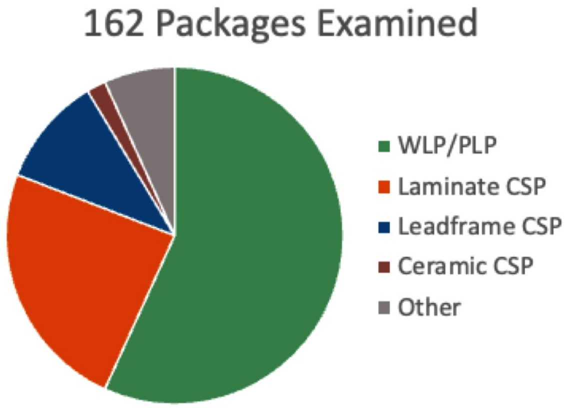
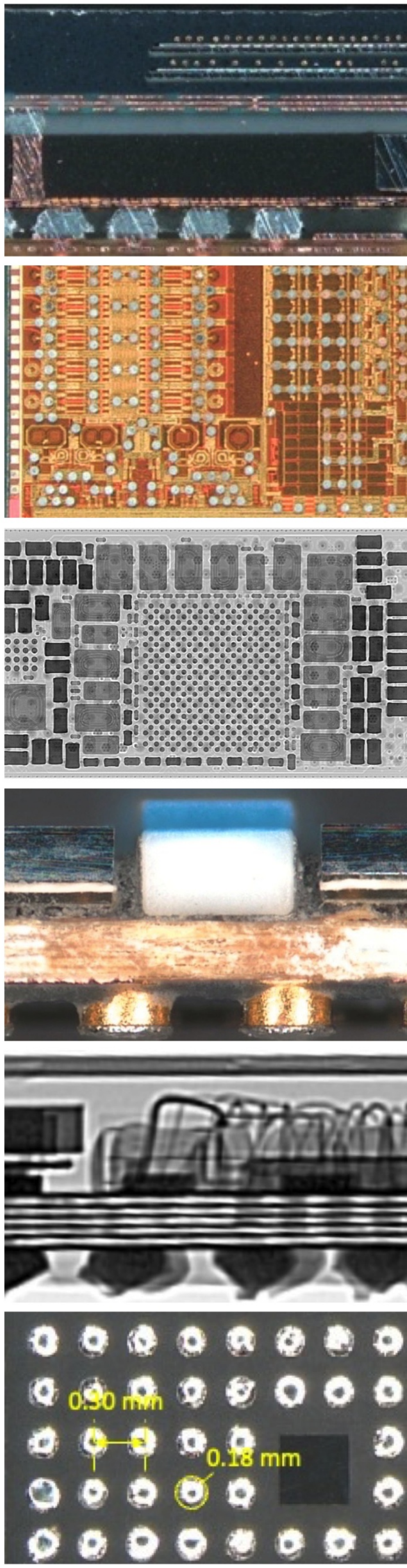
Apple iPhone Air

Teardown from TechSearch International, Inc.





Contents and Highlights

- 221-page report with package quantity summaries and details on every package and die in the phone, including high-resolution photos and X-rays, part numbers and descriptions, package and die dimensions, and analysis of contacts and interconnects
- 47 additional slides with extra details including PoP and main board cross sections, thermal management examination, advanced packaging technology analysis, company design wins, and other interesting new finds
- Deep analysis of Apple’s A19 Pro application processor in FO-WLP, including RDL and Cu pillar measurements from cross sections
- Some of the new chips include Apple’s C1X modem, large core power management module, Wi-Fi/BT/Thread module with Apple’s N1 chip, Samsung NAND chip with flip chip-mounted controller from Apple, and a combined touchscreen and OLED support module

Teardowns backed by 38 years serving as the industry’s trusted source for semiconductor packaging trend analysis

- Examination of all chips with emphasis on assembly and packaging technologies
- Superb quality photographs and x-ray images
- Both the packages and the die within are identified and characterized
- Detailed construction analysis of key chips and packages

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Sample pages from the report and slides

Apple iPhone Air

A3260

category **Smartphone (high-end)**
released **Sep 2025**

Package quantities (by package type)	
WLP/PLP	[redacted]
Laminate CSP	[redacted]
Leadframe CSP	[redacted]
MIS CSP	[redacted]
Ceramic CSP	[redacted]
Other	[redacted]
TOTAL	162

Die quantities (by die interconnect type)	
RDL/WLP	[redacted]
Flip chip	[redacted]
Wire bond	48
Clip	[redacted]
Ribbon	[redacted]
TOTAL	[redacted]

Total area (mm²)	Bare die solutions included	Bare die solutions excluded
Package area	[redacted]	[redacted]
Die area	[redacted]	[redacted]
Die / package	59%	[redacted]

Package = Any device that has completed final packaging steps; includes all board-level packaged devices as well as finished packages mounted inside other packages/modules. *Camera modules not counted as packages.*
Bare die solutions = Finished devices mounted directly on boards or flex circuits (e.g., chip on board, chip on flex, chip on substrate, etc.)

