

Next Gen Bluetooth LE SoC family

Xtreme Low Power

XLP with Energy harvesting

Key sustainability focus topics for UEI



Extend the solution offering for complete SUP-free product delivery



Reduce the use of virgin plastics with >85% PCR recycled material



UE961 & 962 Xtreme low power SOC with Energy Harvesting capability



Next-generation indoor PV cell solution & RF Harvesting technology



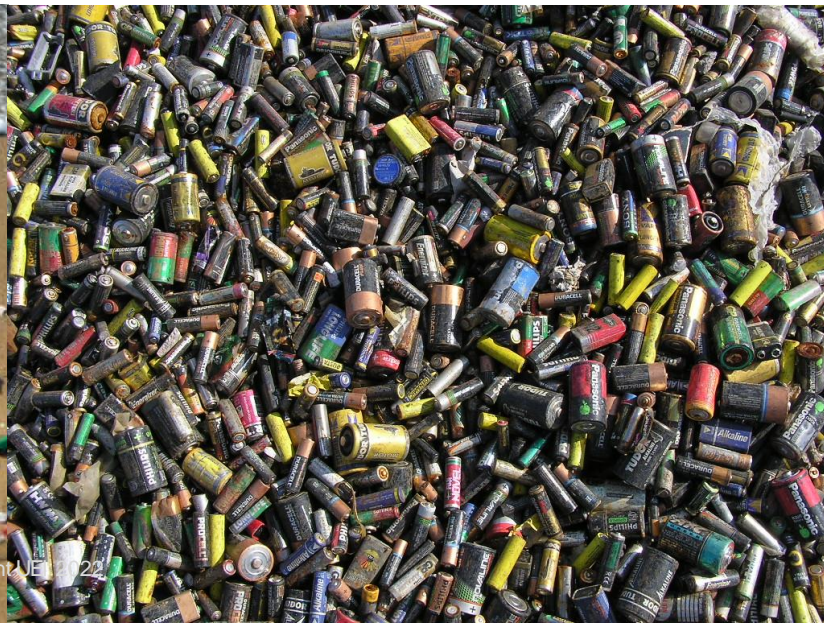


Social Responsibility – A sustainable future

The problem

‘Human-centered’ design, as currently practiced, is problematic. For the convenience and delight of the ‘user,’ we create products that are cheap and desirable but create ***environmental and social damage*** through their production, service, and after-life.

