



**ISMART**  
**Inventek Systems Module Arduino Test**  
**&**  
**Cypress PSoC 4 / PSoC 4 BLE**  
**IoT Development Kit Product Brief**



**Inventek Systems IoT ISMART Shield**

- Supports the following Inventek eS-WiFi Modules:
  - ISM43362-M3G-L44 2.4G Wi-Fi
  - ISM43340-M4G-L44 2.4G/5G Wi-Fi & BT/BLE

## Inventek –Cypress IoT Development Platform:

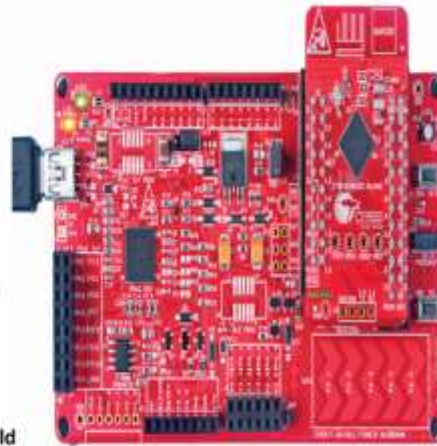


### Inventek Systems eS-WiFi Modules:

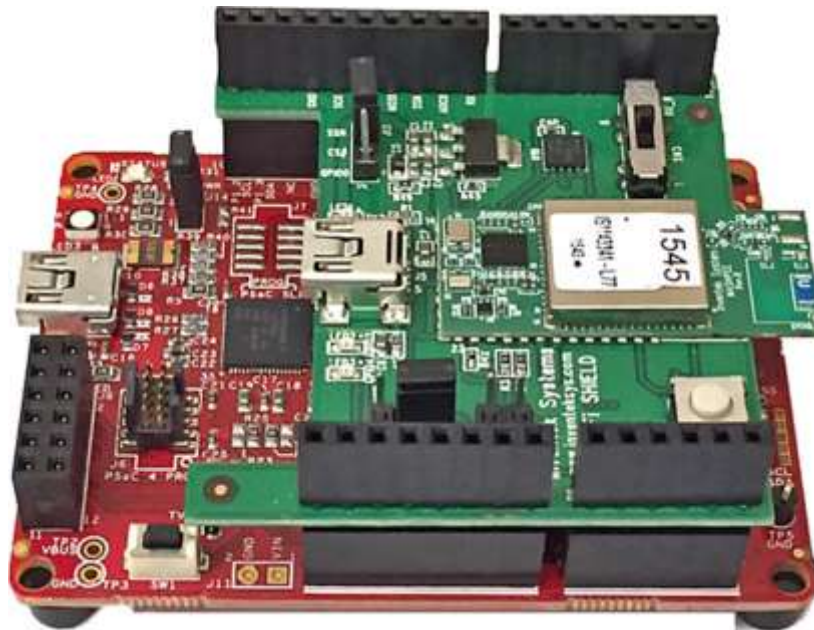
- ISM43362-M3G-L44 2.4G WI-FI
- ISM43340-M4G-L44 2.4G/5G+BT/BLE



Inventek Systems IoT ISMART Shield



Cypress PSoC 4 or PSoC 4 BLE Pioneer Kit



# 1 General Description

## TERMS:

- ISMART: *Inventek Systems Module Arduino Test*
- eS-WiFi: *Inventek embedded Serial Wi-Fi*
- IWIN: *Inventek Wireless Interoperability Network*
- PSoC: *Cypress Programmable System on Chip*

The Inventek **ISMART** (Inventek Systems Module Arduino Test) IoT platform is a user-friendly Arduino compliant shield suited for all of your wireless application needs.

The ISMART platform enables customers to quickly launch IoT products based on **Cypress PSoC 4 & PSoC 4 BLE** host MCUs of your choice and Broadcom's 2.4G Wi-Fi radio. The robust user friendly Inventek AT command set FW, **IWIN** (Inventek Wireless Interoperability Network), makes it easy for PSoC to communicate with any Inventek **eS-WiFi** (embedded Serial Wi-Fi), module, thus allowing customers to quickly get a Wi-Fi connected IoT application up and running.