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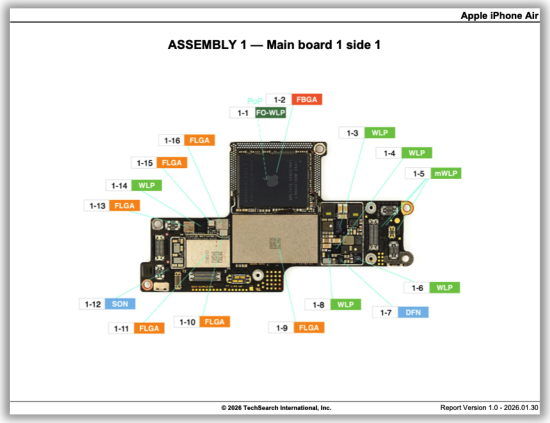

Apple iPhone Air

ASSEMBLY 1 — Main board 1 side 1

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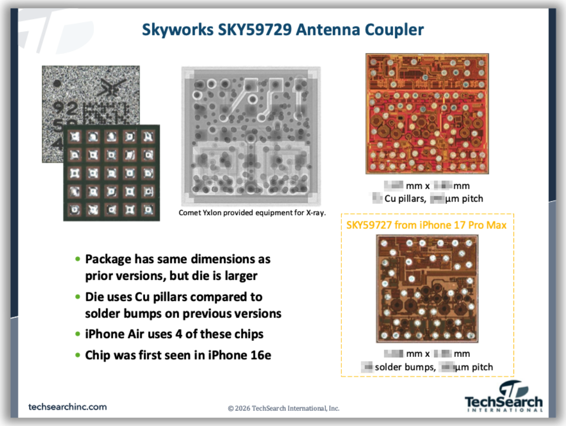

Skyworks SKY59729 Antenna Coupler

Comet Yxlon provided equipment for X-ray.

[redacted] mm x [redacted] mm
[redacted] Cu pillars, [redacted] µm pitch

- Package has same dimensions as prior versions, but die is larger
- Die uses Cu pillars compared to solder bumps on previous versions
- iPhone Air uses 4 of these chips
- Chip was first seen in iPhone 16e

SKY59727 from iPhone 17 Pro Max
[redacted] mm x [redacted] mm
[redacted] solder bumps, [redacted] µm pitch

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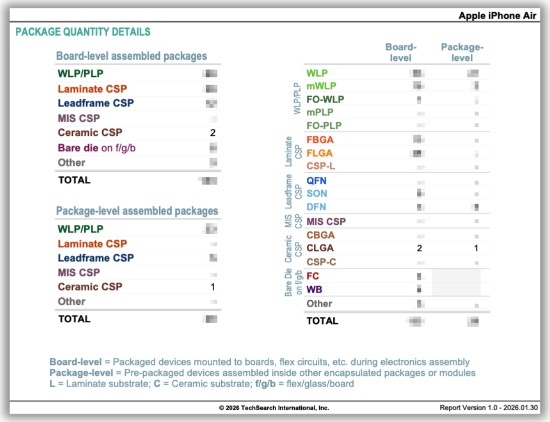

Apple iPhone Air

PACKAGE QUANTITY DETAILS

Board-level assembled packages	
WLP/PLP	[redacted]
Laminate CSP	[redacted]
Leadframe CSP	[redacted]
MIS CSP	[redacted]
Ceramic CSP	2
Bare die on f/g/b	[redacted]
Other	[redacted]
TOTAL	[redacted]

Package-level assembled packages	
WLP/PLP	[redacted]
Laminate CSP	[redacted]
Leadframe CSP	[redacted]
MIS CSP	[redacted]
Ceramic CSP	1
Other	[redacted]
TOTAL	[redacted]

		Board-level	Package-level
WLP/PLP	WLP	[redacted]	[redacted]
	mWLP	[redacted]	[redacted]
	FO-WLP	[redacted]	[redacted]
	mPLP	[redacted]	[redacted]
	FO-PLP	[redacted]	[redacted]
Laminate CSP	FBGA	[redacted]	[redacted]
	FLGA	[redacted]	[redacted]
	CSP-L	[redacted]	[redacted]
Leadframe CSP	QFN	[redacted]	[redacted]
	SON	[redacted]	[redacted]
	DFN	[redacted]	[redacted]
MIS CSP	MIS CSP	[redacted]	[redacted]
Ceramic CSP	CBGA	[redacted]	[redacted]
	CLGA	2	1
	CSP-C	[redacted]	[redacted]
Bare Die on f/g/b	FC	[redacted]	
	WB	[redacted]	
	Other	[redacted]	[redacted]
	TOTAL	[redacted]	[redacted]