Felix Heibeck



A SUSTAINABLE SOLUTION IS NEEDED

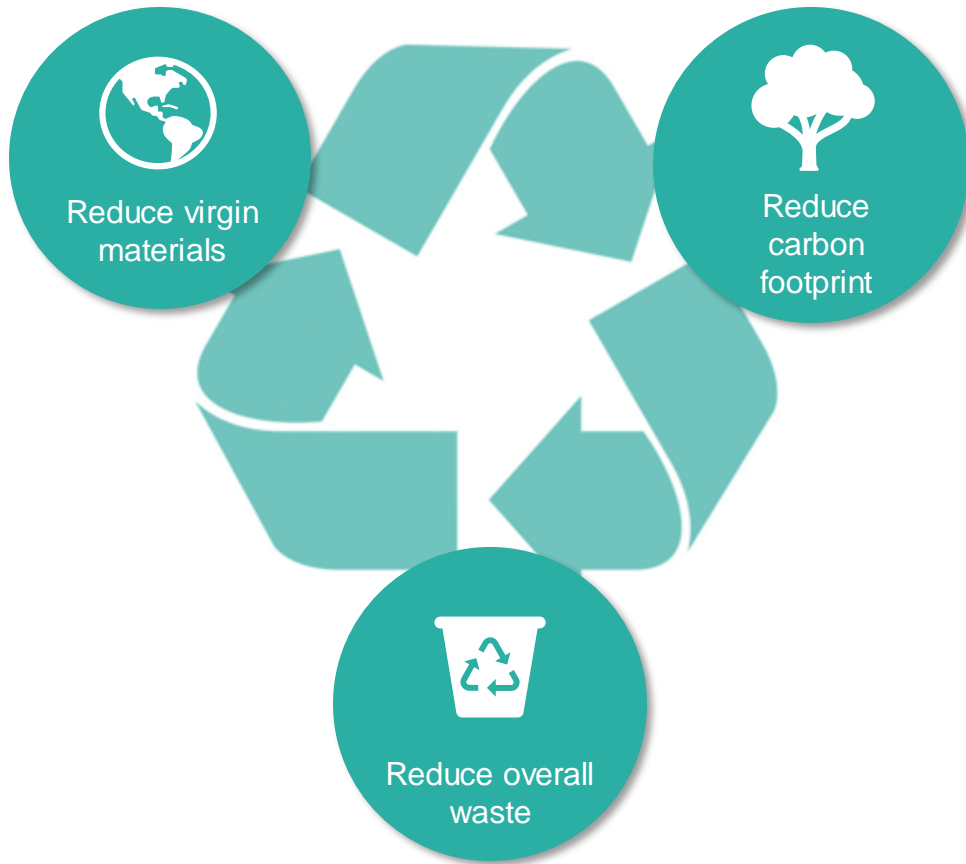
TOWARDS A BATTERY-LESS WORLD

Why are we doing this?

One of our biggest areas of focus is to reduce the environmental impact of the batteries we use to power our products.

Our objective; we want to create a world where people never have to replace the batteries they use.

- Reduce primary battery usage throughout product lifespan.
- Which in turn reduce CO2 footprint and battery waste



15 Billion batteries are purchased annually worldwide,
with only 31% being recycled.

This results to 237,705,000 tons of waste

Reduce the battery waste

Remote controls contribute to over
80 billion batteries
disposed over a decade globally

Resulting in 1.8 million tons of waste

We can change this



Specific
Processor

Low Power
SOC

Extreme Low
Power SOC

QuickSet Widget
SOC

QuickSet Widget
Module

Line up of Silicon Solutions

UE961 Xtreme Low Power

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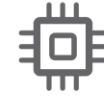



Xtreme
Low Power

* Compared to conventional BLE/Voice Remotes
** Compared to previous generation SoC

80%

More
Efficient*



Xtreme
Low Power

>10X

Battery life*

2.5X

Computing Power**



UE961

Xtreme Low Power SoC

Up to 10x longer battery life vs conventional BLE/Voice remotes

Depending on the power use case 3.5x** to 10x* battery lifetime can be achieved.



Enabling battery for life

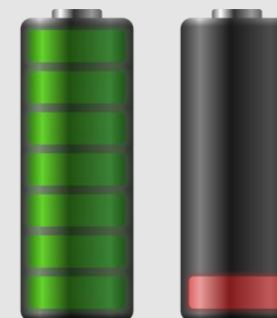
Assuming remote life span of 7 years



>10x

Longer Battery Life*

BLE/Voice



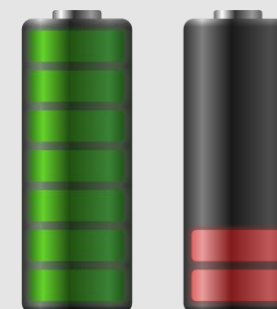
Xtreme Low Power

Conventional Remote

>3.5x

Longer Battery Life**

IR/BLE/Voice/Backlight




Xtreme Low Power

Conventional Remote

* Compared to conventional BLE/Voice remotes, under standard UEI use case

** IR/BLE/Voice remote, estimated under standard UEI use case




Battery for life

Improve waste & CO₂ footprint




732 tons of CO₂*
During the remote lifetime (7 years)

Better user experience



Enhance user experience



-  Always listening
-  Backlight

*Equals 220 Intercontinental Jumbo Jet flights

UE962 Energy Harvesting

All the features & performance of UE961, plus...

