

**Product Name:** ZX180V-LPC FMC Vita 57.1 breakout adapter – passive FPGA Mezzanine Card LPC

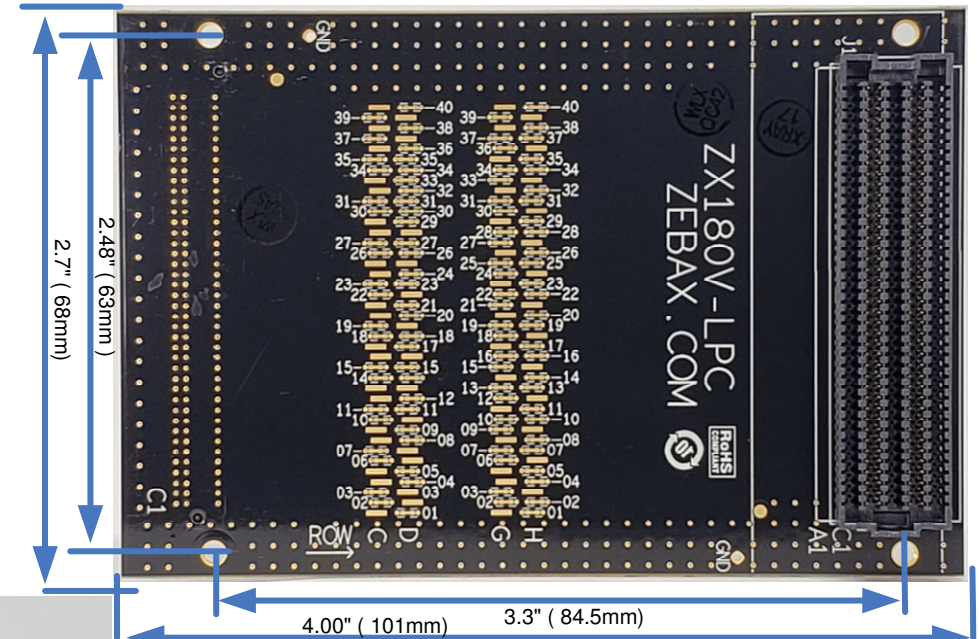
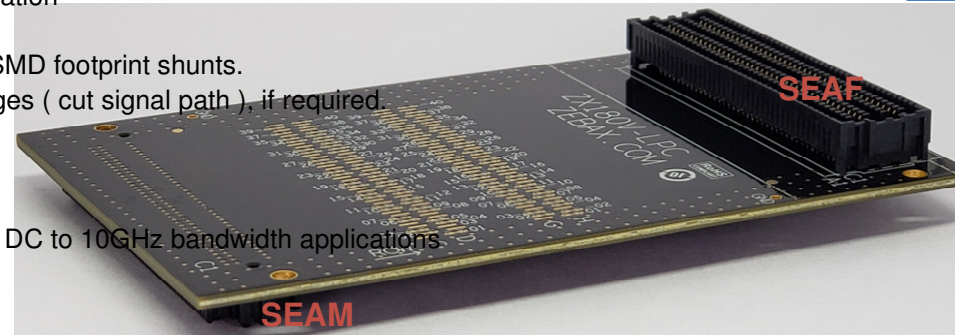
**Product Description:** FPGA Mezzanine card , FMC , passive test module meeting VITA 57.1 , Vita 57.4 standard bus interface. Includes **4 rows x 40 pins** per row totaling **160 pins** Low Pin Count , LPC , housing both SEAM and SEAF connectors. ONLY rows 3, 4, 7, 8(C, D, G, H rows ) are available on Vita 57.1 LPC connector series. 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 400 signals.** Ideal breakout mezzanine card for any design utilizing SEAM / SEAF ( 10x40 ) connector series as well as Vita 57.1, and Vita 57.4 standards. Please note - The standard Vita 57.1 LPC connector utilizes 10x40 connector housing, however only 4 columns are populated, making the LPC connector holding 160 contacts.

**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.

See Page 2,3 for more details

- 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 pass through, enabling user to implement design changes ( cut signal path ) , if required.
- 6- Improved signal integrity and crosstalk
- 7- Multiple GND test points connecting directly to inner layers GND planes.
- 8- Includes both LPC MC ( SEAM ) and CC ( SEAF ) connectors
- 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.



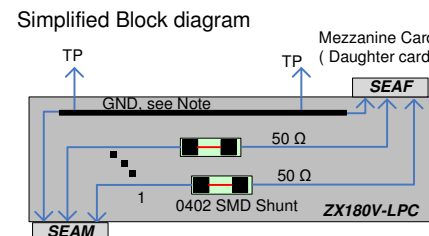
**Electrical:** Insertion loss > -2dB @8GHz  
Trace impedance: 50 Ω  
PCB Material : FR4, 8 layers  
Plating: Gold = 30 μ" (0.76 μm) over 50 μ" (1.27 μm) Ni, all signal layers  
Operating Temperature: -55°C to +125°C  
Connector:

Onboard Connector type: SEAM 10x40 BGA  
SEAF 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.

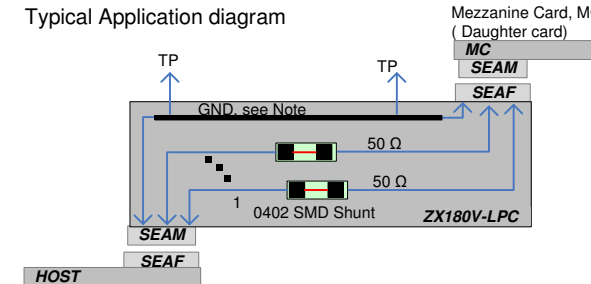


**Note:**  
1- All Vita 57.1 signals are accessible via onboard 0402 SMD shunt landing pads.  
2- All Vita 57.1 reserved GND signals are accessible via GND Test points.  
3- Onboard SEAM connector mates with Host's onboard SEAF connector.  
4- Onboard SEAF connector mates with Mezzanine Card's onboard SEAM connector.

