

**Product Name:** ZX181V-LPC FMC Vita 57.1 breakout adapter – passive FPGA Mezzanine Card LPC

**Product Description:** FPGA Mezzanine card , FMC , passive test module meeting VITA 57.1 , Vita 57.4 standard bus interface. Includes 10 rows x 40 pins, totaling 160 pins, High Pin Count , LPC, housing SEAM connector. Fully compatible with Low Pin Count, LPC connector interface.

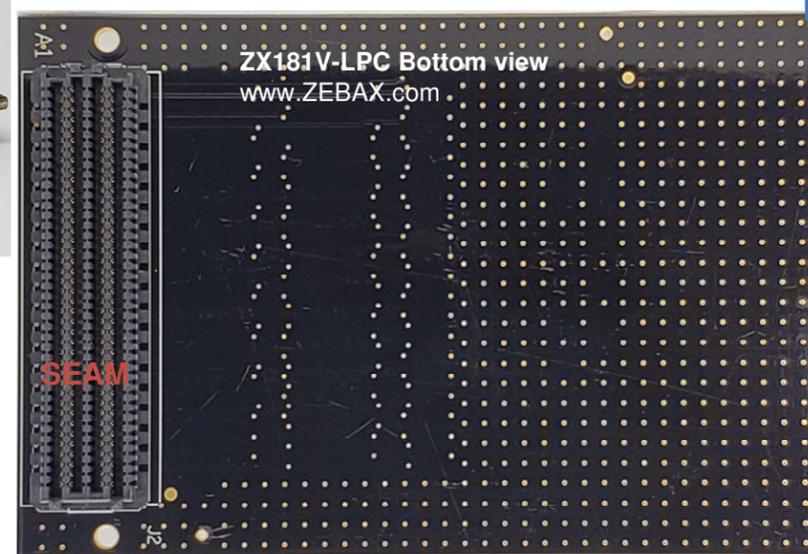
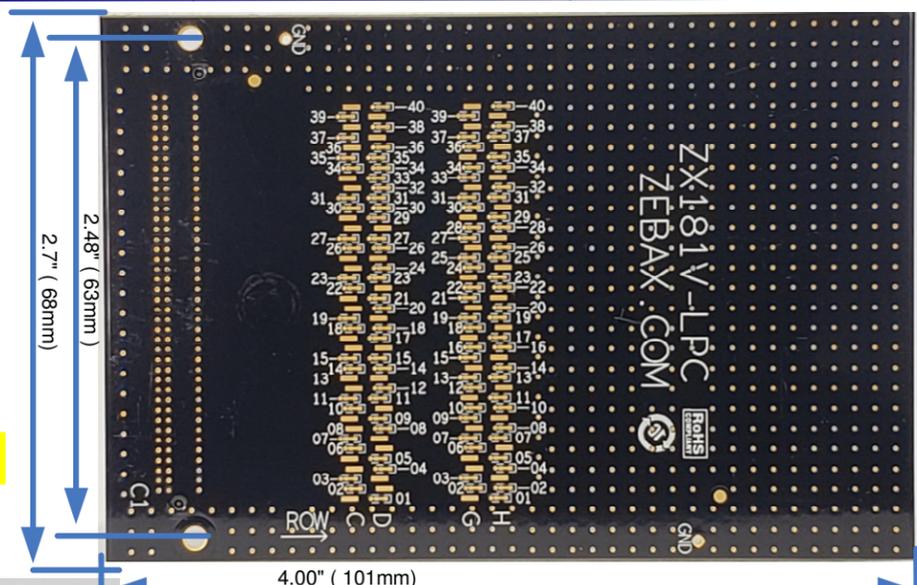
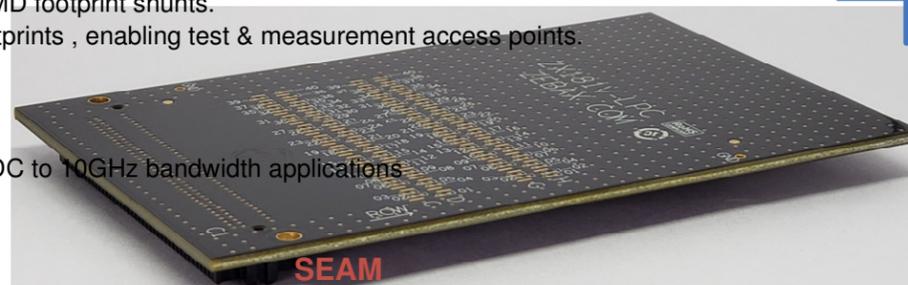
**Provides prototype area as well as onboard SMD 0402 footprint shunts for accessing any of the 160 signals.** Ideal breakout mezzanine card for any design utilizing SEAM ( 10x40 ) connector series as well as Vita 57.1, and Vita 57.4 standards.

