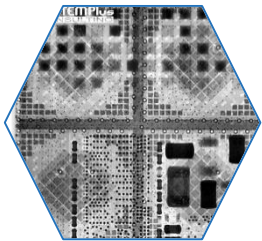
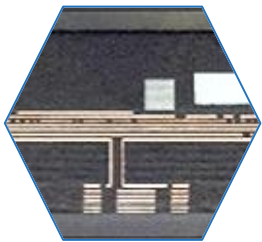


Qualcomm QTM527 mmWave Antenna Module

Deep analysis of the world's first fully integrated high-power 5G mmWave antenna module for Customer Premise Equipment fixed wireless access.



Title: Qualcomm QTM527 mmWave Antenna Module

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This full reverse costing study has been conducted to provide technology data, manufacturing cost and selling price of the QTM527 5G millimeter wavelength (mmWave) antenna module supplied by Qualcomm. More details are available on Qualcomm's website.

The extended range Qualcomm QTM527 mmWave antenna module was developed for the antenna router in 5G customer premise equipment (CPE). The CPE equipped with the QTM527 can have up to 64 dual polarization antenna elements. Each QTM527 is a 16 patch Antenna on Package (AoP) component. The 64 antennas are obtained by the integration of four components on the same PCB.

The flagship component supports up to 800MHz of bandwidth in the n257 28GHz, n258 26GHz, n260 39GHz and n261 28GHz bands. The lower frequencies are managed by other components and antennas.

The transceiver die is powered by a power management integrated circuit (PMIC) die to optimize the power consumption of the CPE and probably the envelope tracking. The transceiver and the PMIC are assembled with passives on the substrate of the AoP. The 3GHz signal input is performed by two coaxial connectors, one providing a horizontal signal, and one a vertical signal.

To provide extensive range radiation, beamforming, beam steering and 2x2 Multiple Input Multiple Output (MIMO) implementation, the QTM527 antenna

module is almost four times bigger than the QTM535. In addition, 16 antennas are integrated in each AoP, implementing up to 64 horizontally and vertically polarized antennae elements. Analysis of the AoP reveals several innovations taken from the smartphone AoP, like complex printed circuit board (PCB) structures with embedded filters and antenna systems, similar transceivers and PMIC implementations.

This report includes a full investigation of the system, featuring a detailed study of the AoPs, including die analyses, processes and board cross-sections with an X-Ray Computed Tomography (CT) scan for the AoP. It contains a complete cost analysis and a selling price estimation of the system. Finally, it features a technical and cost comparison with the QTM525 from Qualcomm.

COMPLETE TEARDOWN WITH

- System analysis
- Detailed photos
- Precise measurements
- Materials analysis
- Manufacturing process flow
- Supply chain evaluation
- Manufacturing cost analysis
- Estimated sales price
- Technical and cost comparison with the Qualcomm QTM525

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System Plus Consulting Services

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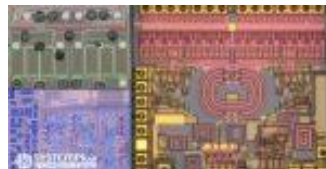
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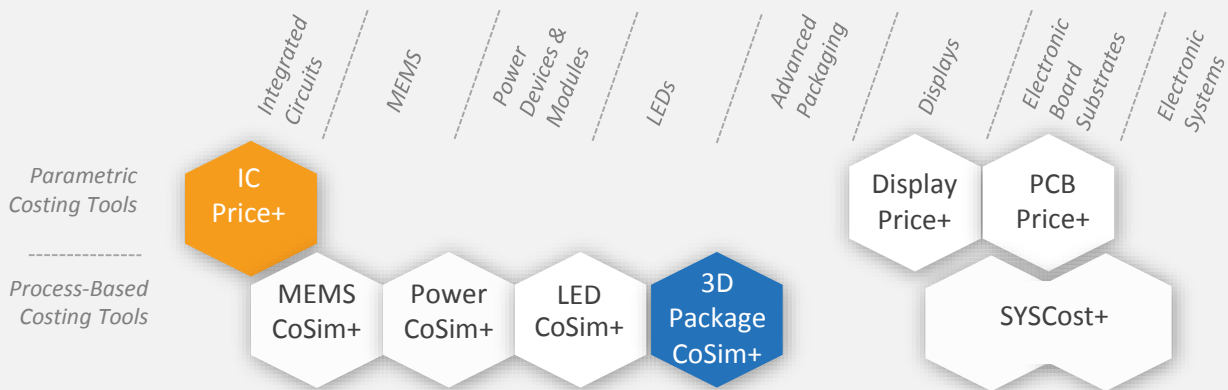
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COSTING TOOLS



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

System Plus Consulting offers powerful costing tools to evaluate the production cost and selling price from single chip to complex structures.

3D Packaging CoSim+

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

IC Price+

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

ABOUT SYSTEM PLUS CONSULTING

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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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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