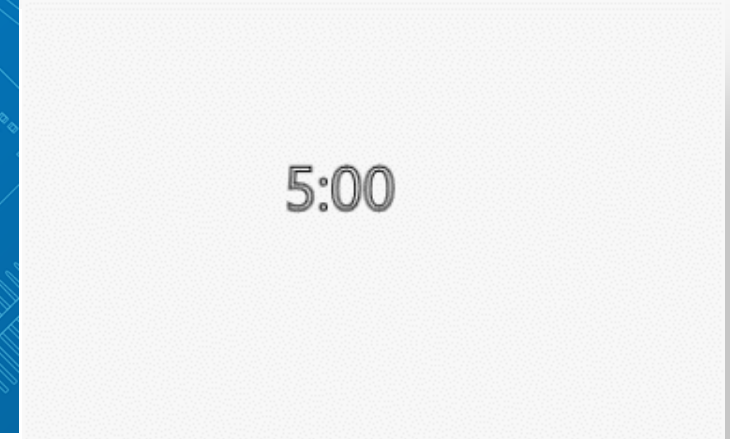
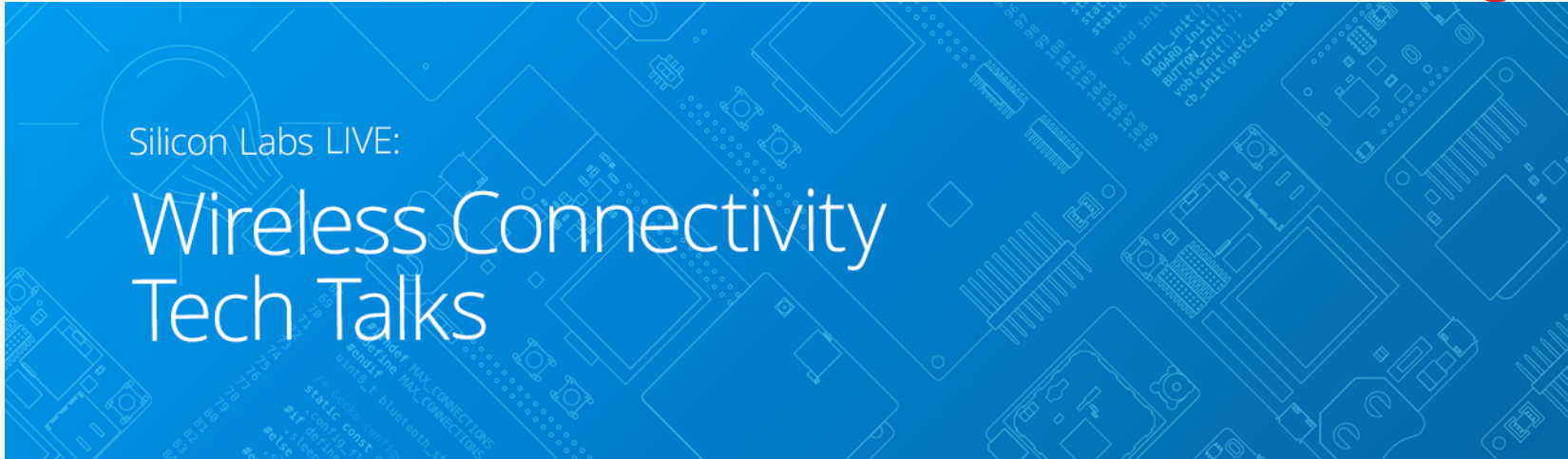


# Tech Talks LIVE Schedule – Presentation will begin shortly



Topic	Date
Multiprotocol Wireless: Real Application of Dynamic Multiprotocol	Tuesday, June 9
Wireless Coexistence	Thursday, June 11
Bluetooth Software Structure: Learn the APIs and State Machines	Tuesday, June 16
Add a Peripheral to a Project in No Time: With 32-bit Peripheral GitHub Library	Thursday, June 18
Energy Friendly PMIC with Low Energy Bluetooth BG22	Tuesday, June 23
<b>Talk with an Alexa: Using Zigbee to Connect with an Echo Plus</b>	<b>Thursday, June 25</b>
Z-Wave Software Structure: Learn about Command Classes and Reference Code	Tuesday, June 30
Building a Proper Mesh Test Environment: How This Was Solved in Boston	Thursday, July 2

Please take the 3 question poll while waiting and be entered to receive a Mesh Starter Kit.

