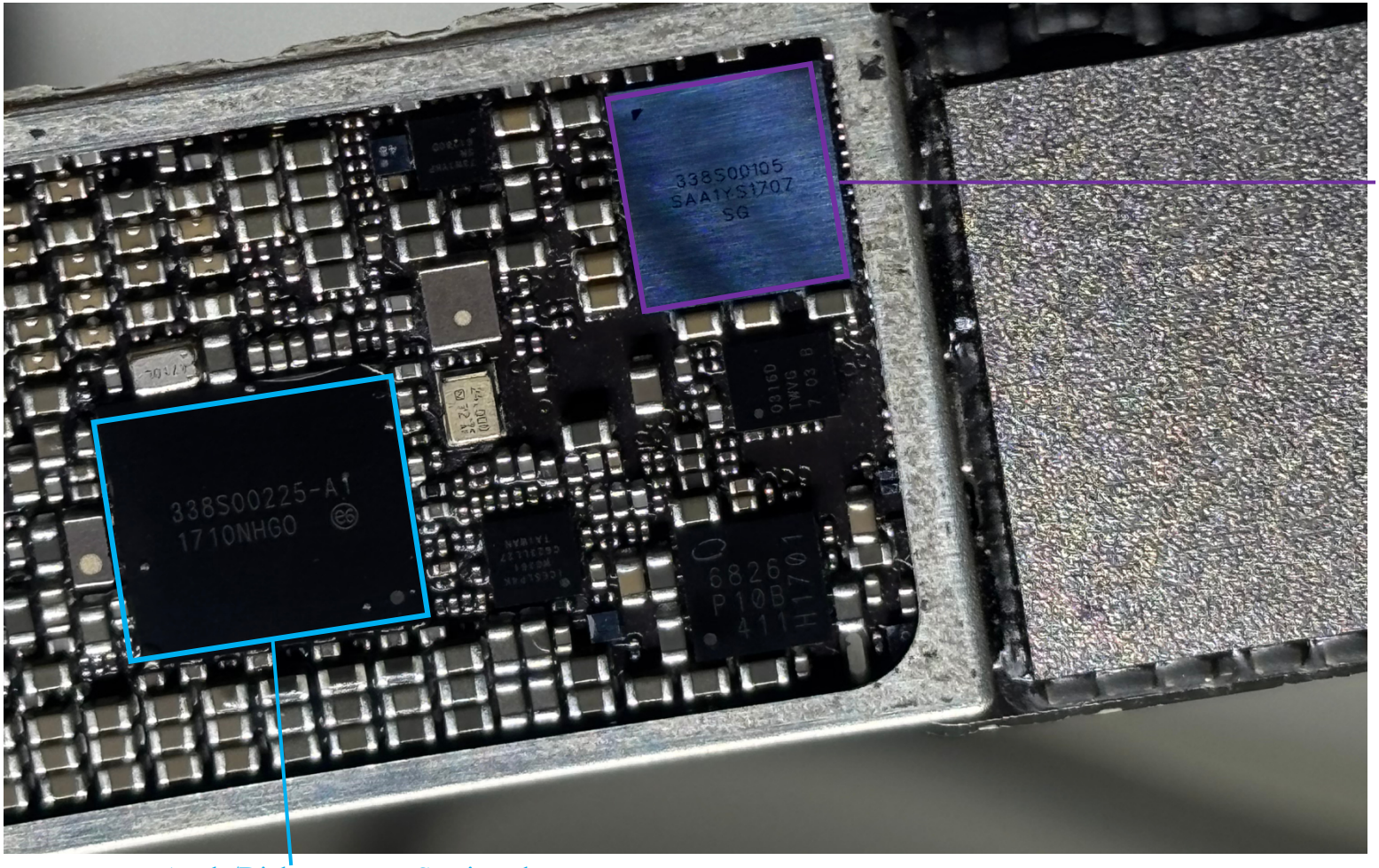
SK Hynix H23Q1T8QK2BYS Flash Memory

Feature	Specification
Manufacturer	SK Hynix
Model	H23QEG8VG2ACS
Capacity	32 GB
Type	eMMC 5.1 NAND Flash
Technology	1z nm-class (likely 15-19nm node), 2D (planar) NAND
Interface Speed	Up to 400 MB/s (HS400 mode)
Package	FBGA, ~11.5 x 13 x 0.8 mm
Applications	Smartphones, tablets, IoT, automotive

Murata 339S00201 Wi-Fi/Bluetooth Module

Feature	Specification
Manufacturer	Murata Manufacturing Co., Ltd.
Model	339S00201
Wi-Fi	802.11a/b/g/n/ac, dual-band (2.4/5GHz)
Bluetooth	4.2 (BR/EDR/LE)
Integration	Wi-Fi + Bluetooth in one module
Interfaces	SDIO (Wi-Fi), UART (Bluetooth)
Application	Smartphones, tablets, IoT devices





Apple/Cirrus Logic 338S00105 Audio Codec

Apple/Dialog Semiconductor 338S00225 Power Management IC

NXP PN67V NFC Controller w/ Secure Element

Feature	Specification
Manufacturer	NXP Semiconductors
Model	PN67V
Function	NFC controller with embedded Secure Element
NFC Standards	NFC Forum, ISO/IEC 14443, EMVCo, MIFARE, FeliCa
Modes Supported	Peer-to-peer, reader/writer, card emulation
Security	Embedded Secure Element for secure payments and data
Host Interfaces	I²C, SPI, UART, SWP
Applications	Mobile payments, ticketing, secure authentication, device pairing

