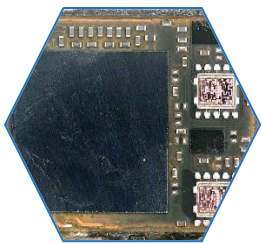
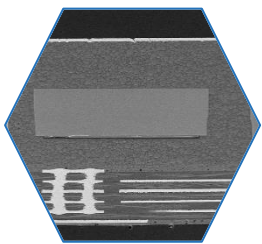
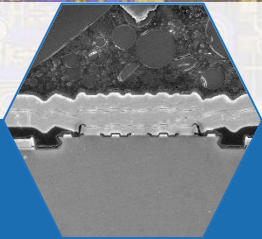


RF Front-End Module Comparison 2021 – Volume 4 - Focus on Wi-Fi 6/6E

Technical and cost overview of the latest radio frequency connectivity front-end technologies, with a deep analysis of Wi-Fi 6/6E architecture.



Title: RF Front-End Module Comparison 2021 - Volume 4 – Focus on Wi-Fi 6/6E

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Each year, System Plus Consulting opens hundreds of front-end modules (FEMs) and components in select flagship smartphones to provide an overview of the radio frequency (RF) FEM market. Gathering the information into one report offers an opportunity to track the evolution of this technology market.

This year, System Plus Consulting proposes different volumes of technical and cost comparisons of smartphones' RFFEM. Each report focuses on a specific subject: this can be a player's evolution, a specific technology, or a comparison of flagship devices.

This fourth volume provides insights into technology and cost data for Wi-Fi chipsets – specifically, the SoC, FEMs, and several components found in four of the latest smartphones: the Huawei P50 Pro, iPhone 13 Pro Max, Samsung Galaxy S21 5G, and Xiaomi Mi 11 Ultra. This report features a comprehensive overview of the connectivity architecture on the market, comparing Wi-Fi AC (aka 5.0) to Wi-Fi AX (aka 6/6E). As the architecture is central on the SoC, PAs, switches, and LNAs, a detailed analysis (including a cross-section and technology analysis) is also provided. Furthermore, different choices of architecture are revealed between Mediatek, Broadcom, Qualcomm, and Huawei.

With teardowns of these smartphones, the main RF modules and components were extracted and physically analyzed –

from the output of the transceiver to the antenna. Packaging, sizes, and technologies were studied to provide a large panel of technical and economical choices, and an overview of the market is provided as well.

This report includes an overview of other flagship smartphones released by the end of 2020/beginning of 2021 and furnishes a statistical analysis for most of the connectivity modules. An explanation of the smartphone makers' choices and supplier tendencies is also provided. Analysis of front-end modules for LTE and 5G is not included in this report.

COMPLETE TEARDOWN WITH:

- Detailed photos
- Precise measurements
- Module opening
- Die measurements
- Complete bills-of-materials for the modules
- Selected sip cross-sections
- Comparison between suppliers
- Comparison between oems
- Cost comparisons
- Detailed technical and cost analysis of 19 components
- Cost analysis of the main wi-fi 6/wi-fi 6E available on the market

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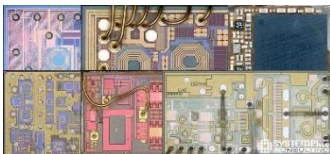


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RELATED ANALYSES



RF Front-End Module Comparison 2021 - Volume 3 – Focus on Samsung

Evolutive technical and cost comparison between the radio frequency front-end module technologies integrated in Samsung's 2019-2021 smartphone series.
December 2021



Qorvo QM7810X 5G Sub-6 L-PAMiD with Rx Diversity

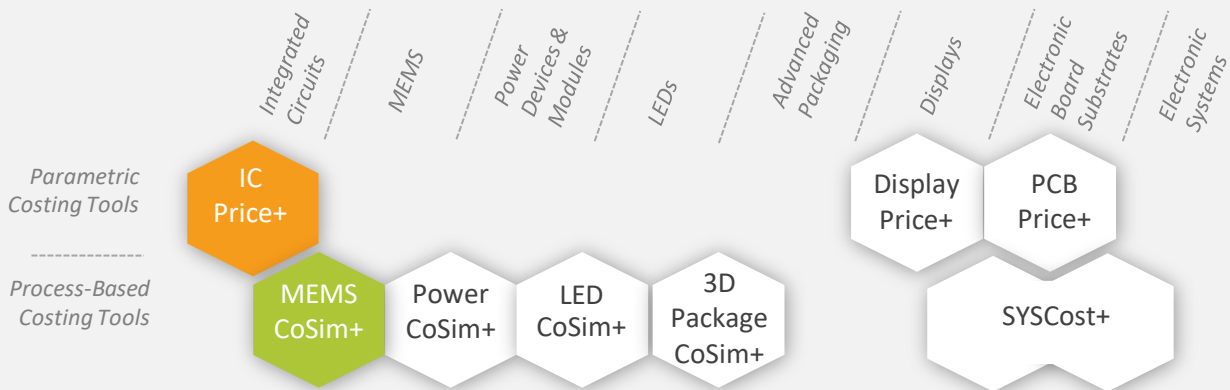
Complete technology and cost analysis of the front-end module using advanced DSMBGA, the latest GaAs PA, enhanced LNA-on-SOI, and novel micro-BAW technology.
October 2021



Cellular RF Front-End Technologies for Mobile Handset 2021

5G reaching the mass market is an opportunity and threat for RF front-end legacy players, and is unifying Chinese companies.
June 2021

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The tool performs the necessary cost simulation of any Integrated Circuit: ASICs, microcontrollers, DSP, memories, smartpower...

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