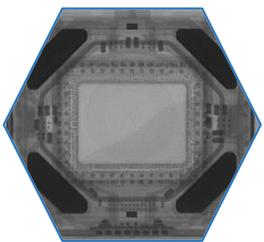
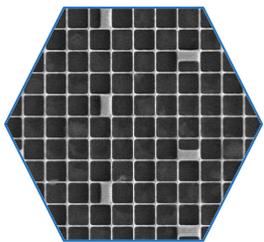


## Apple iPhone 12 Pro Max Rear Camera

*Deep technical and cost analysis of the first generation of Apple’s sensor-shift OIS-equipped camera.*



This full reverse costing study was conducted to provide insight into the technological data, manufacturing cost, and selling price of the iPhone 12 Pro Max Rear Triple Camera.

Apple has long been an innovation and market leader in the smartphone camera space. Since the iPhone 6 Plus, Optical Image Stabilization (OIS) has played a key role in the iPhone cameras’ best-in-class performance by rapidly adjusting the optical path in real time to correct for the natural shaking of the user’s hands. In the iPhone 12, Apple uses a dual-OIS design in which the Telephoto and Rear Main Camera Modules both use OIS technology.

Even though all the iPhone 12 variants were released around the same time, the iPhone 12 Pro Max can be considered a generation apart in terms of camera performance. The main difference is the new OIS technology in the Rear Main Camera Module. Whereas traditional OIS relies on shifting the lens barrel, Apple has for the first time miniaturized a sensor-shift OIS technology once used exclusively in expensive DSLR cameras. Shifting the lightweight, compact image sensor instead of the cumbersome lens barrel allows for more reactive and precise stabilization, resulting in an OIS system that can make up to 5,000 adjustments

per second. This technology also allows Apple to use the same OIS setup in all future cameras without needing to accommodate it to different lens configurations.

This report uses optical, SEM and x-ray imaging to analyze the three RGB camera modules comprising the rear camera of the iPhone 12 Pro Max. The front cameras will only be briefly summarized, since they are retained from previous iPhone generations. The [Dot Projector](#) and [LiDar system](#) have been covered in previous reports. The [Dot Projector](#) and [LiDar system](#) have been covered in previous reports.

**Title:** Apple iPhone 12 Pro Max Rear Camera

**Pages:** 150

**Date:** March 2021

**Format:** PDF & Excel file

**Price:** EUR 3,990

**Reference:** SPR21611

### COMPLETE TEARDOWN WITH

- Detailed Photos
- Explanation of New Technology
- Precise Measurements
- Material Analysis
- Manufacturing Process Flow
- Supply Chain Evaluation
- Manufacturing Cost Analysis
- Selling Price Estimate
- Comparison with the Samsung Galaxy S20 Ultra and Huawei P40 Pro Rear Cameras

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**Véronique Le Troadec** has joined System Plus Consulting as a laboratory engineer. Coming from Atmel Nantes, she has extensive knowledge in failure analysis of components and in deprocessing of integrated circuits.

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### Smartphone Camera Module Comparison 2020 Vol 2: Focus on Samsung

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### Smartphone Camera Module Comparison 2020 Vol. 1

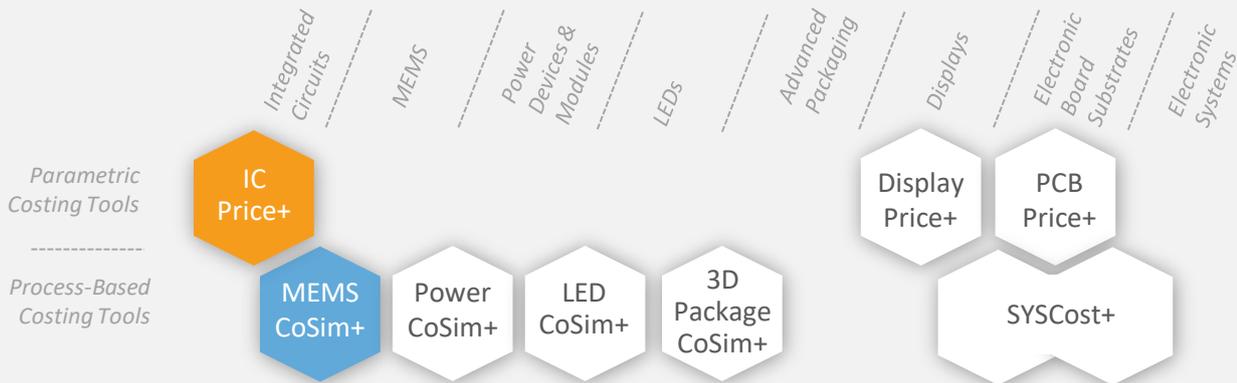
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## COSTING TOOLS



Our analysis is performed with our costing tools MEMS CoSim+ and IC Price+.

System Plus Consulting offers powerful costing tools to evaluate any process or device, the production cost and selling price, from single chip to complex structures. All these tools are on sale under corporate license.

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Cost simulation tool to evaluate the cost of any MEMS process or device.

### IC Price+

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

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## WHAT IS A REVERSE COSTING®?

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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System Plus Consulting may change its prices whenever the company thinks it necessary. However, the company commits itself in invoicing at the prices in force on the date the order is placed.

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The quoted prices already include the rebates and discounts that System Plus Consulting could have granted according to the number of orders placed by the Buyer, or other specific conditions. No discount is granted in case of early payment.

## 4. TERMS OF PAYMENT

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.

If the payment does not reach System Plus Consulting on the deadline, the Buyer has to pay System Plus Consulting a penalty for late payment the amount of which is three times the legal interest rate. The legal interest rate is the current one on the delivery date. This penalty is worked out on the unpaid invoice amount, starting from the invoice deadline. This penalty is sent without previous notice.

When payment terms are over 30 days end of month, the Buyer has to pay a deposit which amount is 10% of the total invoice amount when placing his order.

## 5. OWNERSHIP

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

## 6. DELIVERIES

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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## 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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As a rule, all information handed by customers to system Plus Consulting are considered as strictly confidential.

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## 10. RESPONSABILITY LIMITATION

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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