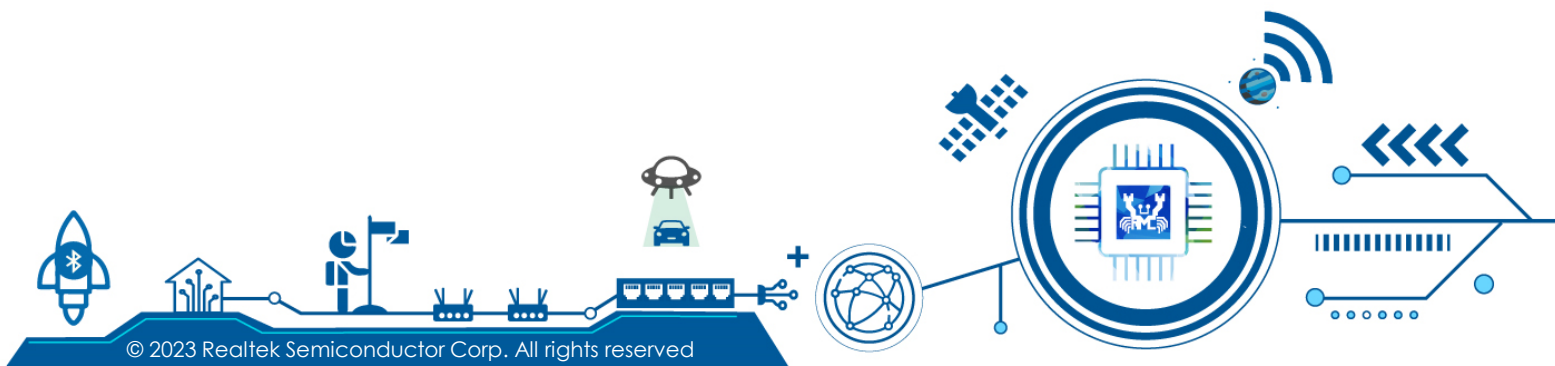


# Realtek Semiconductor IoT Ameba Family Introduction



**REALTEK**

Realtek Now, Ready for the Future



# Realtek Wi-Fi History and Shipping



# Ameba Solution Inside (Smart Home Appliance)



- Refrigerator
- Wash Machine
- Dish Washer
- Air Purifier
- Robot Cleaner
- Air Conditioner

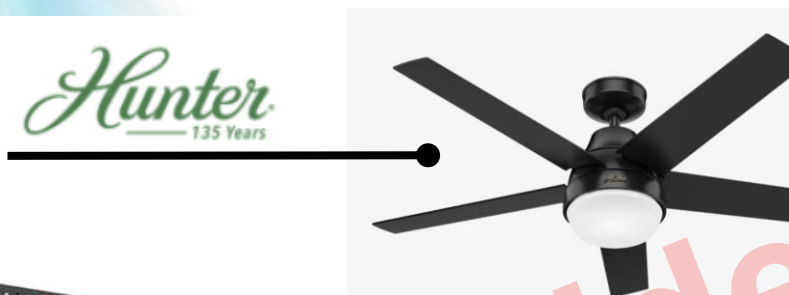
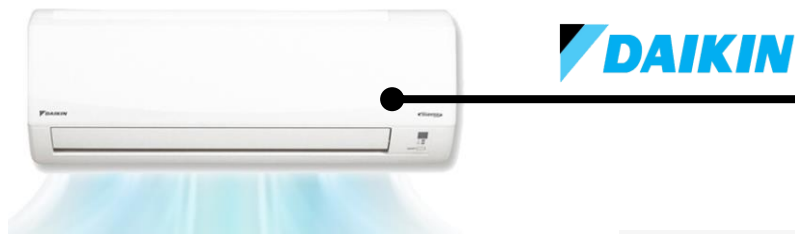


**SAMSUNG**

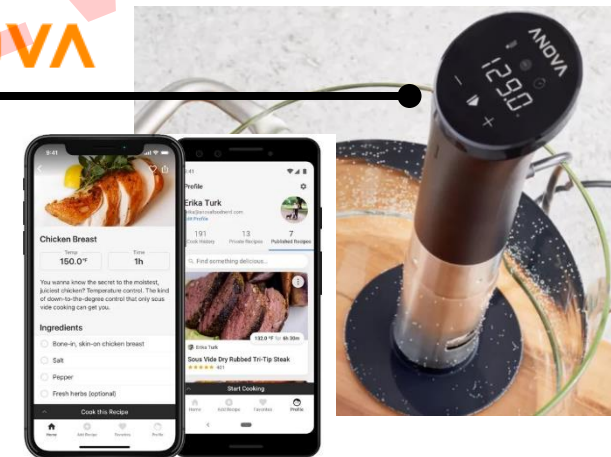
- Refrigerator
- Wash Machine
- Dish Washer
- Air Purifier
- Robot Cleaner
- Air Conditioner