Board-level = Packaged devices mounted to boards, flex circuits, etc. during electronics assembly
Package-level = Pre-packaged devices assembled inside other encapsulated packages or modules
L = Laminate substrate; **C** = Ceramic substrate; **f/g/b** = flex/glass/board

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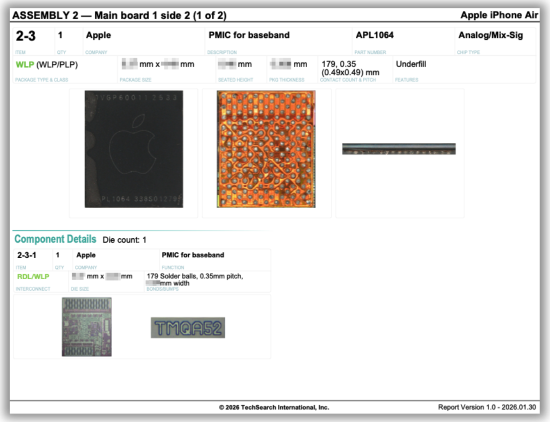

ASSEMBLY 2 — Main board 1 side 2 (1 of 2) Apple iPhone Air

ITEM	QTY	COMPANY	DESCRIPTION	PART NUMBER	CHIP TYPE
2-3	1	Apple	PMIC for baseband	APL1064	Analog/Mix-Sig

PACKAGE TYPE & CLASS	PACKAGE SIZE	SEATED HEIGHT	PKG THICKNESS	CONTACT COUNT & PITCH	FEATURES
WLP (WLP/PLP)	[redacted] mm x [redacted] mm	[redacted] mm	[redacted] mm	179, 0.35 (0.49x0.49) mm	Underfill

Component Details Die count: 1

ITEM	QTY	COMPANY	FUNCTION
2-3-1	1	Apple	PMIC for baseband

INTERCONNECT	DIE SIZE	BONDS/BUMPS
RDL/WLP	[redacted] mm x [redacted] mm	179 Solder balls, 0.35mm pitch, [redacted] mm width

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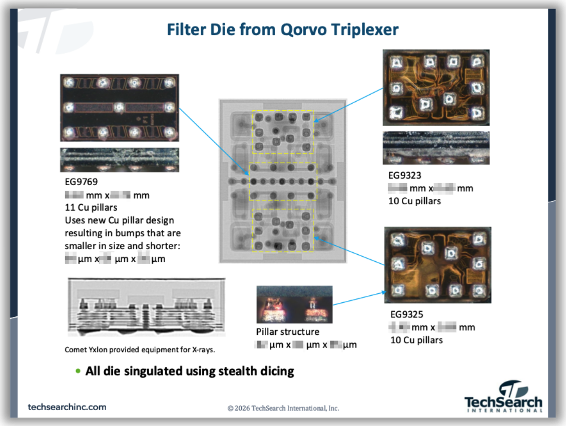

Filter Die from Qorvo Triplexer

EG9769
[redacted] mm x [redacted] mm
11 Cu pillars
Uses new Cu pillar design resulting in bumps that are smaller in size and shorter:
[redacted] µm x [redacted] µm x [redacted] µm

EG9323
[redacted] mm x [redacted] mm
10 Cu pillars

Comet Yxlon provided equipment for X-rays.

Pillar structure
[redacted] µm x [redacted] µm x [redacted] µm

EG9325
[redacted] mm x [redacted] mm
10 Cu pillars

- All die singulated using stealth dicing

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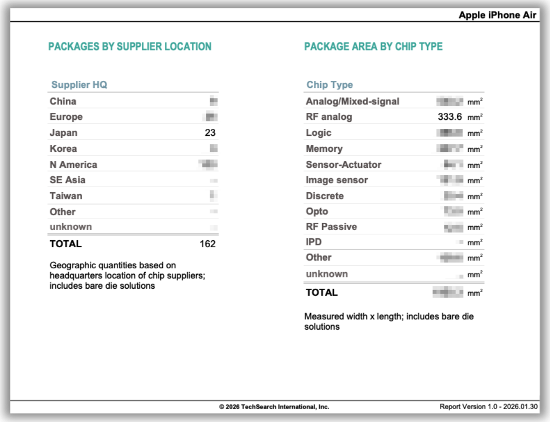