Apple/Dialog Semiconductor 338S00225 Power Management IC

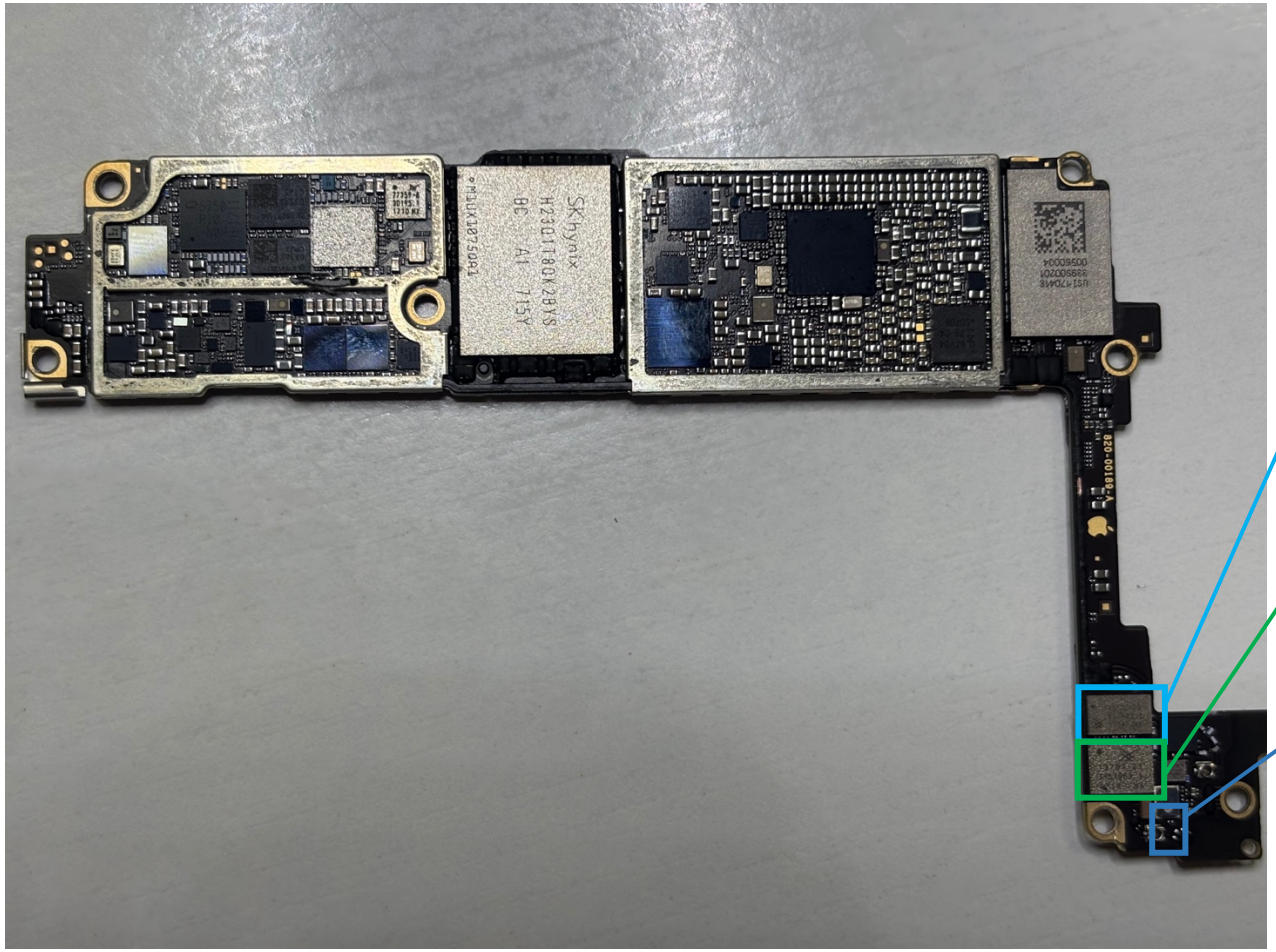
Feature	Specification
Apple Part Number	338S00225
Manufacturer	Dialog Semiconductor
Type	Power Management IC (PMIC)
Pin Count	342 (BGA package)
Board Designator	U1801
Functions	Power distribution, voltage regulation, battery charging, power sequencing, system monitoring
Package	BGA (Ball Grid Array), high-density

Apple/Cirrus Logic 338S00105 Audio Codec

Feature	Specification
Manufacturer	Cirrus Logic (custom for Apple)
Model	338S00105
Function	Audio codec: DAC, ADC, amplifier
Audio I/O	Manages analog input/output for speakers, mics, etc.

