

# Smart Home Device BOM Firmware & Hardware Integration Checklist 2026

## Hardware Component Verification

Validation of all physical components, including PCBAs, sensors, microcontrollers, and connectivity modules (Wi-Fi, Bluetooth, Zigbee) against the master specification.

### Microcontroller (MCU) Part Number Verification

### PCB Revision Status

- ☐ Prototype
- ☐ Pre-Production
- ☐ Mass Production

### Connectivity Modules Included

- ☐ Wi-Fi
- ☐ Bluetooth LE
- ☐ Zigbee
- ☐ Matter/Thread
- ☐ Z-Wave

### Total Component Count

### Hardware Schematic Reference

 Upload File

### Last Hardware Audit Date

### Hardware Engineer Approval

## Firmware & Software Compatibility

Verification of firmware versions, driver compatibility with hardware revisions, and ensuring all communication protocols match the BOM requirements.

### Firmware Version Number

### Compatibility Status

- ☐ Fully Compatible
- ☐ Pending Testing
- ☐ Incompatible - Revision Required
- ☐ Critical Conflict Identified

### Verified Communication Protocols

- ☐ Wi-Fi (802.11)
- ☐ Bluetooth LE
- ☐ Zigbee
- ☐ Matter/Thread
- ☐ Z-Wave

### Firmware Release Notes

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### Compatibility Validation Date

Enter date...

### Known Bug/Conflict Notes

Write something...

### QA Engineer Approval

## Electronic Component Sourcing & Compliance

Checking lead times, manufacturer part numbers (MPN), and ensuring all components meet RoHS, REACH, and other regulatory standards for 2026.

### Manufacturer Part Number (MPN) Verification

### Compliance Standard Status

- ☐ RoHS Compliant
- ☐ REACH Compliant
- ☐ Pending Certification
- ☐ Non-Compliant

### Last Compliance Audit Date

### Minimum Safety Stock Level

### Datasheet & Certificate Upload

 Upload File

### Risk Factors Identified

- ☐ Single Source Supplier
- ☐ Long Lead Time
- ☐ End of Life (EOL) Warning
- ☐ Price Volatility

## Power Management & Battery Specifications

Audit of power supply units, battery cell ratings, voltage regulators, and energy consumption profiles to ensure device longevity and safety.

### Battery Model Number

Write something...

### Nominal Voltage (V)

Enter a number...

### Battery Capacity (mAh)

Enter a number...

### Power Source Type

- ☐ Lithium-Ion
- ☐ Lithium-Polymer
- ☐ Alkaline
- ☐ Rechargeable NiMH
- ☐ AC Adapter Only

### Safety Protection Features Present

- ☐ Overcharge Protection
- ☐ Deep Discharge Protection
- ☐ Short Circuit Protection
- ☐ Thermal Shutdown

### Datasheet for Power Management IC (PMIC)

 Upload File

### Electrical Engineer Approval

## Firmware Security & Encryption Standards

Review of integrated security features, secure boot protocols, and cryptographic module presence within the bill of materials.

### Encryption Standard Used

- ☐ AES-128
- ☐ AES-256
- ☐ RSA-2048
- ☐ ECC (Elliptic Curve Cryptography)

### Security Protocols Implemented

- ☐ Secure Boot
- ☐ TLS/SSL Certificate Validation
- ☐ Hardware Root of Trust (RoT)
- ☐ Code Signing
- ☐ Encrypted Firmware Over-the-Air (FOTA) Updates

### Firmware Version Reference

Write something...

### Vulnerability Mitigation Summary

Write something...

### Security Audit Report/Certificate

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### Security Lead Approval

## Mechanical & Enclosure Integration

Ensuring all physical housing components, fasteners, and thermal interface materials (TIM) are compatible with the electronic assembly.

### Enclosure Material Specification

Write something...

### Ingress Protection (IP) Rating Requirements

- ☐ IP20 (Basic protection)
- ☐ IP44 (Splash resistant)
- ☐ IP65 (Dust tight & Water jet)
- ☐ IP67 (Dust tight & Immersion)

### Tolerance Threshold (mm)

Enter a number...

### CAD/3D Model Reference

 Upload File

### Assembly Method

- ☐ Ultrasonic Welding
- ☐ Screw Fastening
- ☐ Snap-fit
- ☐ Adhesive Bonding

### Mechanical Engineer Approval

## Sensor Calibration & Accuracy Specs

Verification of accuracy tolerances and calibration requirements for all onboard environmental or motion sensors listed in the BOM.

### Sensor Model Name

### Required Accuracy Tolerance (%)

### Calibration Method

- ☐ In-situ Calibration
- ☐ Laboratory Standard Comparison
- ☐ Factory Pre-set Calibration
- ☐ Software-based Offset Adjustment

### Last Calibration Date

Enter date...

### Calibration Certificate

 Upload File

### Testing Parameters Verified

- ☐ Temperature Drift
- ☐ Humidity Sensitivity
- ☐ Signal Latency
- ☐ Signal-to-Noise Ratio (SNR)
- ☐ Voltage Stability

## Production & Manufacturing Readiness

Final review of testing jigs, automated optical inspection (AOI) requirements, and assembly instructions for the integrated hardware-firmware stack.

### Production Start Date

Enter date...

### Manufacturing Facility Location

- ☐ In-house Assembly
- ☐ Contract Manufacturer (CM)
- ☐ Third-party Logistics (3PL)

### Initial Production Run Quantity

Enter a number...

### Required Testing Equipment

- ☐ Automated Optical Inspection (AOI)
- ☐ In-Circuit Testing (ICT)
- ☐ Functional Circuit Testing (FCT)
- ☐ Environmental Stress Screening (ESS)

### Assembly Instruction Manual (SOP)

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### Production Risk Assessment Notes

Write something...

Production Manager Approval

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