**Full access to all ( excluding the GND signals ) Vita 57.1 LPC signals** via onboard 0402 SMD footprint shunts. Please see **Page 2** for full list of accessible signals as listed by Vita 57.1 standard. The Vita57.1 assigned GND signals are not accessible individually, they are connected to inner GND planes as well as top/bottom layers fill. The GND access point is offered by 2 onboard GND test points, interfacing with test equipment, host and target.

Fully compatible with **Vita 57.1 ( FMC )** , and **Vita 57.4 ( FMC+ )** standard by providing full access to all Vita 57.1 LPC signals via onboard 0402 SMD footprint shunts. Fully compatible with Vita 57.4 FMC+, with exception of no access to signals on Columns L , M , Z , Y.

- 1- Mates with any Samtec Molex HI-SPEED HI-DENSITY SEARRAY design connectors.
- 2- **Fully** compatible with 10 rows x 40 pins per row single ended or differential pairs design configuration
- 3- Designed in **8** layers PCB stackup
- 4- **All** Vita 57.1 signals ( **excluding the GND signals** ) are accessible via onboard standard 0402 SMD footprint shunts.
- 5- All signals ( via 0402 SMD package ) are extended to the onboard 0402 SMD package shunts footprints , enabling test & measurement access points.
- 6- Improved signal integrity and crosstalk
- 7- Multiple GND test points connecting directly to inner layers GND planes.
- 8- Onboard LPC MC ( SEAM ) connector
- 9- Matching connector's **50Ω** trace impedance on all signals – Reference plane impedance 50Ω for DC to 10GHz bandwidth applications
- 10- Easy interface with single or differential scope probe, see **page 3** for details.

See Page 2,3 for more details

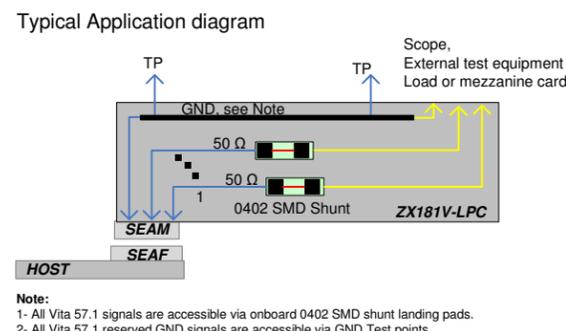
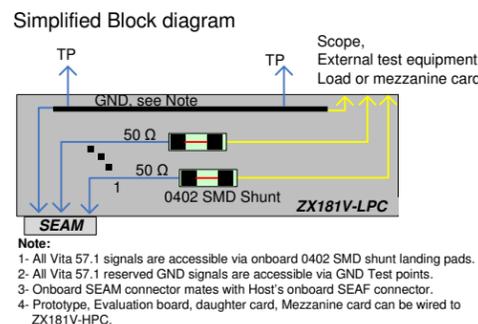


**Electrical:** Insertion loss > -2dB @8GHz  
 Trace impedance: 50 Ω  
 PCB Material : FR4, 8 layers  
 Plating: Gold = 30 μ" (0.76 μm) over 50 μ" (1.27 μm) Ni, all signal layers  
 Operating Temperature: -55 °C to +125 °C  
 Connector:

Onboard Connector type: SEAM 10x40 BGA  
 Connector contact : Copper Alloy  
 Connector housing: LCP UL 94 V0, COLOR: BLACK  
 Connector contacts: COPPER ALLOY / LEAD FREE SOLDER  
 Connector plating: = 30 μ" (0.76 μm) Au over 50 μ" (1.27 μm) Ni  
 Mates with: Any height SEAM and SEAF 10x40 BGA connectors  
 Pitch: 0.05" ( 1.27mm ) pin to pin pitch

Shunt:  
 Package: 0402 SMD standard footprint  
 Plating: Gold = 30 μ" (0.76 μm) over 50 μ" (1.27 μm) Ni

**Application:** FMC VITA 57.1 , Vita 57.4 FMC+ , daughter card Bringup, testing, characterization, qualification , manufacturing loopback test. Emulation, Xilinx Intel custom FPGA system development solutions. Interface testing of daughter board to host, modular design evaluations.