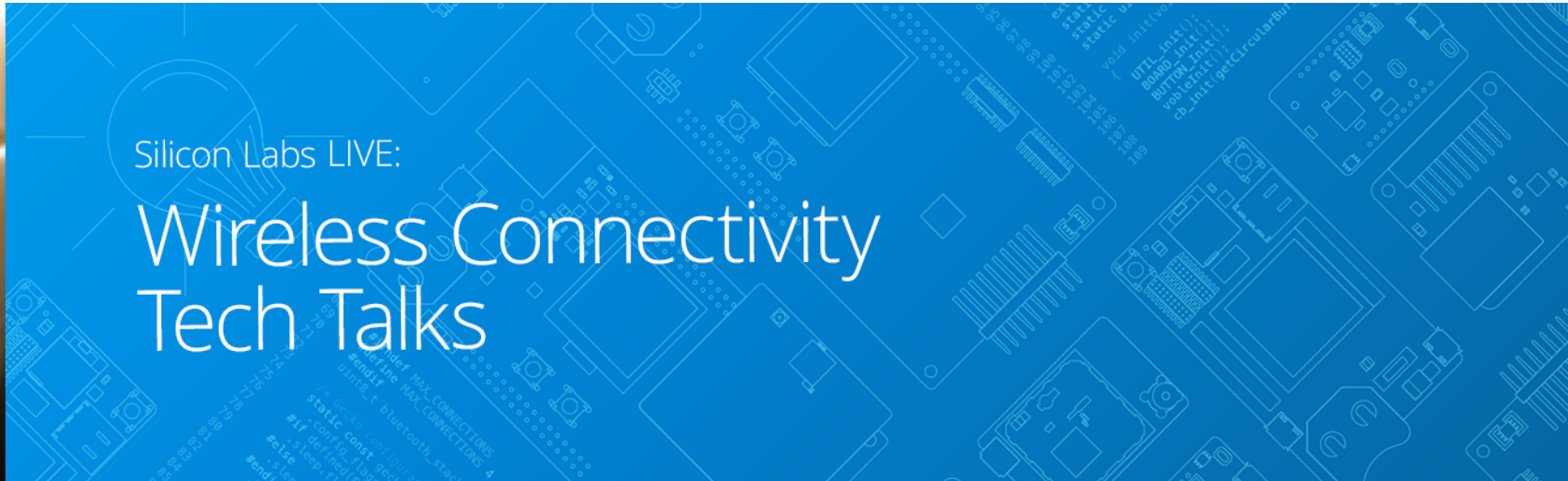


Find Past Recorded Sessions at:

<https://www.silabs.com/support/training>



# WELCOME



# *Using Zigbee to connect with Amazon Echo*

JUNE 2020

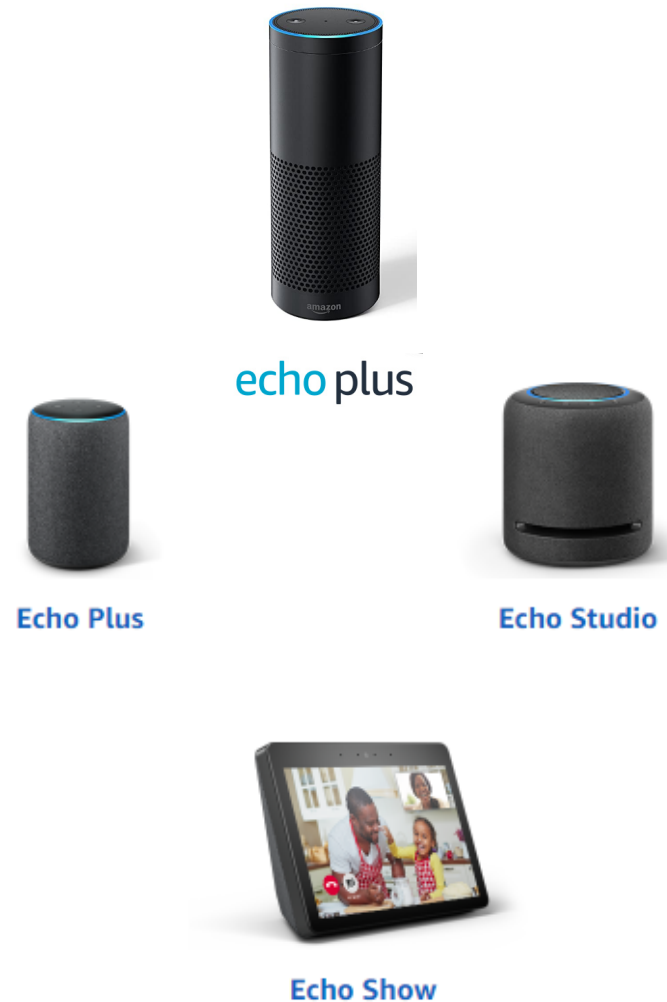


# Overview

- ❑ Echo Devices with Zigbee hubs
- ❑ What Zigbee devices types does Echo Support?
- ❑ Zigbee Certification and Works with Alexa – the process
- ❑ Silicon Labs Mighty Gecko Mesh Hardware
- ❑ How to build an app on a Silicon Labs board that can connect to Echo
- ❑ Live demo of Sample app and connecting to Echo

# What Zigbee device types does Echo Support?

- Echo supports several home automation device types, such as:
  - Door Locks
  - Light bulbs
    - Full RGB, Color temperature and dimming
  - Outlets and Plugs
  - Light Switches
  - Door/Window Sensors
  - Motion Sensors
- Alexa can control Zigbee devices via voice or as an input/output for a smart home routine
  - Examples:
    - Zigbee Motion sensor senses motion -> Triggers Alexa Routine -> Play a warning sound -> Turn on a Zigbee light at 100% brightness
    - User says “Alexa turn on hallway light” -> Zigbee commands to turn on hallway light switch



# Zigbee Certification

1. Become a member – Join the Zigbee alliance at appropriate membership level
2. Select a compliant platform – All of Silicon Labs EFR32MGx devices are certified as Zigbee compliant platforms
3. Choose a test house – see <https://zigbeealliance.org/certification/testing-providers/>
4. Send your product to be tested
5. Send the PICS document – Certification requires you to send a completed PICS document, to the test house, this allows them to determine the correct testing which your product must undergo.
6. Application pending – Testing is completed and awaiting final approval
7. Final approval
  - After having your product approved you will receive a formal certificate from the Zigbee Alliance and can begin to use the Certified Product logo!

# Works With Alexa Certification

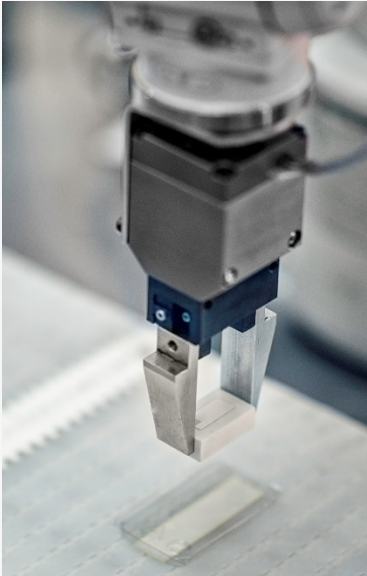
- Once your product is Zigbee certified – you can also apply for Works with Alexa certification
- Works with Alexa establishes your products ability to connect with Alexa devices, including Echo Plus Zigbee hubs
- You'll obtain a “Works With Alexa” badge on Amazon.com product listings once you've passed the certification
- For more information see: <https://developer.amazon.com/en-US/docs/alexa/smarthome/wwa-overview.html>

# Mesh SoC Portfolio Highlights

	Series 1 - MG13	Series 2 – MG21	Series 2 – MG22
<b>Target applications</b>	Mesh Routers and End Devices	Mesh Routers and End Devices	Zigbee End Devices only
<b>Availability</b>	Now	Now	Now
<b>Zigbee features</b>	Zigbee 3.0, Green Power, Concurrent Zigbee/Thread Multiprotocol (Zigbee/BLE)	Zigbee 3.0, Green Power, Concurrent Zigbee/Thread, Multiprotocol (Zigbee/BLE)	Zigbee 3.0 (end devices only) Green Power Device
<b>Proprietary 2.4G</b>	2/4(G)FSK, OQPSK/(G)MSK, DSSS, BPSK/DBPSK TX, OOK/ASK	N/A	2/4(G)FSK, (G)MSK, OQPSK, DSSS
<b>TX / RX (802.15.4)</b>	+19 dBm / -102.7 dBm	+20 dBm / -104.5 dBm	+6 dBm / -102.3 dBm
<b>TX Current</b>	9.5 mA (@ 0 dBm)	9.3 mA (@ 0 dBm)	4.1 mA (@ 0 dBm), 8.2 mA (@+6 dBm)
<b>RX Current (802.15.4)</b>	11.9 mA	9.4 mA	3.9 mA
<b>CPU / Clock Speed</b>	Cortex M4 (38.4 MHz)	Cortex M33 (80MHz)	Cortex M33 (76.8MHz), Cortex M0+ for radio
<b>Flash (kB)</b>	512	Up to 1024	Up to 512
<b>RAM (kB)</b>	64	Up to 96	32
<b>Sleep Current (EM2)</b>	1.3µA (16kB RAM)	4.5 µA (96 RAM)	1.4 µA (32kB RAM)
<b>Active Current (EM0)</b>	70 µA/MHz	51 µA/MHz	26 µA/MHz
<b>Security</b>	2x AES-128/256, ECC, SHA-1/224/256, TRNG	AES-128/256, SHA-1/2, ECC, ECDSA and TRNG DPA countermeasures Secure boot with RTSL Secure OTA and secure debug unlock + Secure Enclave (BG21B)	AES-128/256, SHA-1/2 ECC, ECDSA and TRNG Secure boot with RTLS Secure OTA and secure debug unlock
<b>Operating Voltage</b>	1.8V – 3.6V	1.71V – 3.8V	1.71V – 3.8V
<b>Packages (mm)</b>	7x7 QFN48	4x4 QFN32 (20x GPIO)	5x5 QFN40 (26x GPIO) 4x4 QFN32 / TQFN32 (18x GPIO)