# Ameba Solution Inside (Smart Home Appliance)



dyson



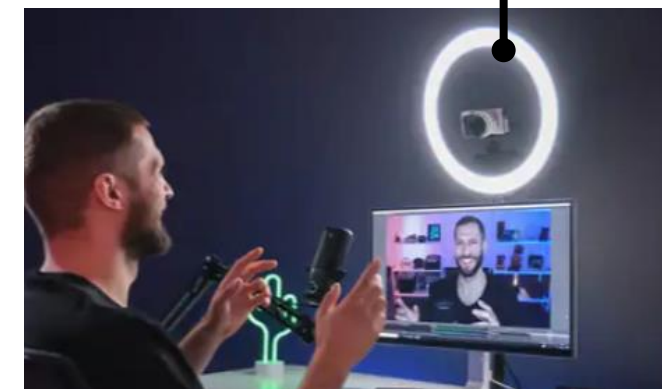
Haier



Midea



# Ameba Solution Inside (Smart Lighting, Electrical)



# Why Ameba Solution?



**Improve Security**

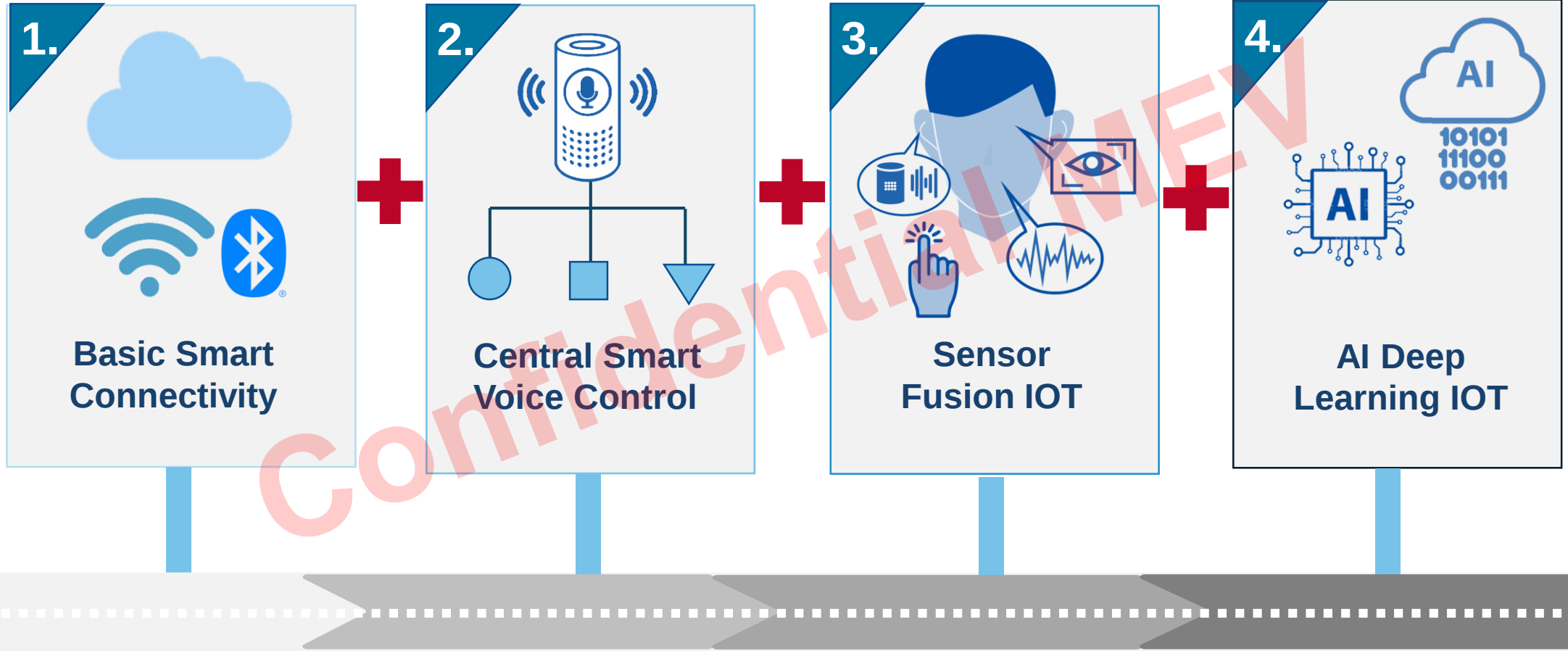


**RF Quality**



**Low Power  
Consumption**

# IoT Innovation Roadmap



# New Generation of Ameba series



## Wireless Entry-level ( Wi-Fi 6 + BLE 5.2)

- Dual MCU (KM4)
- Wi-Fi 6 (2.4GHz)
- Bluetooth 5.2 (LE)
- TrustZone & HW Crypto Engine
- Temp Sensor / Energy Meter
- Wi-Fi Sensing



## Smart Voice DSP Integrated

- Dual MCU (KM4) + **HiFi-5 DSP**
- Wi-Fi 6 (2.4GHz)
- **Bluetooth 5.2 (BR/EDR/LE)**
- TrustZone & HW Crypto Engine
- Support A-MIC (up to 5) and Line-out
- Temp Sensor / Energy Meter
- Wi-Fi Sensing



## Smart Voice Linux OS Embedded

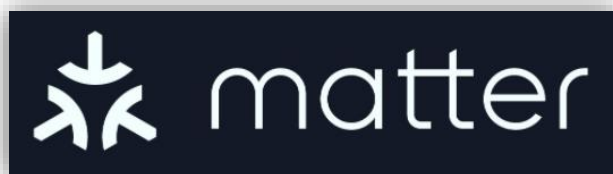
- **Dual Cortex-A32 & KM4 & KM0 MCU**
- CPU+MCU Low power design
- Support FreeRTOS & **Linux OS**
- Wi-Fi 6 (2.4GHz/**5GHz**)
- **Bluetooth 5.2 (BR/EDR/LE)**
- Support A-MIC (up to 5) and Line-out
- Wi-Fi Sensing



# New Generation of Ameba Series Table

| Feature                | RTL8720E                                            | RTL8726E                                            | RTL8730E <sup>AH</sup>                               | RTL8730E <sup>LH</sup>                               |
|------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| Package                | QFN48 6x6mm                                         | QFN68 8x8mm                                         | QFN100 10x10mm                                       | QFN144 11x11mm                                       |
| CPU core               | Dual KM4 @240MHz<br>App/Connectivity Core           | Dual KM4 @240MHz<br>App/Connectivity Core           | Dual CA32@1.4GHz<br>KM4@300MHz<br>KM0@40MHz          | Dual CA32@1.4GHz<br>KM4@300MHz<br>KM0@40MHz          |
| OS                     | FreeRTOS                                            | FreeRTOS                                            | FreeRTOS                                             | Linux OS                                             |
| DSP Core               | -                                                   | Hi-Fi5                                              | -                                                    | -                                                    |
| RAM + PSRAM in Package | 768KB+4MB (Opt.)                                    | 512KB+16MB                                          | 256KB + 8MB/32MB                                     | 256KB                                                |