Lattice Semiconductor ICE5LP4K iCE40 FPGA

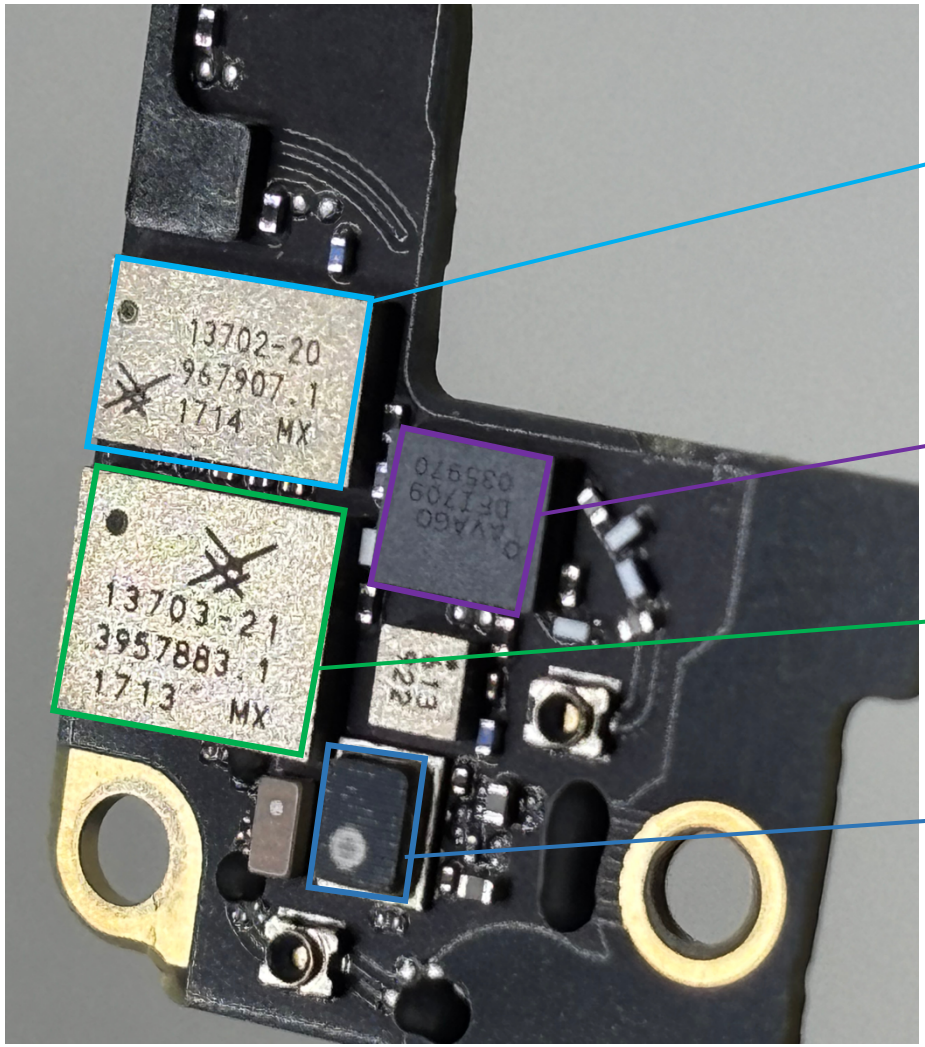
Feature	Specification
Logic Resources	Up to 3,520 4-input LUTs
Embedded RAM	Up to 80 kbits block RAM
I/O Pins	Up to 39 programmable I/Os
Oscillators	10 kHz (LFOSC), 48 MHz (HFOSC)
Process Technology	40 nm CMOS
Interfaces	2x SPI, 2x I²C (hardened controllers)
DSP Functions	8/16-bit multiplier, accumulator, MAC
LED/IR Drive	24 mA (RGB LED), 500 mA (IR LED)
Package Options	QFN, WLCSP, BGA (as small as 2.078 x 2.078 mm)
Applications	Mobile, wearables, sensor hub, GPIO expander, custom logic



Skyworks SKY13702-20
Diversity Receive Module

Skyworks SKY13703-21
Diversity Receive Module

Bosch Sensortec BMP280
Barometric Pressure Sensor



Skyworks SKY13702-20 Diversity Receive Module

Avago DF1709 035970

Skyworks SKY13703-21 Diversity Receive Module

Bosch Sensortec BMP280 Barometric Pressure Sensor

Skyworks SKY13702-20 Diversity Receive Module

Feature	Specification
Manufacturer	Skyworks Solutions, Inc.
Model	SKY13702-20
Function	Diversity Receive Front-End Module (FEM)
Integration	RF switch, SAW filters, discrete LNA gain stages
Supported Bands	Multiple LTE bands (e.g., 1, 3, 4, 7, 8, 20, 26)
Interface	MIPI RFFE
Auxiliary Paths	Supports multiple aux RF paths for MIMO/carrier aggregation
Applications	Smartphones, tablets, embedded data cards, LTE/3G/2G devices