The **ISMART** shield is an embedded wireless internet connectivity platform that operates in the 2.4 & 5.0 GHz spectrum. The **ISMART** hardware includes the option for selecting any Inventek **eS-WiFi** module and a wide range of radio combination options consisting of Single Band (2.4GHz) and Dual-Band (2.4GHz / 5GHz) 802.11 a/b/g/n MAC/Baseband/Radio as well as Integrated Bluetooth 4.0 and NFC.

This Product Brief is specifically for Inventek's ISM43362-M3G-L44 Single Band (2.4GHz) **eS-WiFi** FCC/CE/IC/Japan certified antenna module and **ISMART** in combination with **Cypress' PSoC 4 BLE** development kit.

The **ISMART** shield is compatible with the Arduino UNO R3 connector layout. The Inventek **eS-WiFi** module options supported by **ISMART** require no operating system and contain an integrated TCP/IP stack. The Inventek **eS-WiFi** modules can be used with Inventek's AT Command Set FW, **IWIN** (Inventek Wireless Interoperability Network), or with Broadcom's WICED™ (Wireless Internet Connectivity for Embedded Devices ), SDK 3.1.2 or later.

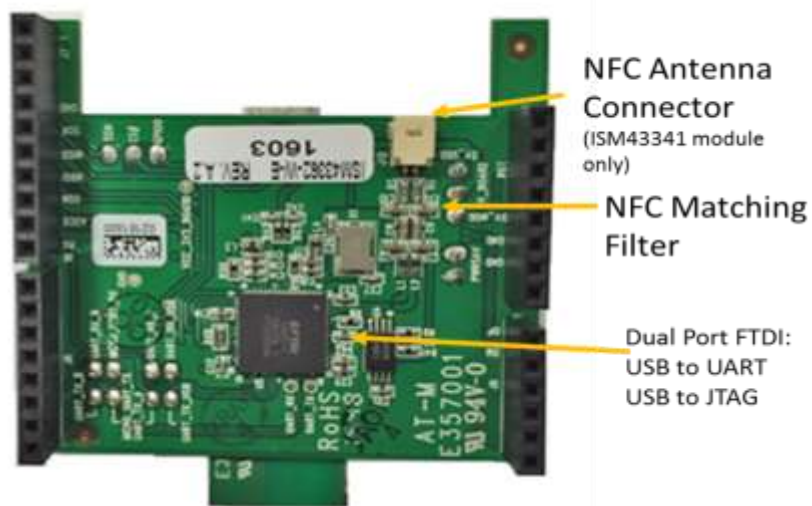
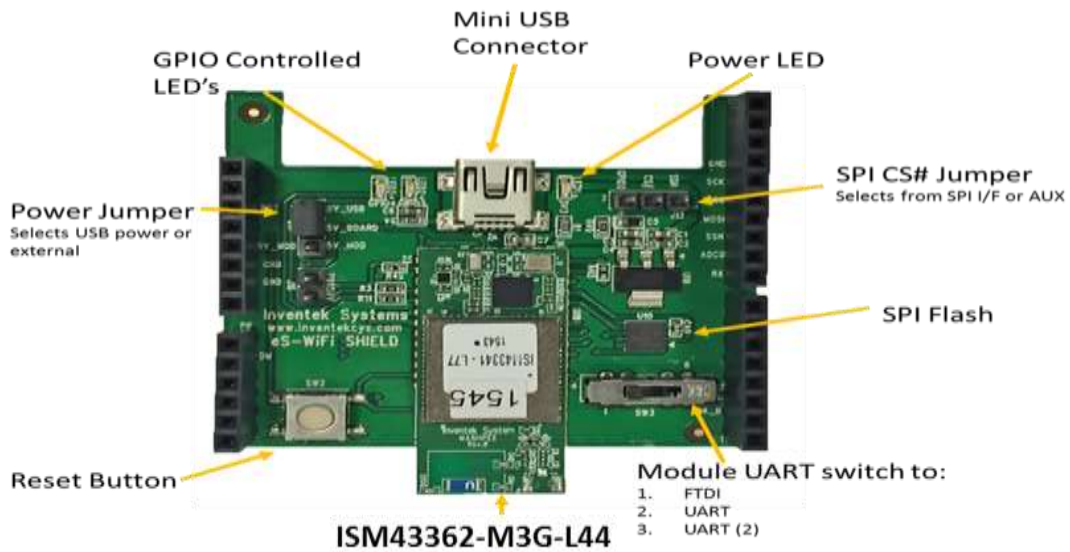
### ***ISMART Hardware Features:***