| DDR in Package         | -                                                   | -                                                   | -                                                    | 64MB/128MB/256MB                                     |
| Flash in Package       | 4MB (Opt.)                                          | -                                                   | 8MB/32MB                                             | 32MB/128MB/256MB                                     |
| Wi-Fi                  | 1x1 2.4GHz Wi-Fi6<br>Wi-Fi Sensing                  | 1x1 2.4GHz Wi-Fi6<br>Wi-Fi Sensing                  | 1x1 2.4/5GHz Wi-Fi6<br>Wi-Fi Sensing                 | 1x1 2.4/5GHz Wi-Fi6<br>Wi-Fi Sensing                 |
| BT                     | Bluetooth 5.2 (LE)                                  | Bluetooth 5.2 (BR/EDR/LE)                           | Bluetooth 5.2 (BR/EDR/LE)<br>Shared/Dedicate RF Port | Bluetooth 5.2 (BR/EDR/LE)<br>Shared/Dedicate RF Port |
| matter                 | 0                                                   | 0                                                   | 0                                                    | 0                                                    |
| Security               | TrustZone-M<br>HW Security Boot<br>Security Storage | TrustZone-M<br>HW Security Boot<br>Security Storage | TrustZone-M<br>HW Security Boot<br>Security Storage  | TrustZone-M<br>HW Security Boot<br>Security Storage  |
| ADC                    | 0                                                   | 0                                                   | 0                                                    | 0                                                    |
| DAC                    | -                                                   | 0                                                   | 0                                                    | 0                                                    |
| I2S                    | 0                                                   | 0                                                   | 0                                                    | 0                                                    |
| SDIO                   | -                                                   | -                                                   | 0                                                    | 0                                                    |
| USB                    | -                                                   | -                                                   | 0                                                    | 0                                                    |

