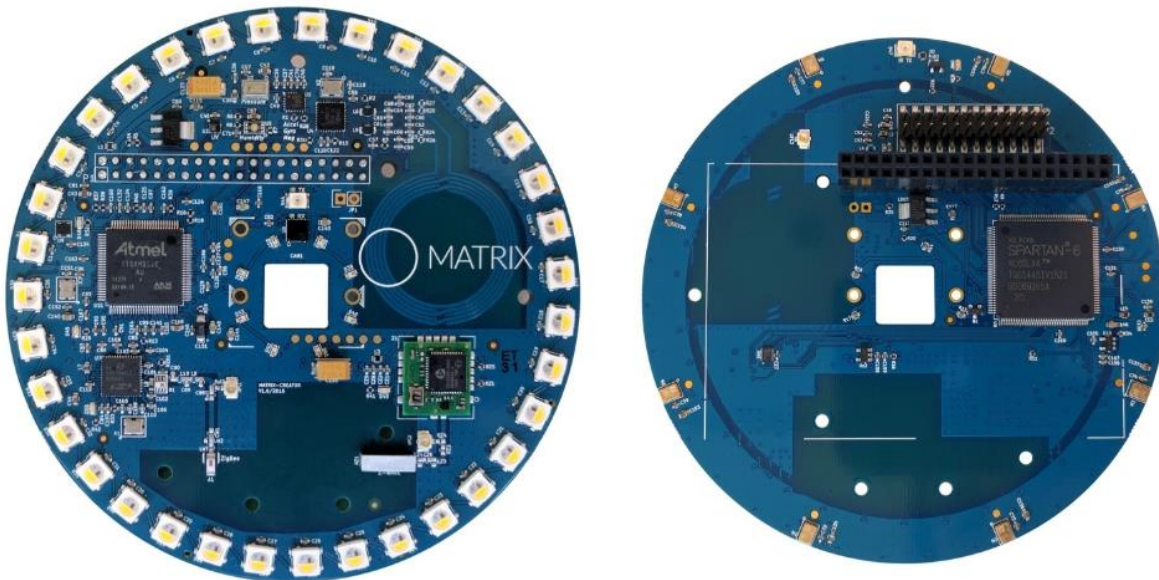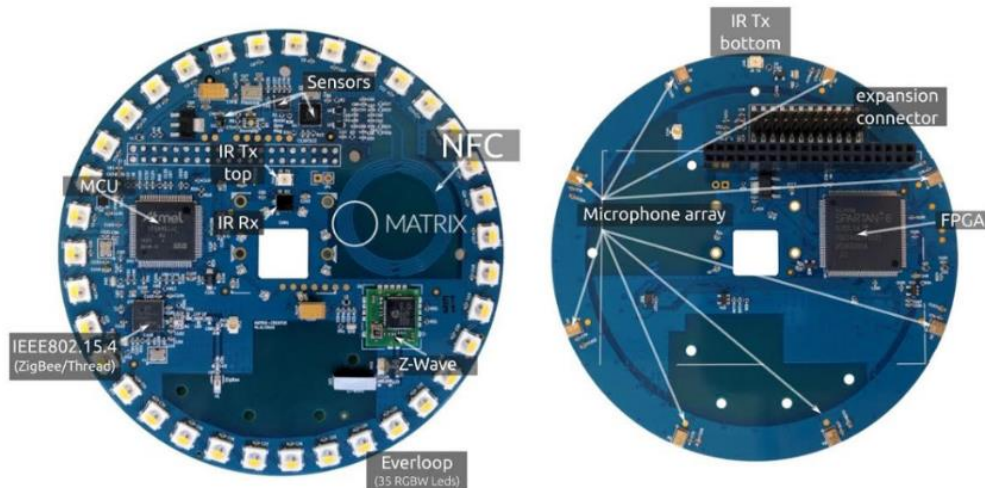| MFR	MPN	Description
MATRIX LABS	**MATRIX-CREATOR-ONE-EU**	MATRIX CREATOR ONE EU VERSION
MATRIX LABS	**MATRIX-CREATOR-ONE-US**	MATRIX CREATOR ONE US VERSION

Matrix Labs FPGA-driven **"Matrix Creator" IoT daughter board for the Raspberry Pi 3** is loaded with sensors, 802.15.4 radios, and a mic array.