- Uses the Inventek ISM43362 **eS-WiFi** modules leveraging Broadcom's leading edge radio technology.
- 4.0 BLE (ISM43340)
- 2.4GHz (ISM43362), chip antenna on module.
- U.FL external antenna connector option
- Configurable using Inventek AT Commands FW (**IWIN**).
- Host interface: UART, SPI.
- Input Power: 5.0 V
- Dual Port FTDI for firmware development and testing.
- SPI Flash for Over The Air (OTA) updates
- FCC, IC and CE approval
- All **eS-WiFi** module options also support a standard L44 form factor to enable customers to migrate between module options for current and future releases once in mass production without requiring any board layout changes.

## ***2.0 System Requirements***

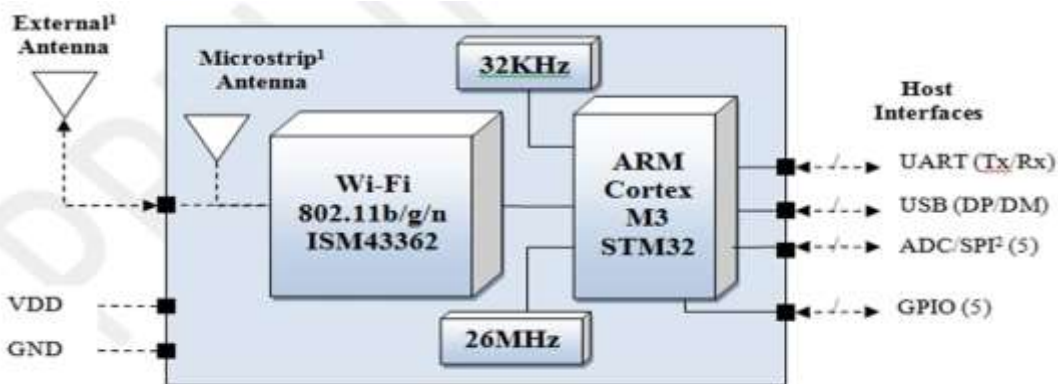
- The ISMART Shield requires the following hardware:
  - Option 1: Communicating using PSoC 4 or PSoC 4 BLE Module
    - Windows PC to install the CY8CKIT-040 or CY8CKIT-042-BLE Kit installer
    - Related documents found on [www.cypress.com/CY8CKIT-042-BLE](http://www.cypress.com/CY8CKIT-042-BLE).
  - Option 2: Communicating using PC over USB for evaluation
    - Windows PC to install Inventek PC Demo software
    - Load Drivers on Windows PC
    - Send **IWIN** AT commands using Inventek IWIN demo software