Skyworks SKY13703-21 Diversity Receive Module

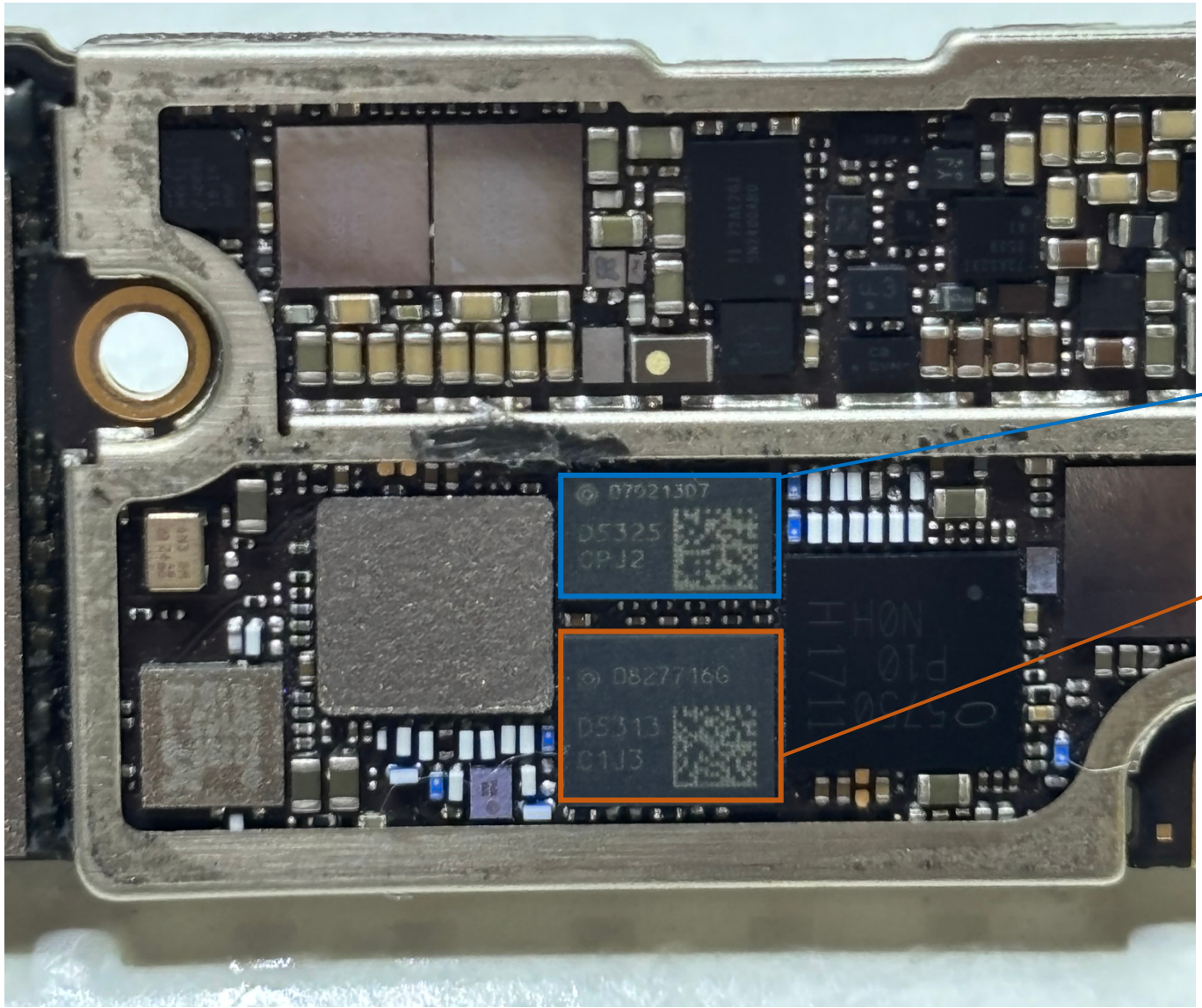
Feature	Specification
Manufacturer	Skyworks Solutions, Inc.
Model	SKY13703-21
Function	Diversity Receive Front-End Module (FEM)
Integration	RF switch, filters, LNA
Application	Smartphones (e.g., iPhone 7), LTE/3G/2G devices
Role	Enables antenna diversity, MIMO, and carrier aggregation

Bosch Sensortec BMP280 Barometric Pressure Sensor

Feature	Specification
Pressure Range	300–1100 hPa
Absolute Accuracy	±1 hPa (950–1050 hPa, 0–40°C)
Relative Accuracy	±0.12 hPa (typical ±1 m)
Temperature Range	-40 to +85°C
Resolution	0.01 hPa (pressure), 0.01°C (temp)
Current Consumption	2.7–3.4 ?A (1 Hz), 0.1 ?A (sleep)
Supply Voltage	1.71–3.6 V (VDD), 1.2–3.6 V (VDDIO)
Interfaces	I²C, SPI
Package	8-pin LGA, 2.0 × 2.5 × 0.95 mm
Modes	Sleep, Normal, Forced
Applications	Mobile, GPS, wearables, weather, altimeter

Avago DF1709 035970

Feature	Specification
Manufacturer	Avago Technologies (Broadcom Inc.)
Model	DF1709 035970
Function	Likely antenna tuner module
Role	Optimizes antenna impedance for multi-band RF performance
Integration	Works with PAs, switches, and diversity modules