Typical signal connection:  
 0402 SMD shunt

**Compliance:**

- ISO2001 certified
  - RoHs - Lead Free
  - EU RoHS2
  - UL E111594 document
  - ELV- Vehicle Directive ( Directive 2000/EC)
  - European Union Directive ( 203/11/EC )
  - Halogen Free per IEC-61249-2.21 : 2003
  - RoHs Directive 2011/65/EU
  - WEEE Directive ( 2012/12/EU)
- Certificate of Compliance for Radioactive substances  
 Certificate of Compliance for Asbestos  
 Certificate of Compliance for Ozone Depleting Substances, ODS  
 Certificate REACH SVHC  
 Certificate of Compliance RoHS\_EN\_CoC

**ZX181V-LPC package includes:**

| Part number | Quantity | Description                                                    |
|-------------|----------|----------------------------------------------------------------|
| ZX181V-LPC  | 1        | FMC Vita 57.1 breakout adapter                                 |
| ZX00BC2PH30 | 0        | 30AWG Bare Copper wire to pin header wire assembly             |
| ZX0002SRF4  | 0        | High Frequency semi-rigid SMA to bare wire coax cable assembly |

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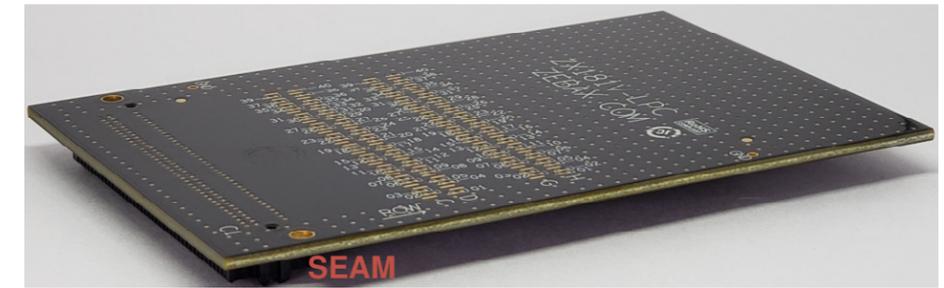
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|-------------------------------------------------------------------------------|------------------|---------------|
| SPECIFIED DIMENSIONS ARE INCHES (MM). ROHS COMPLIANT                          | ASSEMBLY DRAWING |               |
|                                                                               | ITEM: ZX181V-LPC |               |
| DESCRIPTION: FMC VITA 57.1 breakout adapter – passive FPGA mezzanine card LPC |                  |               |
| CHECKED: M. MARINA                                                            | DRAWN: SONYA     | REVISION: 1.0 |
|                                                                               |                  | SHEET: 1 OF 3 |

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**Mates with :** Xilinx FPGA development systems Virtex 6 Virtex 7 connecting daughter board to Host  
 Any and all FMC VITA 57.1 compliant design.  
 SEAM SADL SEAMP SEAR SEAMI SEAC FMC LPC  
 SEAF-040-08.0-L-10-2-A SEAF-040-08-L-10-2-A  
 SEAFP-40 SEAMP-040 SEAMI-040 SEAR-040-10-10- SEAM-040  
 All listed Samtec Molex FMC connectors listed, table below:

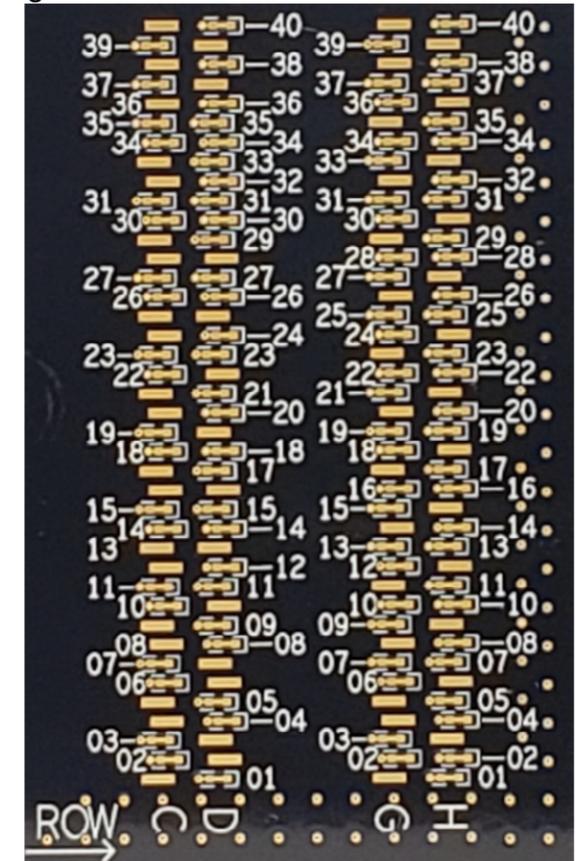
| ZX181V-LPC FMC breakout adapter mates with the following Samtec/Molex SEARAY™ VITA 57 Connectors |               |            |             |                    |
|--------------------------------------------------------------------------------------------------|---------------|------------|-------------|--------------------|
| Molex PN                                                                                         | Samtec PN     | VITA PN    | Description | Mated Stack Height |
| 45971-4307                                                                                       | ASP-127796-01 | CC-LPC-10L | female      |                    |
| 45971-4305                                                                                       | ASP-134603-01 | CC-LPC-10  | female      |                    |



**Ground:** All The Vita 57.1 GND reserved signals on the ZX181V-LPC are connected to the module inner GND planes and top & bottom GND fills. The GND access point is offered by 2 onboard GND test points interfacing with test equipment, host and target.

**Access signals:** ZX181V-LPC provides access to all Vita 57.1 signals as well as Vita 57.4 ( with exception of no access to signals on Columns L , M , Z , Y ) via onboard 0402 SMD footprint package. Table below lists the Vita 57.1 signals , to be used as reference accessing ZX181V-LPC FMC Vita 57.1 FMC test module breakout adapter.

