# How about the sound quality of the product?\_ What&apos;s the difference between CSR and CSR?

# I. Introduction

How about the sound quality of the product is actually a very vague concept, it is difficult for people to answer good or bad.Sound quality depends on the overall product planning, such as: speaker selection, filter circuit, tuning circuit, software EQ algorithm and so on a series of components.

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| 1, | **CSR chips with high market acceptance do have good sound quality.Where is he?It can be divided into the following two aspects:** |
|  | 1. Special Kalimba is integrated in the software, and attention should be paid to the real special DSP.DSP  2. Hardware DAC has high signal-to-noise ratio, that is, high resolution.  **==> This kind of good, mainly reflected in some headphone products, often speaker products, can be improved by power amplifier.** |
| 2 | **But the problem arises. His good qualities are not needed by our ordinary users.** |
|  | 1. Because only big manufacturers like BOSE, Magic Sound and so on can develop these resources in depth.  2. Ordinary users, in use, are difficult to use these core advantages.  3. Waste, at most adjust Kalimba.DSPSome default sound effects.That&apos;s it |
| 3 | **The advantages of CSR chips are:** |
|  | 1. The Bluetooth protocol stack is very perfect.  2. All the basic Bluetooth functions can be realized, and the brand effect is high.  3. At the same time, the disadvantages are very obvious.**It&apos;s expensive.Because powerful chip hardware resources will be needed to support more.** |
| 4 | **Common Bluetooth products:** |
|  | 1. Just need a Bluetooth player to play music, or dual-mode BLE data transmission, while requiring better sound quality.  2. Suggestions are as follows: Choose domestic ones, and you won&apos;t be disappointed.  (1) Bluetooth as a mature product, audio EDR or version 2.1, so far basically no update, it has been nearly 7 years.  (2) The Bluetooth audio function, which is competing in the huge market, is really very close to the people.So when we choose the type, the idea can not stay five years ago.  (3) Or that sentence, the quality of sound is a systematic project, do not rely solely on a chip brand or word of mouth to doubt it. |

# II. Work done in the audio part of the product

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| 1, | **Core audio parameters:** |
|  | 1High performance 32-bit RISC CPU  2DC-160MHz Operation Support DSP instructions  3One audio interface support IIS, left adjusted, right adjusted and DSP mode  416-bit Stereo DAC with headphone amplifier, SNR >= 95dB |
| 2 | **Optimized Processing of Software and Hardware** |
|  | 1. The resolution of audio output is limited by the DAC resolution of the chip. The 16-bit DAC is very high.Not much software can handle  2. In the noise part of the chip, the automatic MUTE is achieved.  (1) Because Bluetooth is the most prone to cause noise, that is, high-frequency noise.This can only be avoided, not completely eliminated.  (2) Software output, open the audio DAC module, no audio, then completely close the DAC module  (3) Automatic switching chip internal power module, Bluetooth audio turn on LDO power supply, reduce noise    3Complete paving, strict digital and analog zoning. |