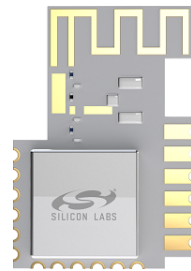


# Introducing Series 2 MGM210x Wireless Modules



**MGM210P**

Optimized for a wide range of applications



**MGM210L**

Optimized for Smart LED bulbs

- Worldwide certifications
  - Reduce certification costs
  - Mitigate risk
  - Accelerate time-to-market
- Best-in-class security
- High temperature rating up to 125 °C
- Software & support enables easy migration from modules to SoCs
- Field upgradeability ensures product longevity
- Protocols supported:
  - Zigbee
  - Thread
  - Bluetooth LE & mesh
  - Dynamic multiprotocol

# Building a Sample Zigbee Light to Connect to Echo

- Hardware:
  - Silicon Labs Wireless Starter Kit
  - EFR32MG21 Radio Board
- Software:
  - Simplicity Studio v4
  - Silicon Labs Gecko SDK + EmberZNet SDK
  - Zigbee 3.0 Light Sample Application



# Z3 Light Sample Application

- Zigbee 3.0 Dimmable Light Implementation
- Supports the Following clusters:
  - On/Off – ability to turn the light on and off
  - Level Control – Ability to set the brightness of the light
- Configured as a Zigbee Router
  - Includes support for Green Power Proxy basic – which is required for a Zigbee 3.0 Router
- Pre-configured to run on Silicon Labs Wireless Starter Kit radio boards

**Clusters**

Manufacturer (name or code):

Multiple endpoint configuration

Endpo...	Profile...	Devic...	Version	Configuration	Network	
★ 1	Hom...	0x01...	1	Centralized	Primary	<input type="button" value="New"/>
≡ 2	Hom...	0x010D	1	Touchlink	Primary	<input type="button" value="Delete"/>
≡ 242	Green...	0x0061	1	GreenPower	Primary	