# Realtek IoT matter Solution Roadmap



## RTL8720CM



- ARM v8M KM4 100MHz
- Trustzone-M
- 256KB SRAM + 4MB PSRAM
- Wi-Fi 1x1 802.11n 2.4GHz
- BT5.0 BQB Certificated



## RTL8777AF



- ARMV8M KM4 120MHz
- 400KB SRAM
- MCM 2MB Flash
- 15.4 Thread
- BLE5.2/BLE Long Range



## RTL8720DF RTL8721DM



- ARM v8M KM4 200MHz
- ARM v8M KM0 20MHz
- Trustzone-M
- 512KB SRAM + 4MB PSRAM (opt.)
- Wi-Fi 1x1 802.11n 2.4GHz / 5GHz
- BT5.0 BQB Certificated
- ADC / DAC / LCD / Key Matrix



# Ameba Z2 Series Comparison Table

|              | RTL8720CM                                                                           | RTL8720CF                                                                           |
|--------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Package      | QFN40                                                                               | QFN40                                                                               |
| Package size | 5*5mm                                                                               | 5*5mm                                                                               |
| MCU          | KM4 @100MHz                                                                         | KM4 @100MHz                                                                         |
| Wi-Fi        |  |  |
| Bluetooth    |  |  |
| RAM          | SRAM 256KB<br>+PSRAM 4MB                                                            | 256KB                                                                               |
| Flash        | External                                                                            | MCM 2MB                                                                             |
| PWM          | x8                                                                                  | x8                                                                                  |
| SPI master   | x1                                                                                  | x1                                                                                  |
| SPI slave    | x1                                                                                  | x1                                                                                  |
| I2C          | x1                                                                                  | x1                                                                                  |
| UART         | x3                                                                                  | x3                                                                                  |
| GPIO Counts  | x20                                                                                 | x20                                                                                 |

# Ameba D (CS) Series Comparison Table

|              | RTL8720CS                                                                                                  | RTL8720DN                                                                                                  | RTL8720DF                                                                                                    | RTL8721CSM                                                                                                   | RTL8721DM                                                                                                    | RTL8722CSM                                                                                                   | RTL8722DM                                                                                                    |
|--------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Package      | QFN 48pins                                                                                                 | QFN 48pins                                                                                                 | QFN 48pins                                                                                                   | QFN 68pins                                                                                                   | QFN 68pins                                                                                                   | QFN 88pins                                                                                                   | QFN 88pins                                                                                                   |
| Package size | 6x6mm                                                                                                      | 6x6mm                                                                                                      | 6x6mm                                                                                                        | 8x8mm                                                                                                        | 8x8mm                                                                                                        | 10x10mm                                                                                                      | 10x10mm                                                                                                      |
| MCU          | KM4 @200MHz<br>KM0 @20MHz                                                                                  | KM4 @200MHz<br>KM0 @20MHz                                                                                  | KM4 @200MHz<br>KM0 @20MHz                                                                                    | KM4 @200MHz<br>KM0 @20MHz                                                                                    | KM4 @200MHz<br>KM0 @20MHz                                                                                    | KM4 @200MHz<br>KM0 @20MHz                                                                                    | KM4 @200MHz<br>KM0 @20MHz                                                                                    |
| Wi-Fi        | <br>2.4GHz                | <br>2.4/5GHz              | <br>2.4/5GHz              | <br>2.4GHz                | <br>2.4/5GHz              | <br>2.4GHz                | <br>2.4/5GHz              |
| Bluetooth    |  Bluetooth <sup>®</sup> 5 |  Bluetooth <sup>®</sup> 5 |  Bluetooth <sup>®</sup> 5 |  Bluetooth <sup>®</sup> 5 |  Bluetooth <sup>®</sup> 5 |  Bluetooth <sup>®</sup> 5 |  Bluetooth <sup>®</sup> 5 |
| RAM          | SRAM 512KB                                                                                                 | SRAM 512KB                                                                                                 | SRAM 512KB                                                                                                   | SRAM 512KB<br>+ PSRAM 4MB                                                                                    | SRAM 512KB<br>+ PSRAM 4MB                                                                                    | SRAM 512KB<br>+ PSRAM 4MB                                                                                    | SRAM 512KB<br>+ PSRAM 4MB                                                                                    |
| Flash        | External                                                                                                   | External                                                                                                   | MCM 4MB                                                                                                      | External                                                                                                     | External                                                                                                     | External                                                                                                     | External                                                                                                     |
| Audio        | No                                                                                                         | No                                                                                                         | No                                                                                                           | Yes                                                                                                          | Yes                                                                                                          | Yes                                                                                                          | Yes                                                                                                          |
| LCDC         | No                                                                                                         | No                                                                                                         | No                                                                                                           | No                                                                                                           | No                                                                                                           | Yes                                                                                                          | Yes                                                                                                          |
| SDIO         | No                                                                                                         | No                                                                                                         | Yes                                                                                                          | No                                                                                                           | No                                                                                                           | Yes                                                                                                          | Yes                                                                                                          |
| GPIO Counts  | 21                                                                                                         | 21                                                                                                         | 21                                                                                                           | 35                                                                                                           | 35                                                                                                           | 55                                                                                                           | 55                                                                                                           |