TDK EPCOS D5325
Antenna Switch Module

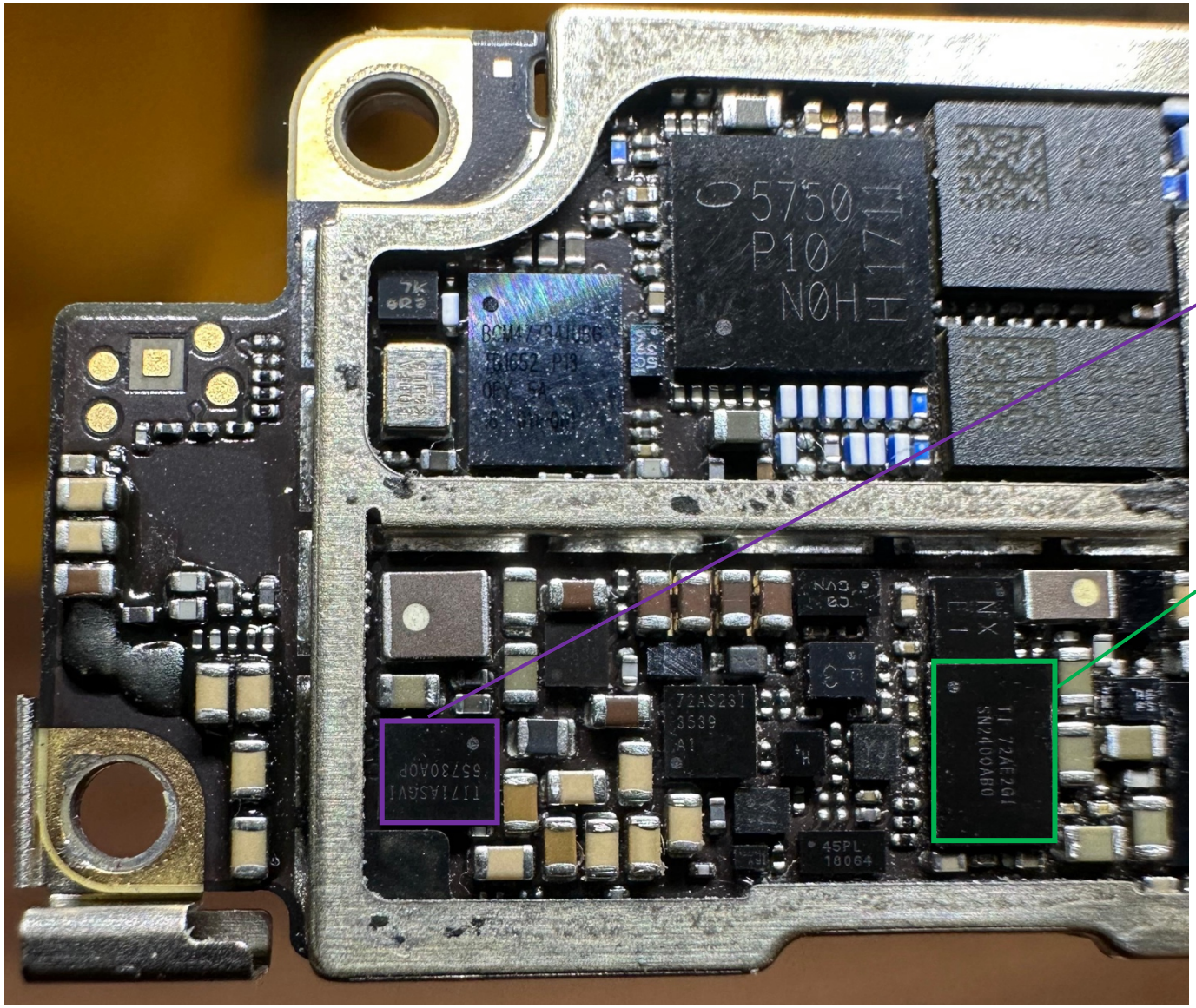
TDK EPCOS D5313
Antenna Switch Module

TDK EPCOS D5325 Antenna Switch Module

Feature	Specification
Manufacturer	TDK EPCOS
Model	D5325
Function	Antenna switch module
Role	Routes RF signals between the transceiver and antennas
Integration	Likely includes RF switches and passive elements

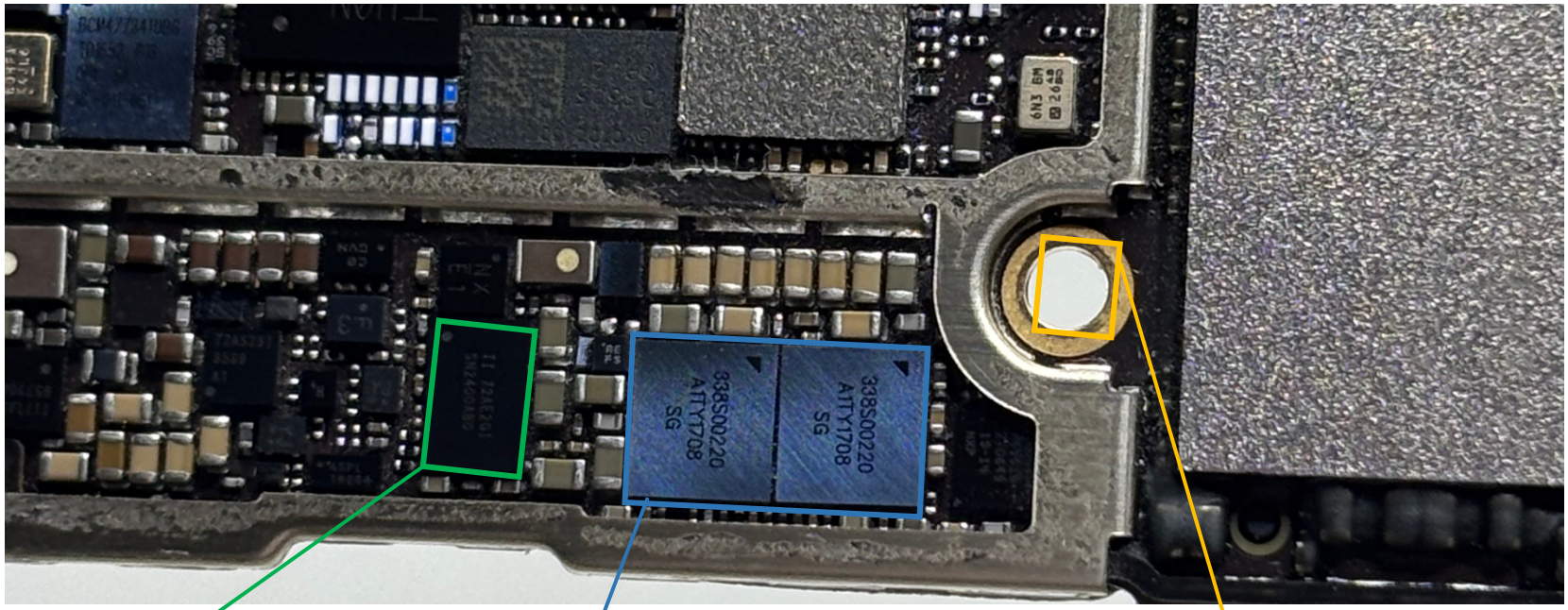
TDK EPCOS D5313 Antenna Switch Module

Feature	Specification
Manufacturer	TDK EPCOS
Model	D5313
Function	Antenna switch module
Role	Routes RF signals between the transceiver and antennas
Integration	Likely includes RF switches and passive elements



