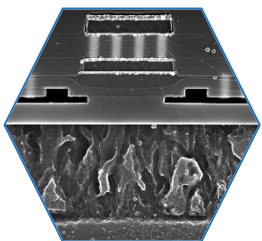
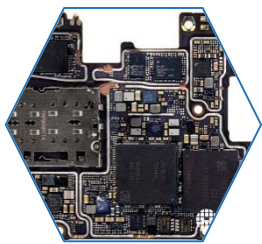


## Oppo Reno3 5G Sub-6 Front-End Module

*Study of innovative 5G Sub-6 modules from Qorvo and Skyworks integrated into Oppo's phones.*



**Title:** Oppo Reno3 5G Sub-6 Front-End Module

**Pages:** 387

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**Format:** PDF & Excel file

**Reference:** SPR21624

Qualcomm is currently the leader of the 5G market with several design wins in 2019 and 2020. But the company is not the only supplier of modules for 5G Sub-6 GHz frequency band communication. Qorvo and Skyworks follow Qualcomm in the rankings and could overtake it in the next few years. In the Reno3 5G, Oppo chose these two suppliers for the Radio Frequency Front-End (RFFE) for 4G and 5G. Both bring good alternatives to Qualcomm's components and offer cost-effective solutions.

Among the first 5G phones on the market in 2019, the Oppo Reno3 series has a different structure for the RF Front-End Module (FEM). The Pro version is based on a complete Qualcomm chipset from the modem to the antenna tuner. The standard version, studied in this report, features a modem and a transceiver from MediaTek and a complete RFFE split between Skyworks and Qorvo.

Qorvo supplied the QM77040 3G/4G/5G Mid/High Band (MB/HB) Power Amplifier integrated Duplexer (PAMiD), mostly with 4G rearming bands for 5G. The device features several dies showing different innovations from the latest generation of PA to generation 4 and 5 Bulk Acoustic Wave (BAW) filter.

Skyworks supplies all the others main components: 4G Low/Low-Mid/Mid/High-band (LB/LMB/MB/HB) Diversity module (SKY53735), 4G/5G B41/n41 PAMiD

(SKY58254), 5G n78/n79 Low Noise PAMiD (L-PAMiD) (SKY58255), and 5G n78/n79 Diversity (SKY53728).

The report contains a complete analysis of the main FEM System-in-Package (SiP), including a detailed analysis of the switches, the Low Noise Amplifier (LNA), the filtering dies, and the internal/external Electromagnetic Interference (EMI) shielding. The report also features a cost analysis and a price estimation of the chipset. Finally, it also integrates a comparison of the Qorvo QM77040 with the Qualcomm QPM5670, and the Skyworks SKY58254 with the Qorvo QM78041 and the Qualcomm QPM6585.

### COMPLETE TEARDOWN WITH

- Detailed photos
- Precise measurements
- Materials analysis
- Manufacturing process flow
- Supply chain evaluation
- Manufacturing cost analysis
- Estimated sales price
- Technical and cost comparison of the Qorvo QM77040 with the Qualcomm QPM5670 and the Skyworks SKY58254 with the Qorvo QM78041 and the Qualcomm QPM6585

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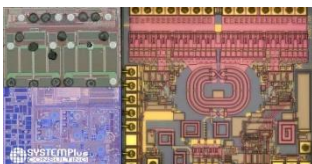


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## RELATED ANALYSES



### RF Front-End Module Comparison 2021 – Vol. 2 – Focus on 5G Chipset

*Technical and cost overview of the evolution of radio frequency front-end module technologies integrated in 5G mmWave and Sub-6 GHz Phones.*

April 2021



### Apple iPhone 12 series mmWave 5G Chipset and Antenna

*A study of the complete first generation of the 5G millimeter-wave chipset for Apple's phones including custom antenna, front-end module and antenna-on-package.*