# Smallest Wi-Fi Dual-band MCU in the World!

- Realtek Ameba D – RTL8720DF

## Wi-Fi Dual-Band

Advance Wi-Fi protocol in IoT.



## Bluetooth BLE 5.0

BLE Commissioning, better user experience.

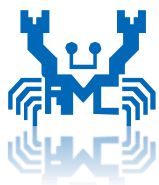


## Small Form Factor

QFN48 6x6mm with 4MB Flash in Package.  
Smallest Wi-Fi Dual-band MCU in the World



KM4@200MHz  
KM0@20MHz  
512KB SRAM



# REALTEK

# REALTEK



Improve Security



RF Quality



Low Power  
Consumption

Improve Security

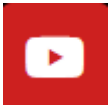
RF Quality

Consumption  
Low Power

# Realtek Ameba IoT Website



<https://www.amebaiot.com/en/>



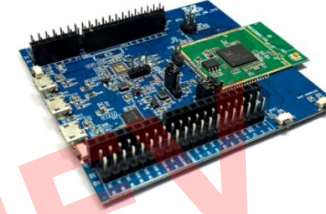
<https://www.youtube.com/channel/UCplqTUNYZEoIKs0nAWf9DCQ/videos>

## EVALUATION BOARDS

Buy Now



Ameba Z2



Ameba D



Ameba Z



Ameba RTL8720CM (AMB 31)



### Worldwide

Seed Studio  
Good Display



### Regional

China: Taobao



Ameba RTL8722DM (AMB 21)



### Worldwide

Seed Studio  
Good Display  
Good Display (Module only)



### Regional

Taiwan: Shopee  
Taiwan: ICShop

# Ameba Z2 – AWS IoT ExpressLink Module



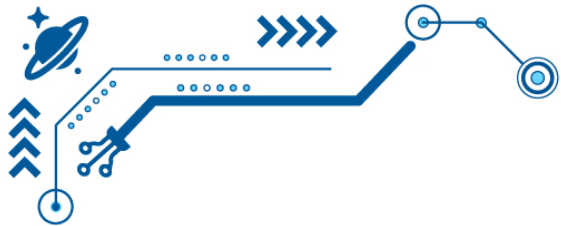
The graphic features a dark blue background with a network of glowing white dots and lines, suggesting a global or interconnected system. Various hexagonal icons are scattered throughout, including a group of people, a server, a lightbulb, a padlock, a magnifying glass, and a Wi-Fi symbol. A large, semi-transparent red watermark with the text "Confidential MEV" is oriented diagonally across the center.

**REALTEK**

## Ameba Z2 AWS IoT ExpressLink Module

Securely Connect and Seamlessly Integrate

powered by  
**aws**



Realtek Now, Ready for the Future

# Thank You

Realtek is committed to providing its customers with the best possible connectivity and multimedia solutions