## 2.1 ISMART Architecture (Top/Bottom)



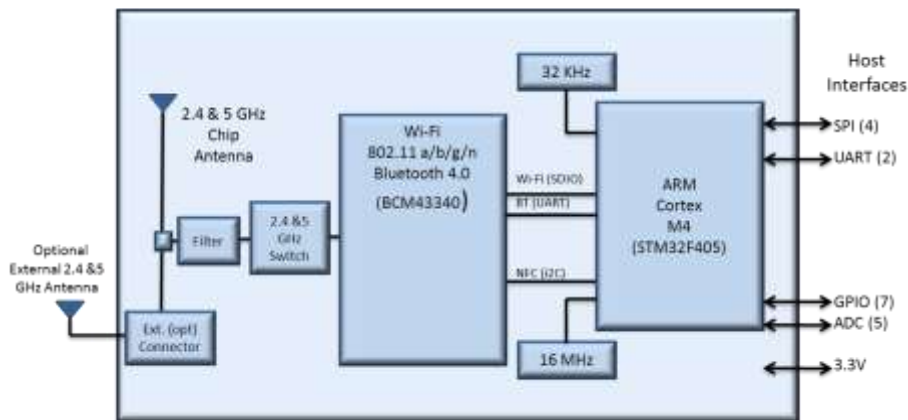


## 2.2 ISM43362-M3G-L44 eS-WiFi Module Block Diagram



ISM43362-M3G-L44-E General Block Diagram

## 2.3 ISM43340-M4G-L44 eS-WiFi Module Block Diagram



ISM4334x-M4G-L44 General Block Diagram

**NOTE: Inventek eS-WiFi Module options for ISMART include:**

- ISM43362-M3G-L44-E (2.4 GHz)
- ISM43340-M4G-L44-C (2.4G/5GHz Wi-Fi & BT/BLE)

## 2.3 ISMART Components

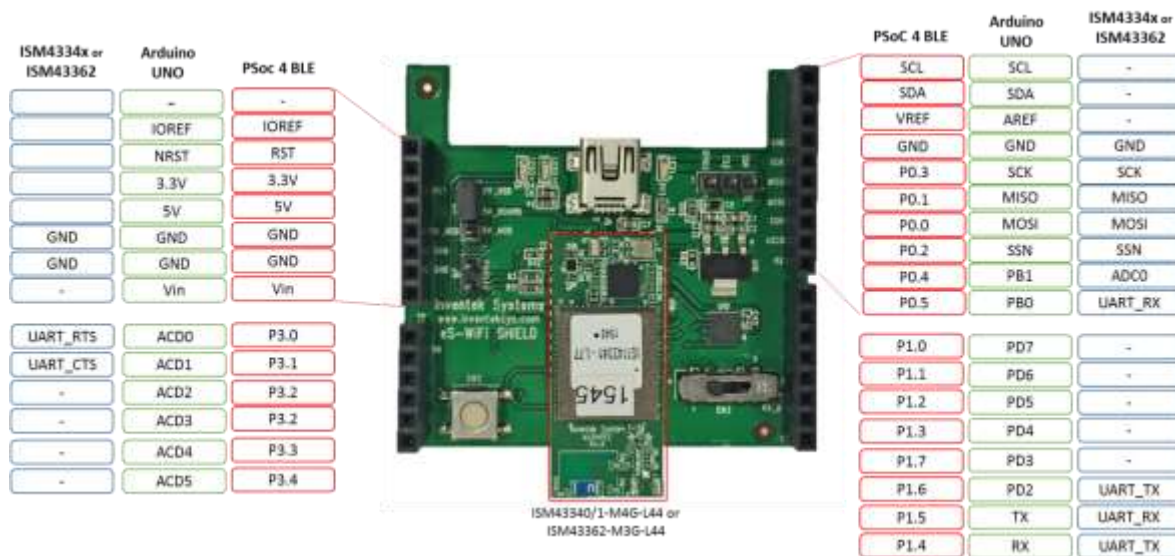
Position	Description	Case
U18	eS-WiFi	ISM43362-M3G L44 footprint compatible embedded Serial WiFi module to all other Inventek modules supported.
J5	USB	USB Connected to FTDI to eS-WiFi as a VCOM port for UART or JTAG update. USB Driver required (but not required for the P4 BLE Kit board)
LED1	LED	3v3 Power LED
LED2	LED	GPIO3 on eS-WiFi module
LED3	LED	GPIO4 on eS-WiFi module
SW3	3 Position	FTDI 2232 dual UART to eS-WiFi module for JTAG or UART <i>USART1 PA9/10</i> <i>USART2 PA2/2</i>
SW2	Reset	Resets eS-WiFi module
J18	Option	Can be used to connect USART 1 CTS/RTS
R51	Temp.	Thermistor
U10	Flash	External SPI Flash for OTA (Over The Air updates) for the ISM43362 only. The ISM4334x has an option for on board flash
J13	SPI	Selects between SPI I/F or AUX