February 2021

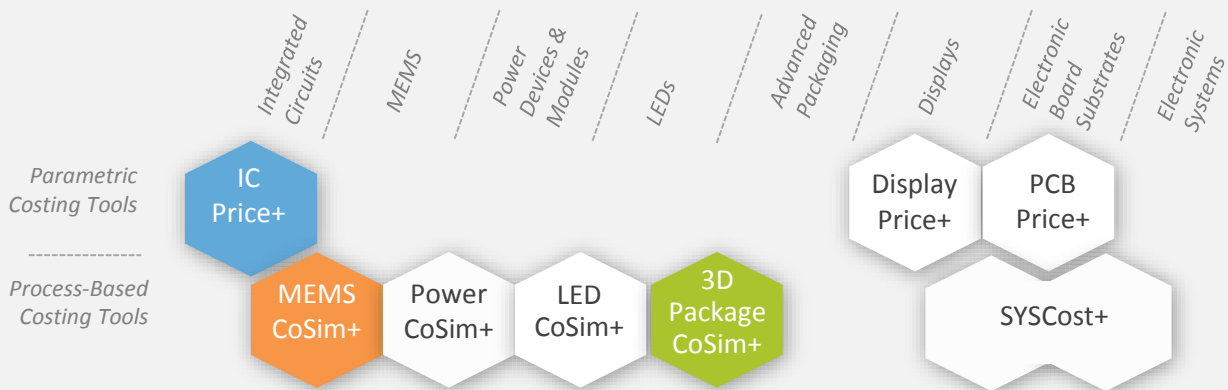


### 5G Packaging Trends for Smartphones 2021

*5G packaging brings innovative technology and 2.6 billion dollar opportunities for SiP business.*

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Our analysis is performed with our costing tools IC Price+, MEMS CoSim+ and 3D Packaging CoSim+.

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### 3D Packaging CoSim+

Cost simulation tool to evaluate the cost of any Packaging process: Wafer-level packaging, TSV, 3D integration...

### MEMS CoSim+

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System Plus Consulting is specialized in the cost analysis of electronics from semiconductor devices to electronic systems. A complete range of services and costing tools to provide in-depth production cost studies and to estimate the objective selling price of a product is available.

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Reverse Costing® is the process of disassembling a device (or a system) in order to identify its technology and calculate its manufacturing cost, using in-house models and tools.



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# TERMS AND CONDITIONS OF SALES

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## 1. INTRODUCTION

The present terms and conditions apply to the offers, sales and deliveries of services managed by System Plus Consulting except in the case of a particular written agreement.

Buyer must note that placing an order means an agreement without any restriction with these terms and conditions.

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Prices of the purchased services are those which are in force on the date the order is placed. Prices are in Euros and worked out without taxes. Consequently, the taxes and possible added costs agreed when the order is placed will be charged on these initial prices.

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System Plus Consulting delivered services are to be paid within 30 days end of month by bank transfer except in the case of a particular written agreement.

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System Plus Consulting remains sole owner of the delivered services until total payment of the invoice.

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The delivery schedule on the purchase order is given for information only and cannot be strictly guaranteed. Consequently any reasonable delay in the delivery of services will not allow the buyer to claim for damages or to cancel the order.

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The transport costs and risks are fully born by the Buyer. Should the customer wish to ensure the goods against lost or damage on the base of their real value, he must imperatively point it out to System Plus Consulting when the shipment takes place. Without any specific requirement, insurance terms for the return of goods will be the carrier current ones (reimbursement based on good weight instead of the real value).

## 8. FORCE MAJEURE

System Plus Consulting responsibility will not be involved in non execution or late delivery of one of its duties described in the current terms and conditions if these are the result of a force majeure case. Therefore, the force majeure includes all external event unpredictable and irresistible as defined by the article 1148 of the French Code Civil?

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The Buyer is responsible for the use and interpretations he makes of the reports delivered by System Plus Consulting. Consequently, System Plus Consulting responsibility can in no case be called into question for any direct or indirect damage, financial or otherwise, that may result from the use of the results of our analysis or results obtained using one of our costing tools.

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