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Harvestable Energy

- Multiple energy sources suitable for indoor harvesting
- Ultra Low-Power micro architecture silicon design
- Built-in energy harvesting unit and highly efficient power management unit that stores harvested energy efficiently



Ambient Light



RF



Kinetic



Thermo



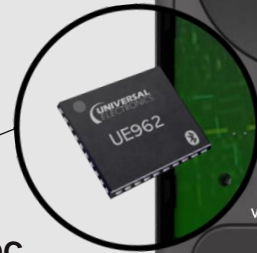
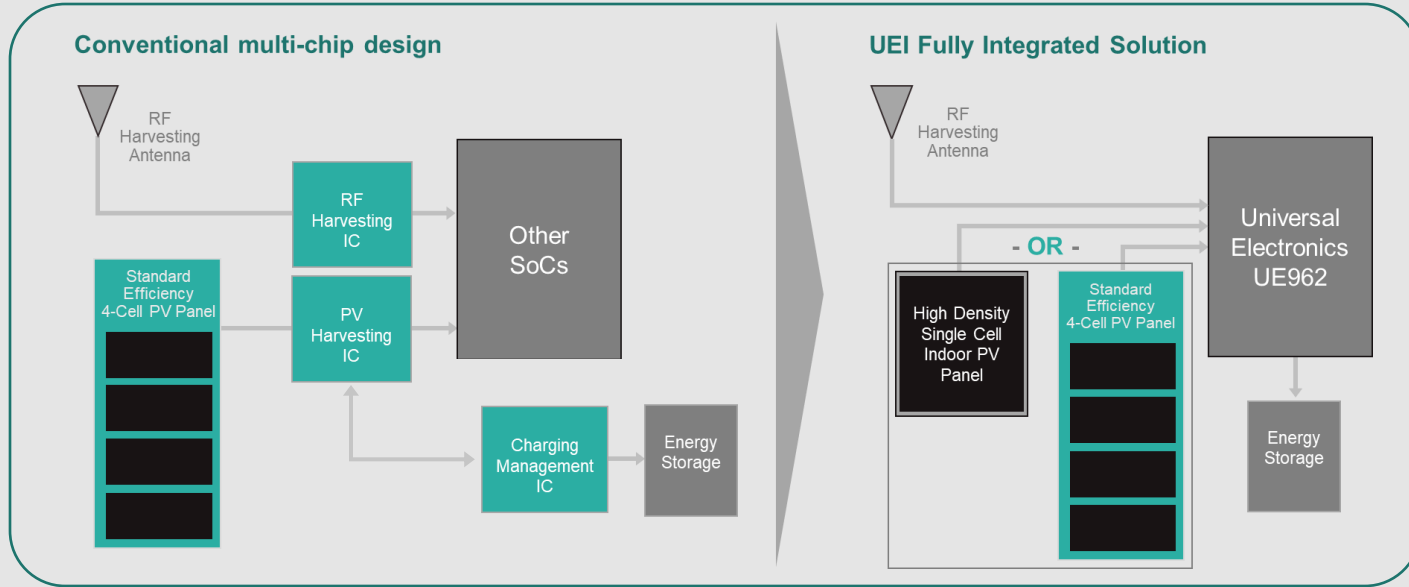
The evolution of energy harvesting remotes

- Announced at CES 2021:
First deployment of new UE1 chipset
First market introduction with PV solar panel
- Announced at CES 2022:
2nd generation with RF harvesting and PV solar panel to eliminate use of battery

