| 文件编号<br>Document No. | ESP-07-2-007-03 | 文件名称<br>Document Name | 产品/工艺变更通知<br>Product/Process Change Notice (PCN) |
|---|---|---|---|
| 文件版本<br>Document Version | 1.4 | 保存期限<br>Retention Period | 5 年<br>5 years |

**ESP32-S3、ESP8685、ESP32-C3 芯片规格书中蓝牙的“天线分集”功能移除**

**Remove "antenna diversity" Feature of Bluetooth LE in ESP32-S3, ESP8685, ESP32-C3 Chip Datasheets**

| PCN 编号<br>PCN No. | PCN20221203 | 提出日期<br>Issue Date of PCN | 2022/12/23 |
|---|---|---|---|
| 变更日期<br>Proposed Date of Change | 2022/12/29 | 预计变更后产品首次出货日期<br>Proposed Date of First Shipment After Change | NA，产品无变更<br>Product has no change. |
| PCN 类型 / PCN Category | ☐客户需要批准/ Customer Approval Required<br>☑客户通知/ Customer Notification | | |

1. 影响产品名称/ Affected Product Name

ESP32-S3 Series

ESP8685 Series

ESP32-C3 Series

2. 变更原因/ Reason for Change

在 ESP32-S3、ESP8685 和 ESP32-C3 芯片规格书 >低功耗蓝牙 > 低功耗蓝牙射频和物理层章节，“天线分集”被列为特性之一。然而，目前没有方案支持该特性，原因如下：

- 蓝牙是跳频工作的，每个频率的最优天线可能不同，而目前芯片的硬件设计及固件都不支持根据工作频率的变化选用天线，因此无法提供合适的应用方案。

In ESP32-S3, ESP8685 and ESP32-C3 chip datasheets > Bluetooth LE > Bluetooth LE Radio and PHY, the item “antenna diversity” is listed as a feature. Yet, it is currently not supported for the reason below:

- BLE is a frequency hopping system, and the best antenna for each working frequency may be different. However, the hardware design and firmware of the current chip can’t dynamically change the antenna according to the operating frequency.

3. 变更描述/ Description of Change

在 ESP32-S3、ESP8685 和 ESP32-C3 芯片规格书 > 低功耗蓝牙 > 低功耗蓝牙射频和物理层章节，移除“天线分集”。

In ESP32-S3, ESP8685 and ESP32-C3 chip datasheets > Bluetooth LE > Bluetooth LE Radio and PHY section, remove the item “antenna diversity”.

4. 变更对比/ Change Comparison

请见附录 I：变更对比。

Please refer to Appendix I: Change comparison.

5. 变更影响/ Impact of Change

1) 品质和性能/ Quality & Performance: 无影响/ No impact
2) 交期/ Delivery: 无影响/ No impact
3) 生产料号/ Material Part Numbers (MPN): 无影响/ No impact
4) 认证/ Certification: 无影响/ No impact
5) 软件/ IDF：无影响/ No impact

6. 变更前后产品处理/ How to Deal with Products

NA，产品无变更。Product has no change.

7. 相关报告/ Related Report(s):

☑Related ECN No. ECN-2022-045

# Appendix I 变更对比/ Change Comparison

## 1. 变更基本信息/ Change General Information

| 产品系列<br>Product Series | 变更前数据规格书版本<br>Datasheet Version Before Change | 变更后数据规格书版本<br>Datasheet Version After Change |
|---|---|---|
| ESP32-S3 | v1.2 | v1.3 |
| ESP8685 | v1.0 | v1.1 |
| ESP32-C3 | v1.3 | v1.4 |

注/ Note：

乐鑫技术规格书可查阅技术文档。

Espressif technical Datasheet can see on Technical Documents.

## 2. 变更详细信息/ Change Detailed Information

以 ESP32-S3 芯片数据规格书为例：

Take ESP32-S3 Chip Datasheet as an example:

| Type | Chang Before | Change After |
|---|---|---|
| CN Version | **3.7.1 低功耗蓝牙射频和物理层**<br>ESP32-S3 低功耗蓝牙射频和物理层支持以下特性：<br>• 1 Mbps PHY<br>• 2 Mbps PHY，用于提高传输速度和数据吞吐量<br>• Coded PHY，用于提高接收灵敏度和传输距离（125 Kbps 和 500 Kbps）<br>• 无需外部 PA，支持 Class 1 发射功率<br>• 硬件实现 Listen Before Talk (LBT)<br>• 天线分集 (Antenna diversity)：支持带有外部射频开关的天线分集与选择。外部射频开关由一个或多个 GPIO 管脚控制，用来选择最合适的天线以减少信道衰落的影响。 | **3.7.1 低功耗蓝牙射频和物理层**<br>ESP32-S3 低功耗蓝牙射频和物理层支持以下特性：<br>• 1 Mbps PHY<br>• 2 Mbps PHY，用于提高传输速度和数据吞吐量<br>• Coded PHY，用于提高接收灵敏度和传输距离（125 Kbps 和 500 Kbps）<br>• 无需外部 PA，支持 Class 1 发射功率<br>• 硬件实现 Listen Before Talk (LBT) |
| EN Version | **3.7 Bluetooth LE**<br>ESP32-S3 includes a Bluetooth Low Energy subsystem that integrates a hardware link layer controller, an RF/modem block and a feature-rich software protocol stack. It supports the core features of Bluetooth 5 and Bluetooth mesh.<br>**3.7.1 Bluetooth LE Radio and PHY**<br>Bluetooth Low Energy radio and PHY in ESP32-S3 support:<br>• 1 Mbps PHY<br>• 2 Mbps PHY for high transmission speed and high data throughput<br>• Coded PHY for high RX sensitivity and long range (125 Kbps and 500 Kbps)<br>• Class 1 transmit power without external PA<br>• HW Listen before talk (LBT)<br>• Antenna diversity with an external RF switch. This switch is controlled by one or more GPIOs, and used to select the best antenna to minimize the effects of channel imperfections. | **3.7 Bluetooth LE**<br>ESP32-S3 includes a Bluetooth Low Energy subsystem that integrates a hardware link layer controller, an RF/modem block and a feature-rich software protocol stack. It supports the core features of Bluetooth 5 and Bluetooth mesh.<br>**3.7.1 Bluetooth LE Radio and PHY**<br>Bluetooth Low Energy radio and PHY in ESP32-S3 support:<br>• 1 Mbps PHY<br>• 2 Mbps PHY for high transmission speed and high data throughput<br>• Coded PHY for high RX sensitivity and long range (125 Kbps and 500 Kbps)<br>• Class 1 transmit power without external PA<br>• HW Listen before talk (LBT) |

**邮件订阅**
**Espressif Email Notifications**

乐鑫为注册用户提供电子邮件通知服务，用户可通过乐鑫订阅系统接收技术文档更新、新闻通讯、PCN 等邮件通知。
Espressif sends email notifications of technical documentation changes, along with newsletters, PCNs and other valuable information, to subscribed customers only. If you wish to stay updated on our products and services, please subscribe here.

**客户响应要求**
**Customer Response Requirements**

**需客户批准的变更/ Change Requiring Customer Approval：**

a) 客户须在乐鑫发出 PCN 后的 30 天内告知乐鑫已收到 PCN。如客户未在接收到 PCN 后的 30 天内告知已收到，则视为客户收到变更。
Customers are requested to acknowledge receipt of the PCN within 30 calendar days from the date of issue of the PCN. Customers would be considered as notified 30 calendar days after issue of the PCN if no acknowledgement is received.

b) 自发布 PCN 之日起 90 天内，客户没有任何其他反馈，则表示客户接受该 PCN。
The lack of any additional responses from customers within 90 calendar days from the date of issue of the PCN constitutes acceptance of the proposed changes.

**客户通知/ Customer Notification：**

a) 客户需在乐鑫发出 PCN 后 14 天内通知乐鑫收到该 PCN。 如客户未在接收到 PCN 14 日反馈乐鑫，则视为客户确认该 PCN。
Customers are requested to acknowledge receipt of the PCN within 14 calendar days from the date of issue of the PCN. Customers would be considered as having acknowledged the PCN if no response is received after 14 calendar days.

请反馈至 pcn@espressif.com。
Please send feedback to pcn@espressif.com.

**客户批准/确认信息**
**Customer Approval/Acknowledgement and Remarks**

| | | | |
|---|---|---|---|
| 客户公司全称：<br>Customer's Company Name: | | | |
| PCN 评审结果/ PCN Review Result： | ☐批准/确认 Accepted/Acknowledged<br>☐不批准/ Rejected<br>☐需要分析/ Further Analysis Required | | |
| 客户意见/Comment: | | | |
| 公司代表人姓名<br>Representative's Name: | | 公司代表人职责<br>Representative's Job Title: | |
| 公司代表人签名<br>Representative's Signature: | | 日期<br>Date: | |