Texas Instruments TPS65730A0P Power Management IC

Texas Instruments SN2400AB0 Battery Charger IC



Texas Instruments SN2400AB0
Battery Charger IC

Cirrus Logic 338S00220
Audio Amplifier (x2)

NXP Semiconductor
CBTL1610A3
Display Port

Cirrus Logic 338S00220 Audio Amplifier (x2)

Feature	Specification
Manufacturer	Cirrus Logic (custom for Apple)
Model	338S00220
Function	Audio power amplifier
Quantity	2 (in iPhone 7/7 Plus; sometimes 3 for Lightning output)
Audio Output	Drives stereo speakers, supports Lightning audio
Integration	Works with Cirrus Logic 338S00105 Audio Codec

NXP Semiconductor CBTL1610A3 Display Port Multiplexer

Feature	Specification
Manufacturer	NXP Semiconductors
Model	CBTL1610A3
Function	High-speed differential signal multiplexer/demultiplexer
Supported Standards	DisplayPort 1.2, PCIe Gen3, USB 3.0, SATA 6 Gbit/s
Multiplexing Topology	2:1 or 1:2 (single differential channel)
Power Supply	3.3 V ±10%
Insertion Loss	-1.5 dB (4 GHz), -0.6 dB (100 MHz)
Bandwidth	9 GHz (-3 dB)
Propagation Delay	60 ps
Applications	DisplayPort, PCIe, USB 3.0, SATA switching in mobile/PC

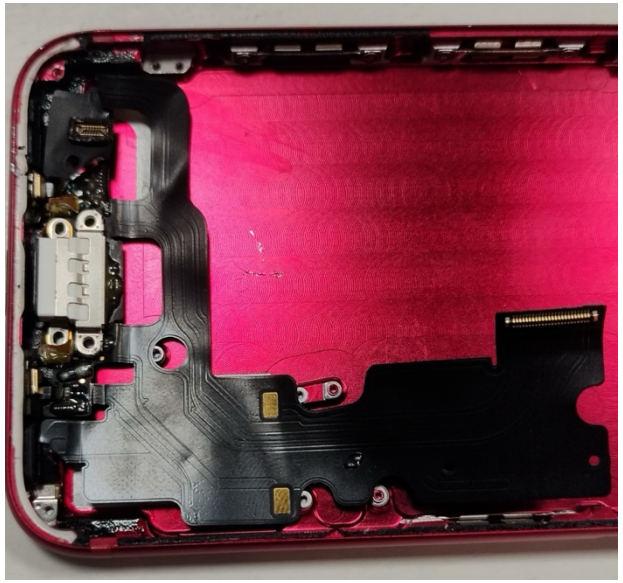
Texas Instruments SN2400AB0 Battery Charger IC

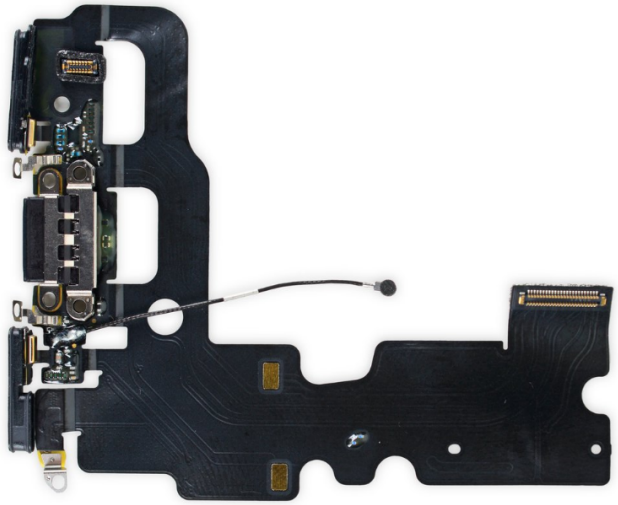
Feature	Specifications
Manufacturer	Texas Instruments
Function	1-cell Li-ion/LiPo linear battery charger
Input Voltage Range	3.0–5.9 V
Max Charge Current	Up to 1 A
Power Path Management	Yes
Programmability	I²C (charge current, voltage, input current limit)
Quiescent Current	15 nA (shutdown), ultra-low in normal operation
Applications	Smartphones, wearables, IoT, portable devices

Texas Instruments TPS65730A0P Power Management IC

Feature	Specification
Manufacturer	Texas Instruments
Model	TPS65730A0P
Function	Power Management IC (PMIC)
Role	Power regulation and distribution for key subsystems
Integration	Multiple power rails, power sequencing, compact BGA