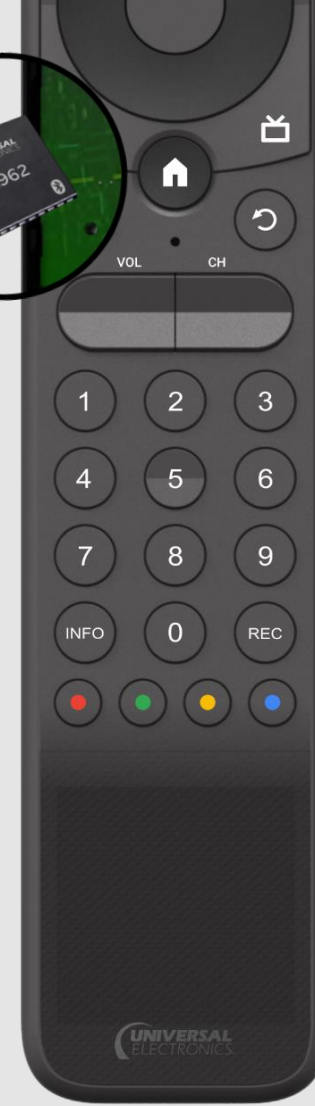


EXTREME LOW-POWER SOC WITH ENERGY HARVESTING

UE962 Harvesting SOC



Optimized for energy harvesting



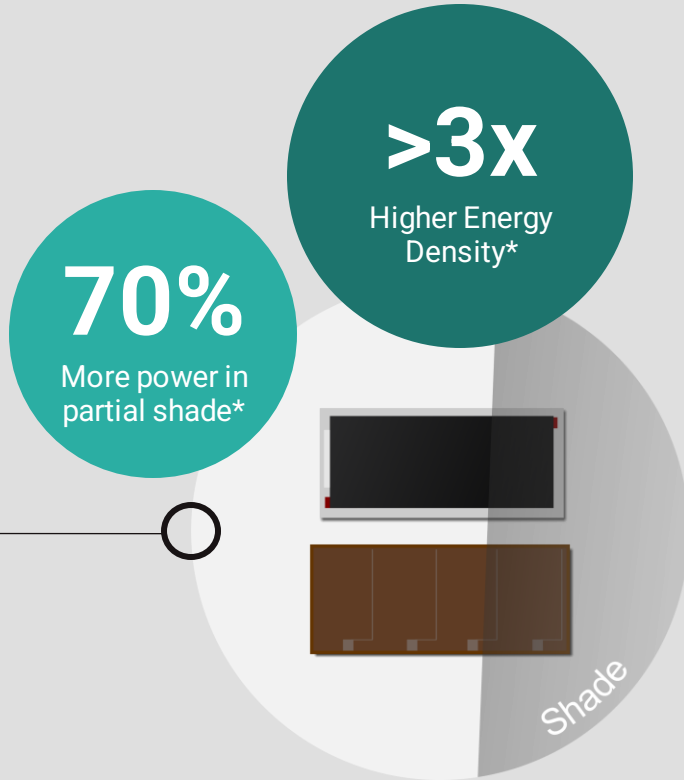
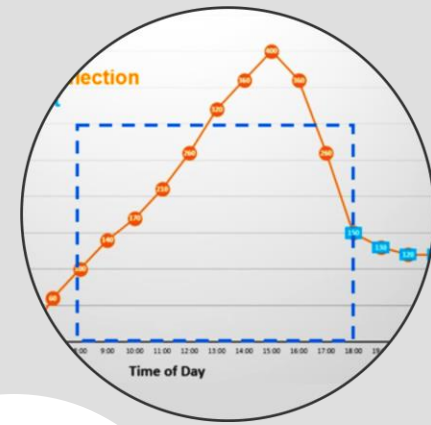
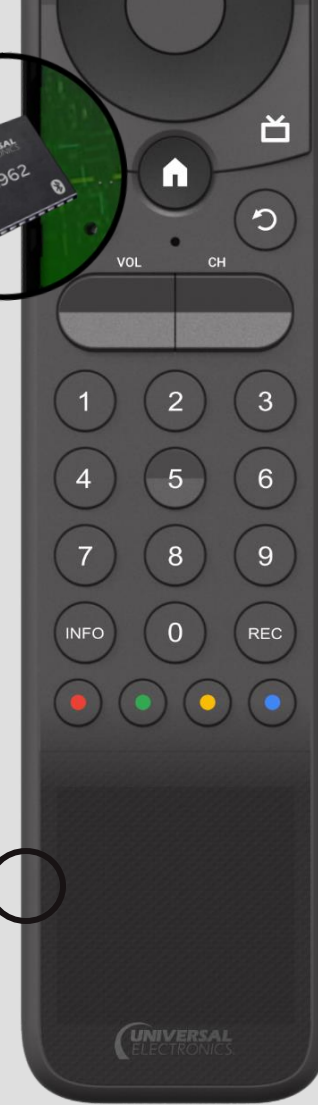
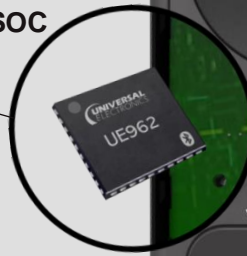
A true All-in-One Harvesting SoC