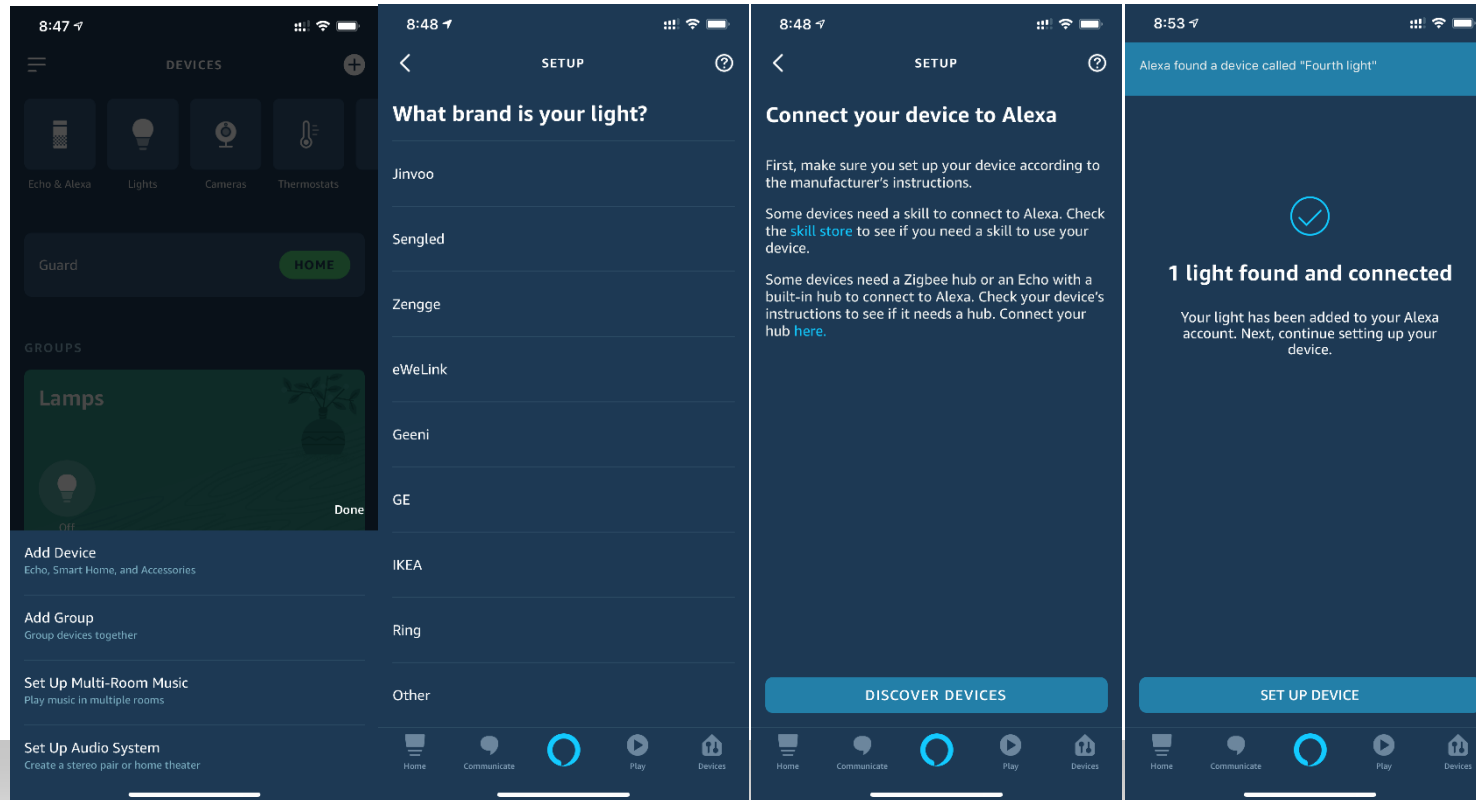
Selected configuration name: **Centralized**

ZCL device type:

Cluster name	Cluster...	Client	Server	Mfg Id
▼ <b>General</b>				
• Basic	0x0000		✓	
• Power Configuration	0x0001			
• Device Temperature Configuration	0x0002			
• Identify	0x0003		✓	
• Groups	0x0004		✓	
• Scenes	0x0005		✓	
• On/off	0x0006		✓	
• On/off Switch Configuration	0x0007			
• Level Control	0x0008		✓	

# Building a Sample Zigbee Light to Connect to Echo Plus

1. Plugin WSTK and open Simplicity Studio
2. Create, build and flash a Z3 Light Sample Application
3. Open Alexa app and Select Add Device -> Light -> Other -> Discover Devices
4. Open Console for Light Sample app and leave any existing networks and reboot the device
5. Alexa should discover the light and add it to available devices



Live Demo – Connecting Z3 Light to Echo Plus



# Additional Resources

- Zigbee Alliance Certified products and platforms
  - [https://zigbeealliance.org/zigbee\\_products/?product\\_type=certified\\_product](https://zigbeealliance.org/zigbee_products/?product_type=certified_product)
- Works With Alexa – Zigbee
  - <https://developer.amazon.com/en-US/alexa/connected-devices/zigbee>
- Silicon Labs Mighty Gecko Getting Started
  - <https://www.silabs.com/support/getting-started/mesh-networking/mighty-gecko>

# BG22 Virtual Workshop



Learn how to develop and deploy more powerful, efficient, and secure IoT products with your own BG22 Thunderboard – free for all registrants!

New Sessions Open for June

10:00AM –11:30 AM CST - T, W, Th

(Other sessions available for Asia Pacific and Europe)

Register today! <https://www.silabs.com/about-us/events/virtual-bluetooth-workshop>



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FROM BEGINNER TO ADVANCED*



# Q & A Session



Thank you

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