Lightning Connector assembly

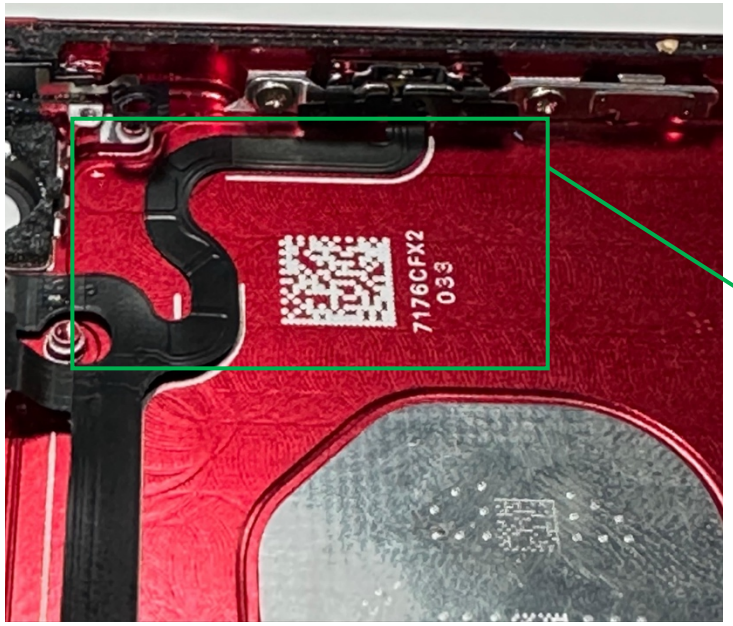




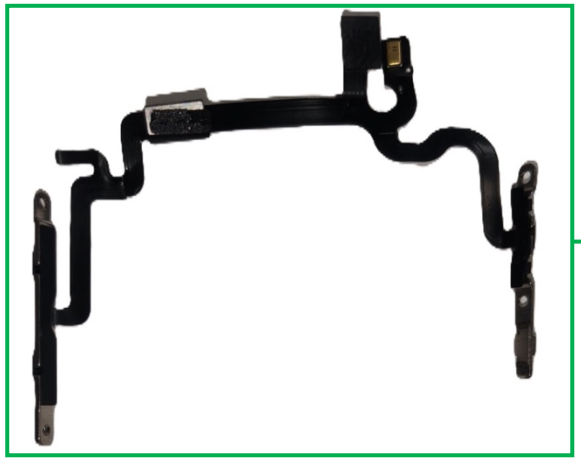
Lightning Connector assembly

Feature	Specification
Location	Bottom center of the phone, directly connected to the rear chassis
Function	Acts as the main I/O port for charging, data transfer, and audio output (no 3.5mm jack)
Includes	Lightning port, dual microphones, antenna contacts, grounding pads
Material	Flex cable with metallic Lightning socket and shielding
Connection Points	Connects to the logic board through a flex connector
Microphones	Bottom mic (main voice input) and secondary mic for noise cancellation
Design Note	Apple integrated audio output through the Lightning port in place of the headphone jack

Antenna Flex Assembly



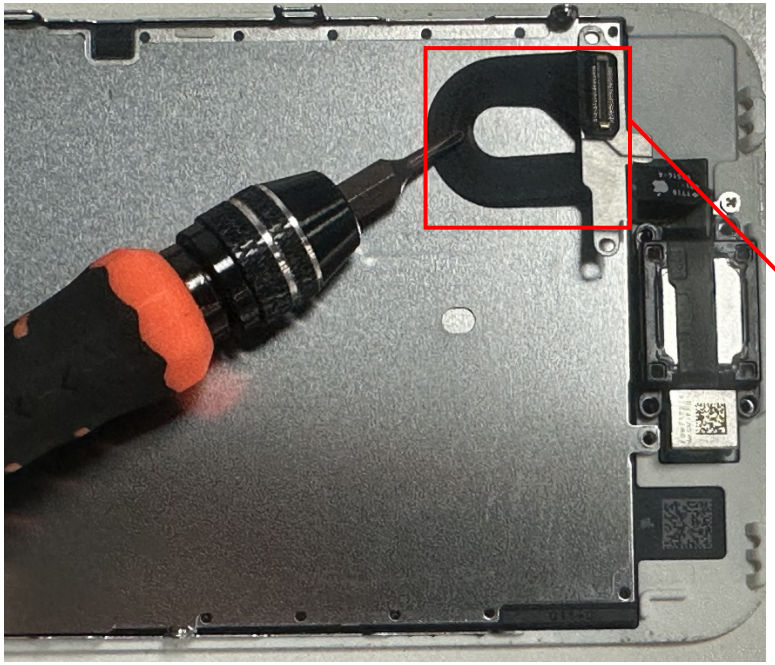
Antenna Flex cable attached to power button on side and volume buttons on another side