- Reduces the need for external ICs
- Minimizes additional components
- Improves power harvesting efficiency
- Minimizes total BOM cost

* Compared to commonly used 4-Cell PV panels

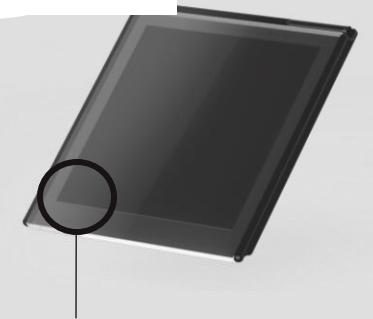
EXTREME LOW-POWER SOC WITH ENERGY HARVESTING

UE962 Harvesting SOC



HD Panel requires only 1/3 of the space vs a standard PV panel for the same power requirement

Optimized for Indoor light harvesting

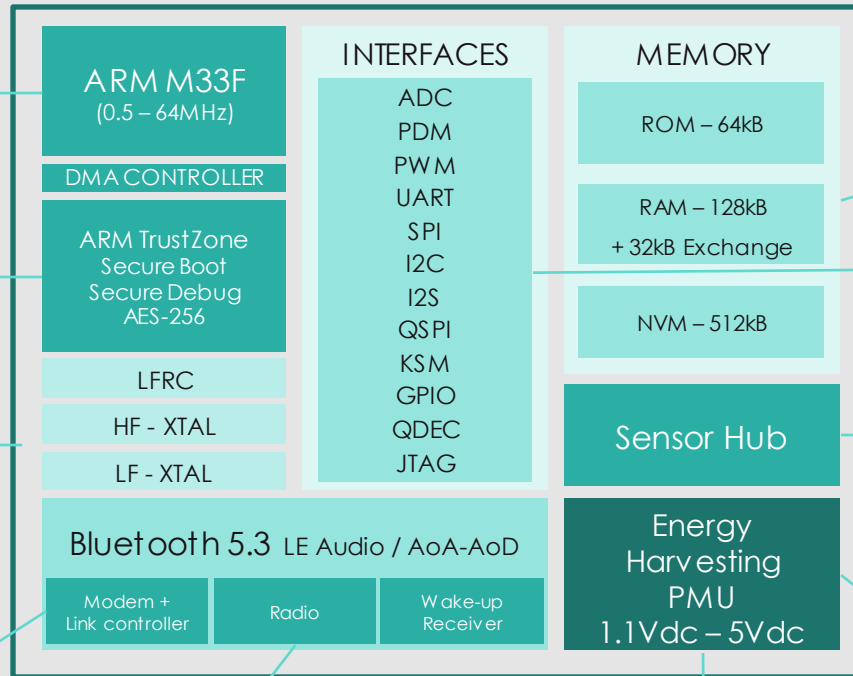


High performance Single Cell PV panel
UEI in exclusive partnership

* Compared to commonly used 4-Cell PV panels

EXTREME LOW-POWER SOC WITH ENERGY HARVESTING

UE962



Scalable system clock:
Ultra-efficient, optimized for performance & energy

Hack-proof, clone-proof security features

Power islands that cluster functional blocks to achieve lowest power usage

Power optimized wireless connectivity:

- High efficiency low power analog circuit
- Wake on RF Rx keeps digital domain in sleep

Dedicated RF harvester:
no external IC needed

Built in energy harvester circuit, MPPT/ Fix-MPPT:
Support single cell or multi cell PV, support dual energy harvesting source

Low leakage memory architecture

Flexible IO architecture allows for use of external memory, DSP or other peripherals e.g. BT/ Wi-Fi co-existence.