ZX181V-LPC 0402 SMD shunt footprints grid matrix



| Pin | Vita 57.1 - LPC |    |             |            |    |    |               |           |    |    |
|-----|-----------------|----|-------------|------------|----|----|---------------|-----------|----|----|
|     | K               | J  | H           | G          | F  | E  | D             | C         | B  | A  |
| 1   | NC              | NC | VREF_A_M2C  | GND        | NC | NC | PG_C2M        | GND       | NC | NC |
| 2   | NC              | NC | PRSNT_M2C_L | CLK1_M2C_P | NC | NC | GND           | DP0_C2M_P | NC | NC |
| 3   | NC              | NC | GND         | CLK1_M2C_N | NC | NC | GND           | DP0_C2M_N | NC | NC |
| 4   | NC              | NC | CLK0_M2C_P  | GND        | NC | NC | GBTCLK0_M2C_P | GND       | NC | NC |
| 5   | NC              | NC | CLK0_M2C_N  | GND        | NC | NC | GBTCLK0_M2C_N | GND       | NC | NC |
| 6   | NC              | NC | GND         | LA00_P_CC  | NC | NC | GND           | DP0_M2C_P | NC | NC |
| 7   | NC              | NC | LA02_P      | LA00_N_CC  | NC | NC | GND           | DP0_M2C_N | NC | NC |
| 8   | NC              | NC | LA02_N      | GND        | NC | NC | LA01_P_CC     | GND       | NC | NC |
| 9   | NC              | NC | GND         | LA03_P     | NC | NC | LA01_N_CC     | GND       | NC | NC |
| 10  | NC              | NC | LA04_P      | LA03_N     | NC | NC | GND           | LA06_P    | NC | NC |
| 11  | NC              | NC | LA04_N      | GND        | NC | NC | LA05_P        | LA06_N    | NC | NC |
| 12  | NC              | NC | GND         | LA08_P     | NC | NC | LA05_N        | GND       | NC | NC |
| 13  | NC              | NC | LA07_P      | LA08_N     | NC | NC | GND           | GND       | NC | NC |
| 14  | NC              | NC | LA07_N      | GND        | NC | NC | LA09_P        | LA10_P    | NC | NC |
| 15  | NC              | NC | GND         | LA12_P     | NC | NC | LA09_N        | LA10_N    | NC | NC |
| 16  | NC              | NC | LA11_P      | LA12_N     | NC | NC | GND           | GND       | NC | NC |
| 17  | NC              | NC | LA11_N      | GND        | NC | NC | LA13_P        | GND       | NC | NC |
| 18  | NC              | NC | GND         | LA16_P     | NC | NC | LA13_N        | LA14_P    | NC | NC |
| 19  | NC              | NC | LA15_P      | LA16_N     | NC | NC | GND           | LA14_N    | NC | NC |
| 20  | NC              | NC | LA15_N      | GND        | NC | NC | LA17_P_CC     | GND       | NC | NC |
| 21  | NC              | NC | GND         | LA20_P     | NC | NC | LA17_N_CC     | GND       | NC | NC |
| 22  | NC              | NC | LA19_P      | LA20_N     | NC | NC | GND           | LA18_P_CC | NC | NC |
| 23  | NC              | NC | LA19_N      | GND        | NC | NC | LA23_P        | LA18_N_CC | NC | NC |
| 24  | NC              | NC | GND         | LA22_P     | NC | NC | LA23_N        | GND       | NC | NC |
| 25  | NC              | NC | LA21_P      | LA22_N     | NC | NC | GND           | GND       | NC | NC |
| 26  | NC              | NC | LA21_N      | GND        | NC | NC | LA26_P        | LA27_P    | NC | NC |
| 27  | NC              | NC | GND         | LA25_P     | NC | NC | LA26_N        | LA27_N    | NC | NC |
| 28  | NC              | NC | LA24_P      | LA25_N     | NC | NC | GND           | GND       | NC | NC |
| 29  | NC              | NC | LA24_N      | GND        | NC | NC | TCK           | GND       | NC | NC |
| 30  | NC              | NC | GND         | LA29_P     | NC | NC | TDI           | SCL       | NC | NC |
| 31  | NC              | NC | LA28_P      | LA29_N     | NC | NC | TDO           | SDA       | NC | NC |
| 32  | NC              | NC | LA28_N      | GND        | NC | NC | 3P3VAUX       | GND       | NC | NC |
| 33  | NC              | NC | GND         | LA31_P     | NC | NC | TMS           | GND       | NC | NC |
| 34  | NC              | NC | LA30_P      | LA31_N     | NC | NC | TRST_L        | GA0       | NC | NC |
| 35  | NC              | NC | LA30_N      | GND        | NC | NC | GA1           | 12P0V     | NC | NC |
| 36  | NC              | NC | GND         | LA33_P     | NC | NC | 3P3V          | GND       | NC | NC |
| 37  | NC              | NC | LA32_P      | LA33_N     | NC | NC | GND           | 12P0V     | NC | NC |
| 38  | NC              | NC | LA32_N      | GND        | NC | NC | 3P3V          | GND       | NC | NC |
| 39  | NC              | NC | GND         | VADJ       | NC | NC | GND           | 3P3V      | NC | NC |
| 40  | NC              | NC | VADJ        | GND        | NC | NC | 3P3V          | GND       | NC | NC |

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**Access:** ZX181V-LPC offers all Vita 57.1 signals ( **excluding the GND signals** ) accessible via onboard standard 0402 SMD footprint shunts. The followings are few recommendations for interfacing ZX181V-LPC with test & measurement equipment , scope, function generator, Network Analyzer, power supply, electronics load and more.

- 1- Using 32AWG solid copper wire with pin header, ZX00BC2PH30 or similar to interface to any scope probe / test equipment
- 2- Using high frequency semi-rigid coax cable assembly , ZX0002SRF4 , to solder on any signal on ZX181V-LPC. The SMA connector part of the cable assembly may be interfaced with any test equipment for purpose of signal injection or interface with test equipment.