## 2.4 ISMART Connections

The ISMART Shield connection scheme option:

1. Connects directly to your PC using the Mini USB connector and then runs the Inventek **IWIN** AT Commands FW.
  - a. Power Jumper in 5V\_USB
  - b. [www.inventeksys.com/IWIN](http://www.inventeksys.com/IWIN) download PC demo app and install drivers
  - c. RUN Inventek **IWIN** AT Commands with Tera-term
    - i. Baud rate: 115,200, Parity None, Data Width 8, Stop Bits 1
    - ii. SW3 in FTDI position 1
2. Plug into the PSoC 4 and run eS-WiFi ISAMRT\_CYPRESS project on the CY8Ckit-046

## 2.5 The ISMART-CY8CKIT-042-BLE IoT Platform Pin-Out Map



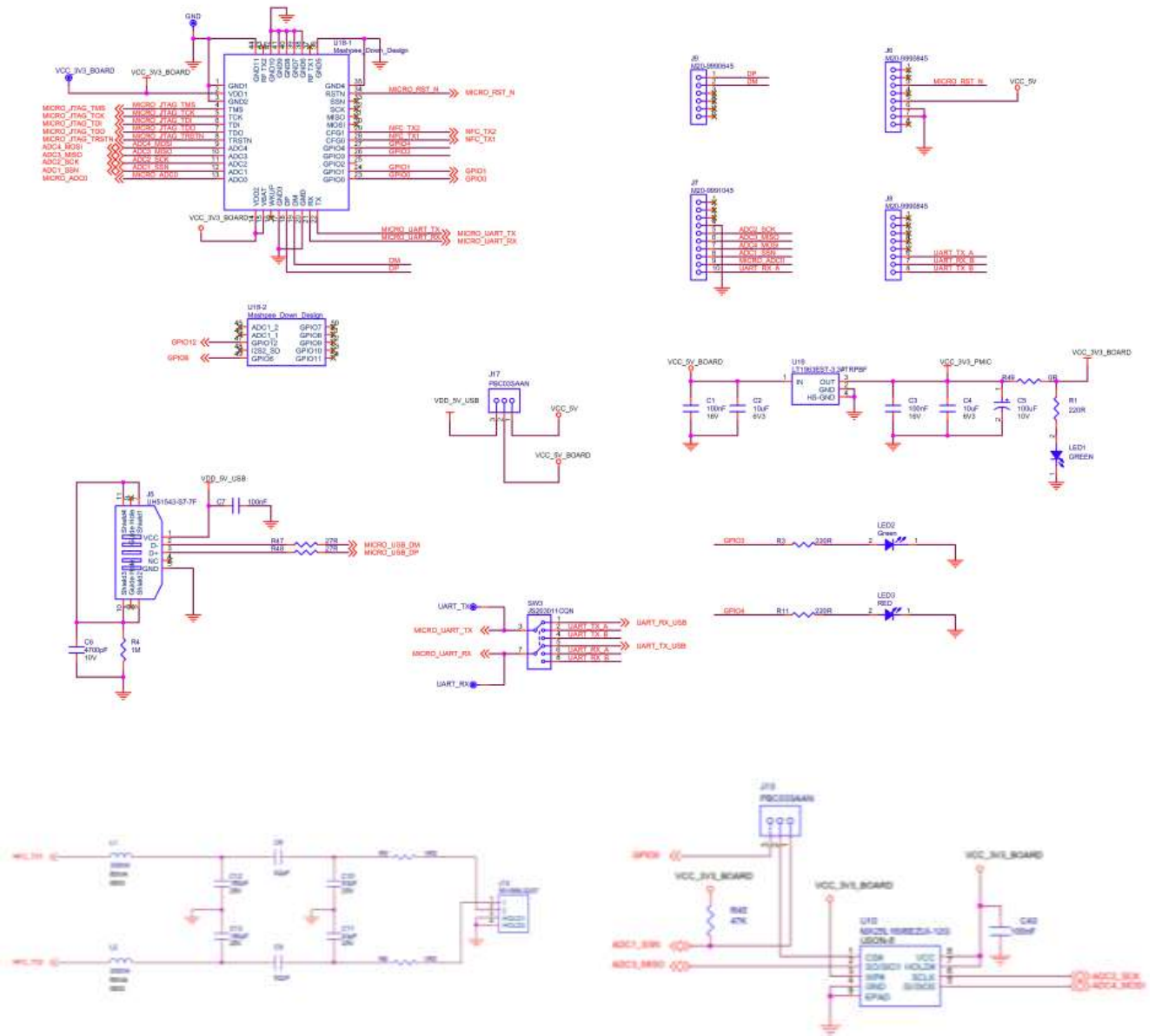


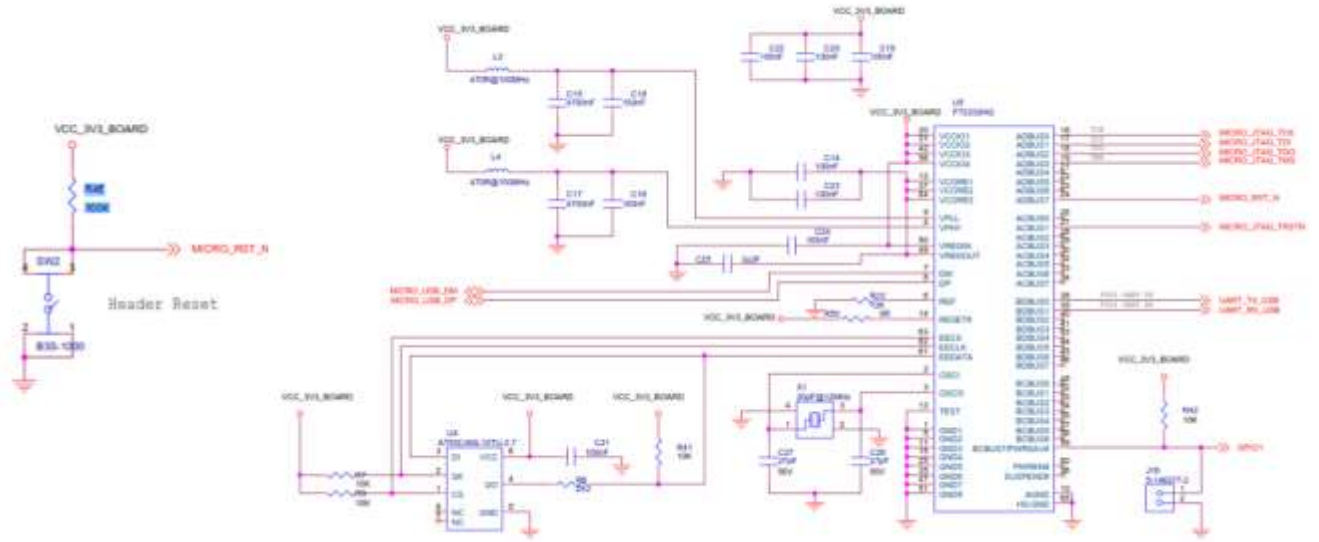
### ***ISMART eS-WiFi Module Part Number Detail Description***

ISMART43362-E	2.4 GHz Wi-Fi Shield w/ ISM43362-M3G-L44-E <b>eS-WiFi</b> module	On board Antenna
ISMART43340-C	2.4/5 GHz Wi-Fi + BT/BLE Shield w/ ISM43340-M4G-L44-C <b>eS-WiFi</b> module	On board Antenna

- Antenna Options:
  - -E = ISM43362 Etched Antenna
  - -C = ISM43340 Dual Band (2.4/5 GHz) Chip Antenna
  - -U = U.FL Connector for External Antenna option

### 3.2 ISMART Shield Schematic





## 4 Revision Control

Document : ISM4334xC-ISMART	Wi-Fi Arduino Shield
External Release	DOC-PB-ISMART_PSOC

Date	Author	Revision	Comment
4/29/2016	AS	1.0	Preliminary Release
10/6/2016	MFT	1.1	Update

## 5 CONTACT INFORMATION

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