Apple iPhone Air

PACKAGES BY SUPPLIER LOCATION	
Supplier HQ	
China	[redacted]
Europe	[redacted]
Japan	23
Korea	[redacted]
N America	[redacted]
SE Asia	[redacted]
Taiwan	[redacted]
Other	[redacted]
unknown	[redacted]
TOTAL	162

Geographic quantities based on headquarters location of chip suppliers; includes bare die solutions

PACKAGE AREA BY CHIP TYPE	
Chip Type	
Analog/Mixed-signal	[redacted] mm²
RF analog	333.6 mm²
Logic	[redacted] mm²
Memory	[redacted] mm²
Sensor-Actuator	[redacted] mm²
Image sensor	[redacted] mm²
Discrete	[redacted] mm²
Opto	[redacted] mm²
RF Passive	[redacted] mm²
IPD	[redacted] mm²
Other	[redacted] mm²
unknown	[redacted] mm²
TOTAL	[redacted] mm²

Measured width x length; includes bare die solutions

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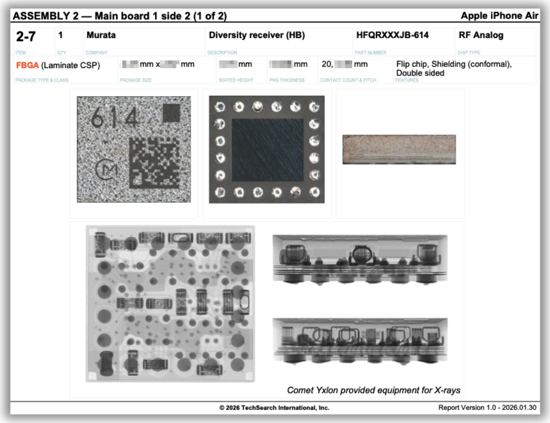

ASSEMBLY 2 — Main board 1 side 2 (1 of 2) Apple iPhone Air

ITEM	QTY	COMPANY	DESCRIPTION	PART NUMBER	CHIP TYPE
2-7	1	Murata	Diversity receiver (HB)	HFQRXXXJB-614	RF Analog

PACKAGE TYPE & CLASS	PACKAGE SIZE	SEATED HEIGHT	PKG THICKNESS	CONTACT COUNT & PITCH	FEATURES
FBGA (Laminate CSP)	[redacted] mm x [redacted] mm	[redacted] mm	[redacted] mm	20, [redacted] mm	Flip chip, Shielding (conformal), Double sided

Comet Yxlon provided equipment for X-rays

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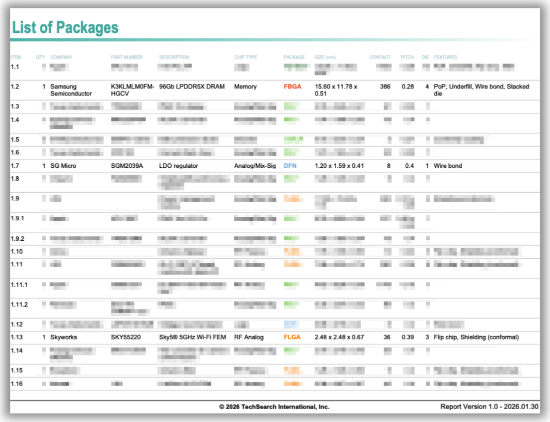

List of Packages

ITEM	QTY	COMPANY	PART NUMBER	DESCRIPTION	CHIP TYPE	PACKAGE	SIZE (mm)	CONTACT	PITCH	DIE	FEATURES
1.1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1.2	1	Samsung Semiconductor	K3KLMLM0FM-HGCV	96Gb LPDDR5X DRAM	Memory	FBGA	15.60 x 11.78 x 0.51	386	0.28	4	PoP, Underfill, Wire bond, Stacked die
1.3	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1.4	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1.5	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1.6	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1.7	1	SG Micro	SGM2039A	LDO regulator	Analog/Mix-Sig	DFN	1.20 x 1.59 x 0.41	8	0.4	1	Wire bond
1.8	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1.9	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1.9.1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1.9.2	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1.10	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1.11	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1.11.1	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1.11.2	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1.12	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1.13	1	Skyworks	SKY55220	Sky5® 5GHz Wi-Fi FEM	RF Analog	FLGA	2.48 x 2.48 x 0.67	36	0.39	3	Flip chip, Shielding (conformal)
1.14	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	
1.15	[redacted]	[redacted]		[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
1.16	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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For pricing, please call +1-512-372-8887