**Loopback test:** ZX181V-LPC may be configured for manufacturing , development , or qualification loopback test configuration. Using any 32AWG solid copper wire to inner connect any connection combination. The ZX181V-LPC enables any design loopback test requirement, ensuring solid test & measurement method for pre-bringup, bringup, qualification and manufacturing phase of any design.

**Typical Application:** ZX181V-LPC is designed for purpose of test and debugging at full connector's bandwidth. It provides new approach in usage of breakout adapters by :

- 1- Utilizing single or differential scope probe for purpose of test & measurements
- 2- Enabling design changes, by re-assignment of any signal by means of cut and solder, where any signal may be cut and assigned to new location by jumper wires.
- 3- Loopback test & measurement , enabling software development & testing.

**Scope Probe wire Installation:**

- 1- It is recommended to keep the probe wire length at 0.5" ( 1.2cm ) long.
- 2- In order to avoid ground loop problems, please use the shortest Ground probe wire interfacing to the nearest GND reference. The ZX181V-LPC provides two GND test points for reference.
- 3- Both Keysight as well as Tektronix offer variety of single ended as well as differential probes along with their accessories, below are few probes from each vendor:
  - a) Keysight differential probe or similar N2795A, N2796A, 1168V, 1134B along with E2677B differential Solder-in probe, N5426A ZIF Tip, N2884A Fine Wire ZIF Tip and more – See the figure "probe head accessories".
  - b) Tektronix offers several single-ended as well as differential probes such as : P6245, P6248, P6247, P6246 or any of TDP7000 series and more
- 4- Please follow your vendor's guideline in installation of probe wires & accessories.

**Signal Access & re-route:**

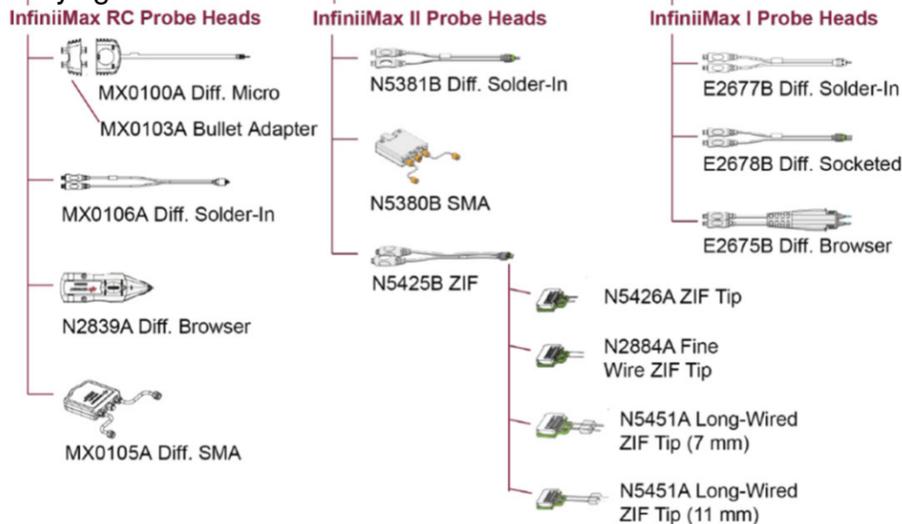
Re-routing any signal on ZX181V-LPC may be implemented by cutting the designated 0402 SMD shunt and re-routing to new location.

**Accessories:** The following accessories compliment ZX181V-LPC for testing purpose.

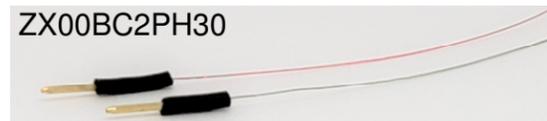
ZX00BC2PH30 30AWG Bare Copper wire to pin header wire assembly – It can be easily soldered to any pads on the ZX181V-LPC for scope probe interface.

ZX0002SRF4 High Frequency SMA to bare wire semi-rigid coax cable assembly – It is **semi-rigid** coax cable assembly where case of the cable assembly is exposed copper. It can easily soldered to any pads on ZX181V-LPC. With Insertion loss of >-0.5dB, ZX0002SRF4 is excellent for characterization and performance test qualification.

**Keysight Probe Head accessories**



**Tektronix P6243 scope probe**



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