The disc-shaped Matrix Creator add-on for the Raspberry Pi is based on AdMobilize's successfully Kickstartered Matrix home automation and surveillance hub. AdMobilize spun off Matrix Labs, which has now built this cheaper, board-level version of the product.

The Creator lacks the Matrix's application processor, memory, camera, speaker, altitude sensor, GPS, WiFi, Bluetooth, 3G radio, and enclosure. What's left is a sensor-rich development board with a full suite of short-range wireless radios. New additions include IR, Thread mesh networking support, and an ultraviolet detector. The device is aimed at developers building "drones, robots, smart homes, security, retail, and other custom hardware builds."

Matrix Creator replaces the i.MX6 with a **Xilinx Spartan 6 FPGA and an Atmel ATSAM3S2C Cortex-M3 MCU**. It's designed to work with the Raspberry Pi 3 SBC, although Matrix Labs IoT daughter board already tested with RPi 2 too, probably the MATRIX Creator will work with any Pi inspired board with the 40 pins expansion connector".

The NodeJS and Javascript based Matrix OS IoT stack, which runs on the earlier Matrix hub's i.MX6 SoC, here runs in user space on the Raspberry Pi 3's 1.2GHz, quad-core, Cortex-A53 Broadcom BCM2837. Matrix OS runs on Raspbian Linux instead of Snappy.

Matrix IoT hub

According to Matrix Labs, the Matrix Creator is the first Raspberry Pi add-on with support for NFC, as well as 802.15.4-compliant short-range wireless radios like Z-Wave, ZigBee, and Thread. It's also the first RPi add-on with a microphone array, claims the company. The board is further touted for being the first RPi add-on with a IR remote receiver/transmitter, and the first with both an ARM MCU and a Xilinx FPGA.

The device has motion detectors and a wide array of sensors, and like the Matrix provides an LED light array around the edge of the disc board. I/O is available such as 17x GPIOs, UARTs, and more.

Matrix OS includes Matrix CLI for device management, as well as Matrix CV, which lets Matrix Creator developers use "face, gesture, and other object detection libraries to integrate vision into your IoT applications." In other words, you can still tap the CV capabilities of the Matrix via the Raspberry Pi's optional cameras. In fact, the device includes an infrared ring for the Raspberry Pi NoIR camera.

Specifications listed for the Matrix Creator include:

- Processor — Xilinx Spartan 6 FPGA; Atmel ATSAM3S2C Cortex-M3 MCU
- Wireless:
    - ZigBee
    - Thread
    - Z-Wave
    - NFC reader
- Sensors:
    - Ultraviolet
    - Pressure
    - Humidity
    - Temperature
    - 3D accelerometer, gyroscope, magnetometer
- Other features:
    - 8x MEMs microphone array
    - RGBW LED light array
    - IR RX/TX for remote controller compatibility
    - Infrared ring for the Raspberry Pi NoIR camera
- Other I/O:
    - 2x ADC channels
    - 17x digital GPIOs
    - SPI, I2C, UART

ZigBee support **Connectivity & Communications (included)**

-
- Thread support
- Z-Wave support
- NFC reader
- IR RX/TX for remote controller compatibility
- 2 ADC Channels
- 17 Digital GPIOs
- SPI bus
- I2C bus
- UART interface
- Infrared ring for the *Raspberry Pi NoIR camera*

The **Raspberry Pi daughter board, MATRIX Creator**, provides the most embedded sensors on the market and support as:

- The first Raspberry Pi add-on with support for NFC, Z-Wave, ZigBee and Thread on the same board.
- The first Microphone Array for Raspberry Pi.
- The first IR remote receiver/transmitter add-on for Raspberry Pi.
- The first Raspberry Pi daughter board with ARM Microcontroller + Xilinx FPGA.