Power saving and trigger ready Sensor Hub, keeps CPU powered down and wakes up at defined conditions

Flexible PMU configuration:

- Allows multi energy storage options
- Extremely low cold start voltage at 0.5V
- Ultra-low power to maintain standalone PMU operation at 10uW



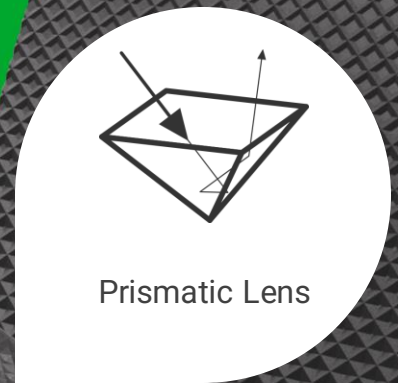
Performance
Boost for Voice
& Backlight



Indoor Solar

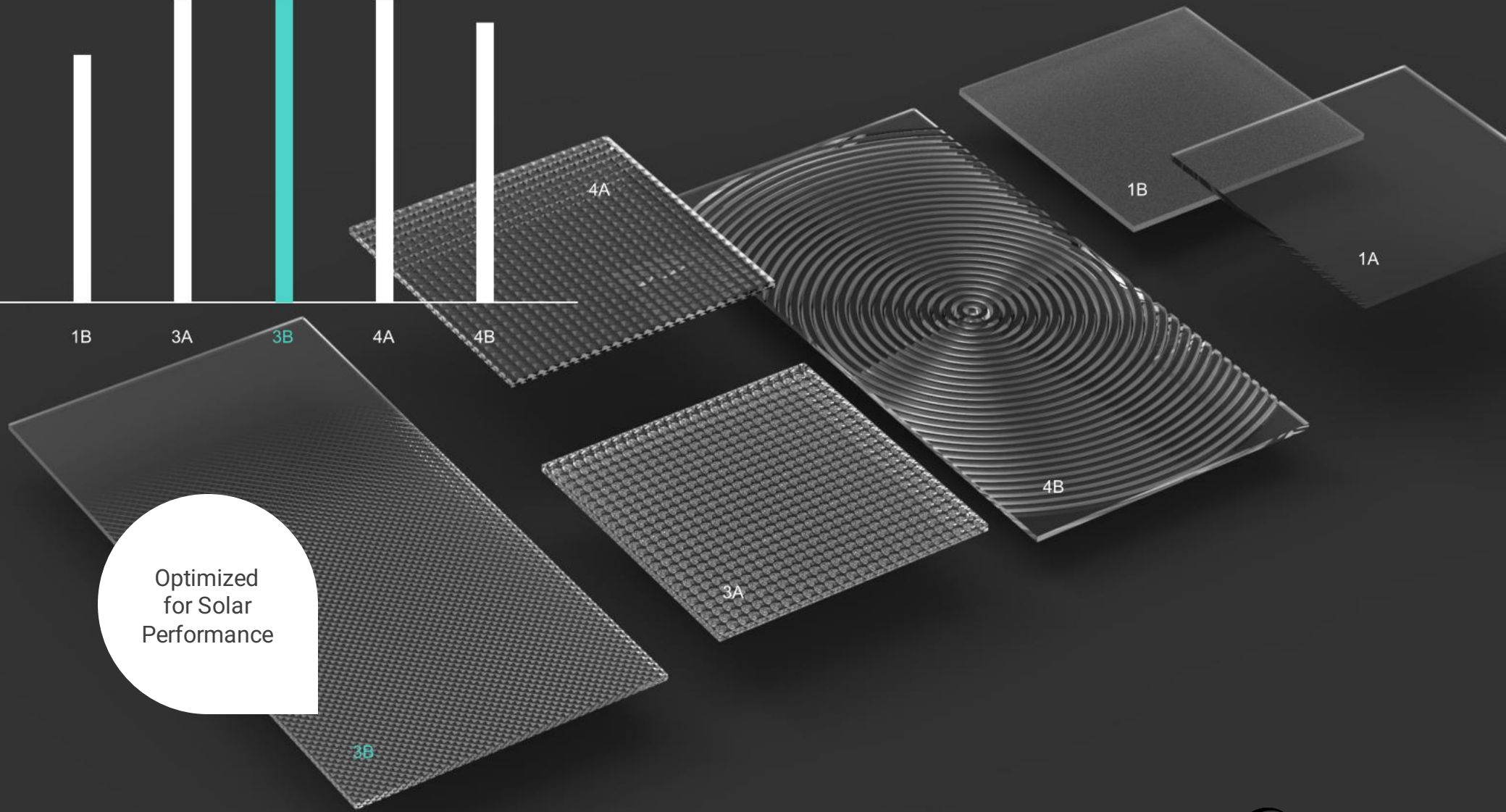
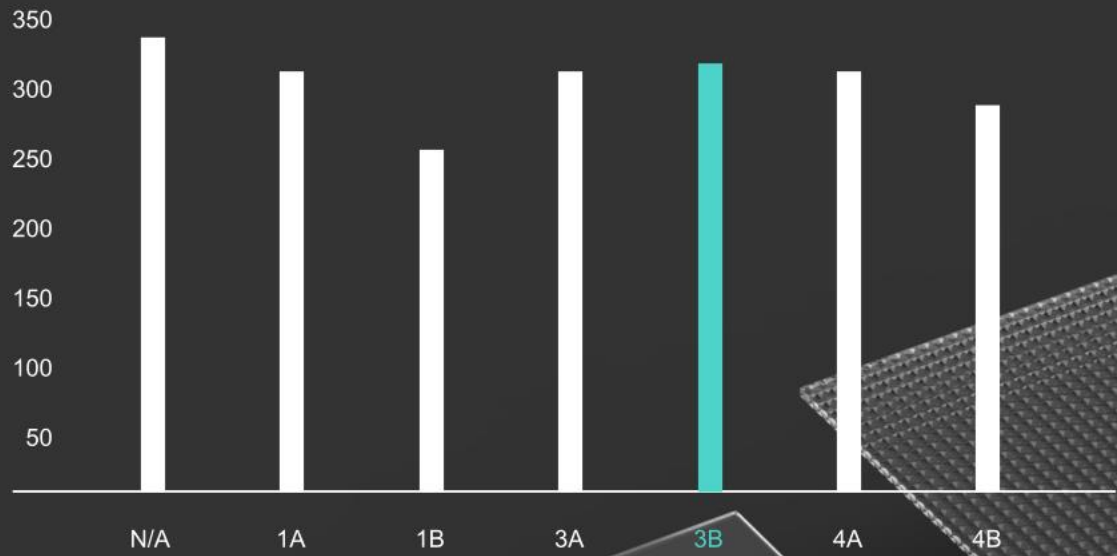


Extreme Low
Power IC




Prismatic Lens

UNIVERSAL
ELECTRONICS



Optimized
for Solar
Performance

The image displays several Universal Electronics remote controls arranged on a dark surface. The remotes are shown from various angles, highlighting their sleek, dark grey design. Some models feature a prominent, textured rectangular panel on the left side, which is the integrated HD PV panel mentioned in the text. The controls include standard buttons for power, volume, channel, and a numeric keypad, along with more advanced features like a directional pad, home button, and various service buttons (e.g., Disney+, Netflix, Prime Video). The Universal Electronics logo is visible on the bottom left of each remote.

HD PV panel integrated into
a remote control



Use indoor light to power
your remote

How green can you go?

Never change batteries again*

Save up to 14 batteries



UE962 Xtreme Low power SOC
with HD Indoor PV panel

** Compared to conventional IR/BLE/Voice/BL remotes, under standard UEI use case, assuming 7 years of service before refurbishment*

Thank you!
Questions?