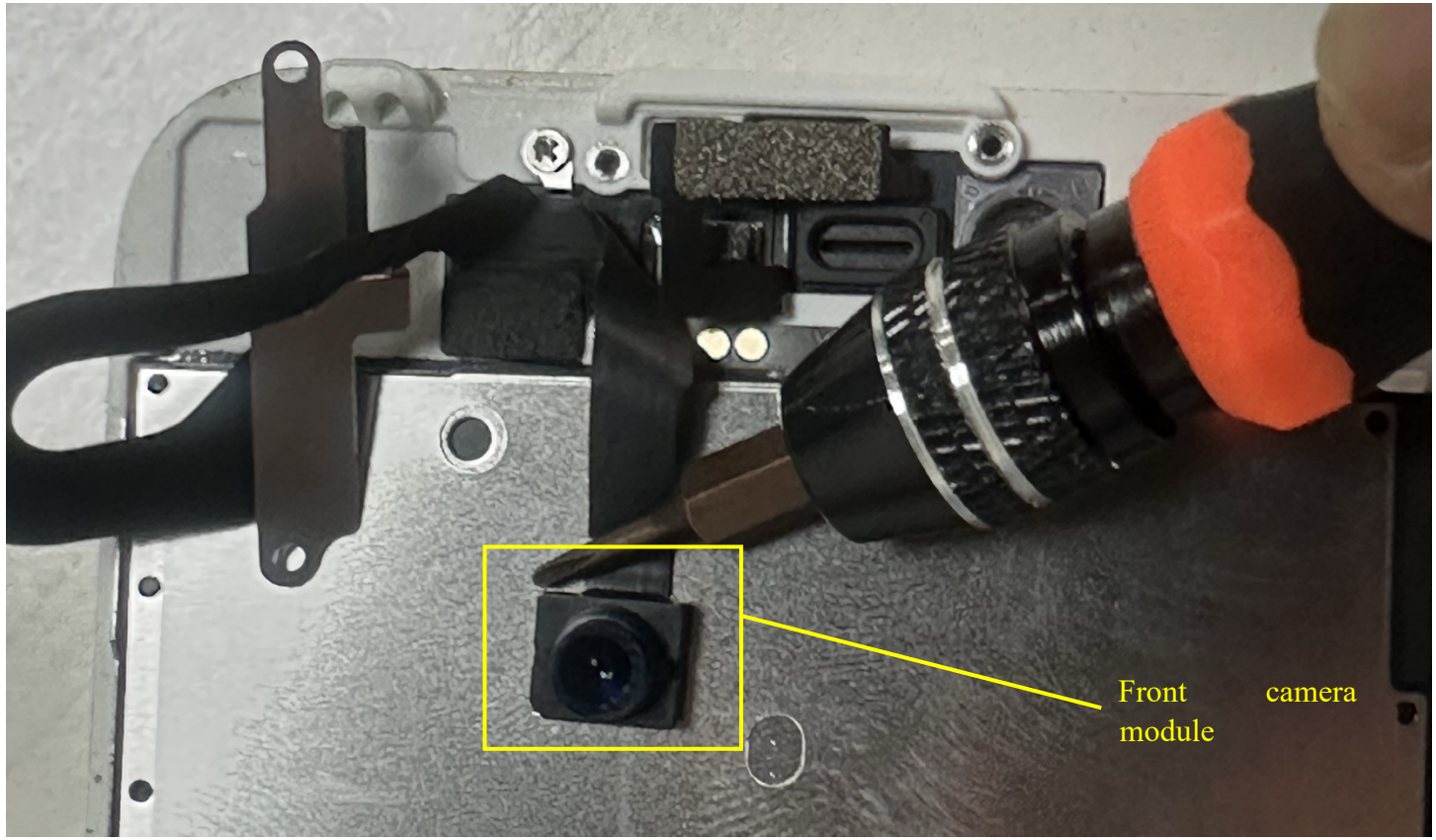
Antenna Flex cable assembly

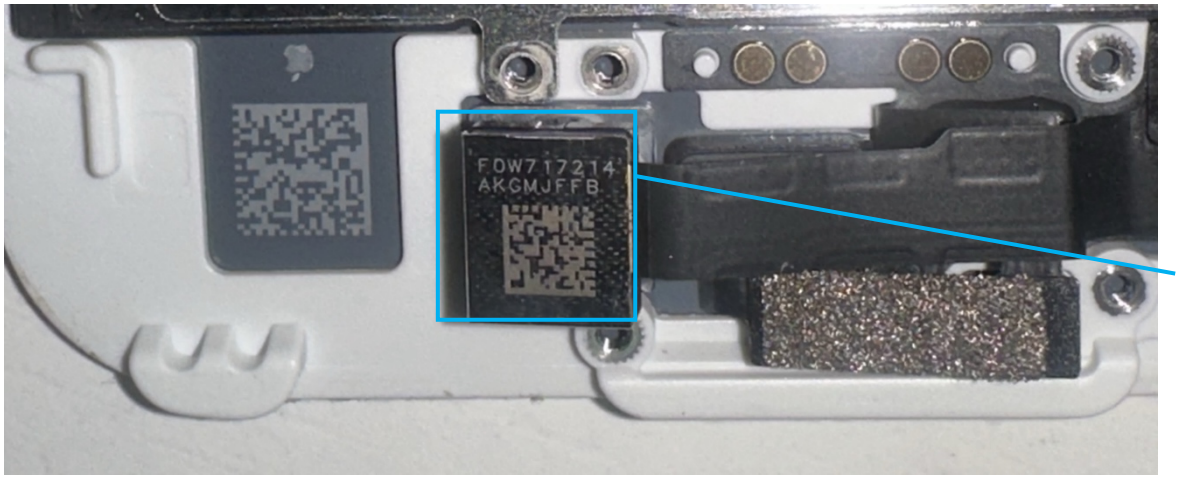
Features	Specification
Location	Upper chassis section
Function	Enables wireless connectivity, handles LTE, Wi-Fi, Bluetooth, and GPS signals
Material	Flexible polyimide (PI) substrate with etched copper signal traces
Supported Frequency Bands	LTE (Bands 1-28), GSM, UMTS, CDMA; Wi-Fi 802.11 a/b/g/n/ac; Bluetooth 4.2; GPS
Integration Points	Connects with: Logic board RF section, metal mid-frame (antenna lines), Lightning connector

Display Components and Earpiece



Flex cable which attaches to the logic board





Front Speaker module

Feature	Specification
Part Number	FOW717214
Type	Front Earpiece Speaker Module (Receiver Speaker)
Location	Top front, behind the display assembly
Impedance	~32 Ω (approx..)
Frequency Response	Optimised for voice frequencies (approx. 300 Hz – 3.4 kHz)

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