Typical signal connection:

Break signal path:

Typical Application diagram



**Note:**  
1- All Vita 57.1 signals are accessible via onboard 0402 SMD shunt landing pads.  
2- All Vita 57.1 reserved GND signals are accessible via GND Test points.

**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

**ZX180V-LPC package includes:**

Part number	Quantity	Description
ZX180V-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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**DESCRIPTION:** FMC VITA 57.1 breakout adapter – passive FPGA mezzanine card LPC

<b>CHECKED:</b> M. MARINA	<b>DRAWN:</b> SONYA	<b>REVISION: 1.0</b> <b>SHEET: 1 OF 3</b>
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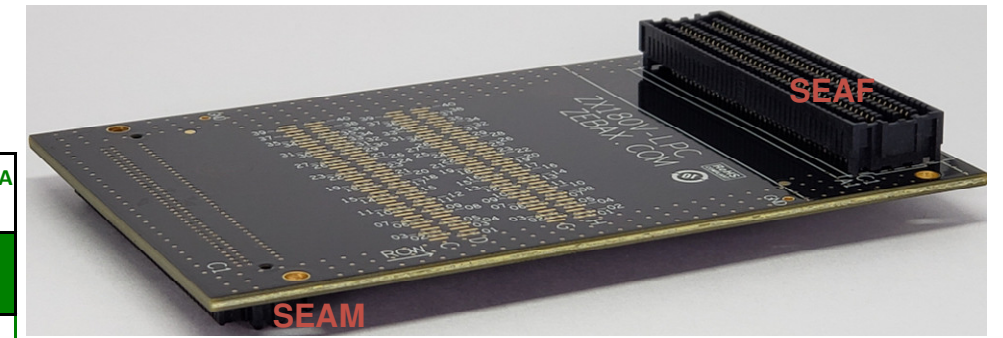
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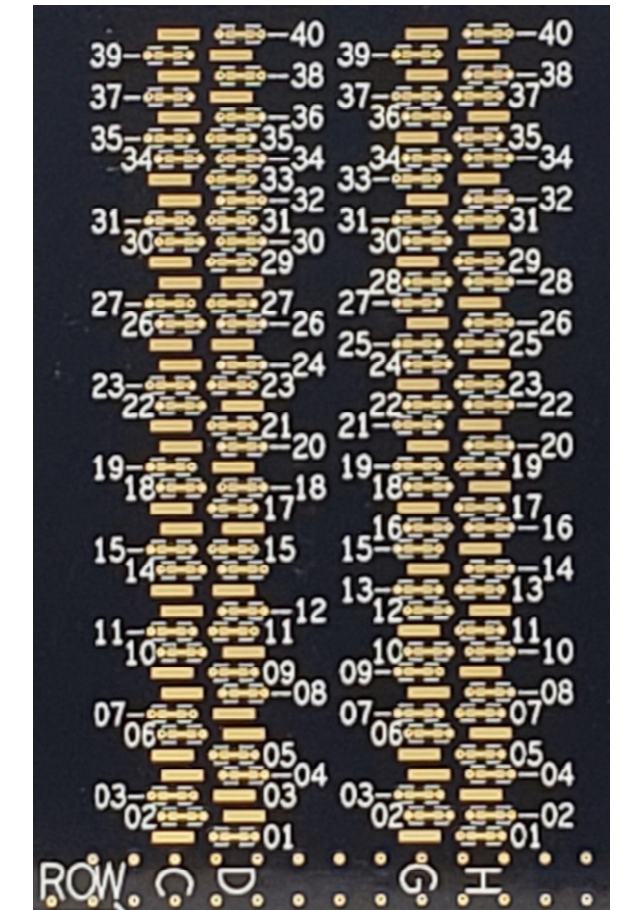
**Mates with :** Mechanically compatible with HPC connectors, ONLY 4 listed signal rows are available.  
 Xilinx FPGA development systems Virtex 6 Virtex 7.  
 Any and all FMC LPC VITA 57.1 compliant design.  
 SEAM SADL SEAMP SEAR SEAMI SEAC FMC LPC  
 SEAF-040-08.0-L-10-2-A SEAF-040-08-L-10-2-A  
 SEAFP-40 SEAMP-040 SEAMI-040 SEAR-040-10-10- SEAM-040  
 All listed Samtec Molex FMC connectors listed, table below:

ZX180V-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	
45970-4107	ASP-134605-01	MC-LPC-8.5L	male	8.5 mm
45970-4105	ASP-134606-01	MC-LPC-8.5	male	8.5 mm
45970-4307	ASP-127797-01	MC-LPC-10L	male	10 mm
45970-4305	ASP-134604-01	MC-LPC-10	male	10 mm



ZX180V-LPC 0402 SMD shunt footprints grid matrix



**Ground:** All The Vita 57.1 GND reserved signals on the ZX180V-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:** ZX180V-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 ZX180V-LPC FMC Vita 57.1 FMC test module breakout adapter.

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:** ZX180V-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 ZX180V-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 ZX180V-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:** ZX180V-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 ZX180V-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:** ZX180V-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 ZX180V-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:**

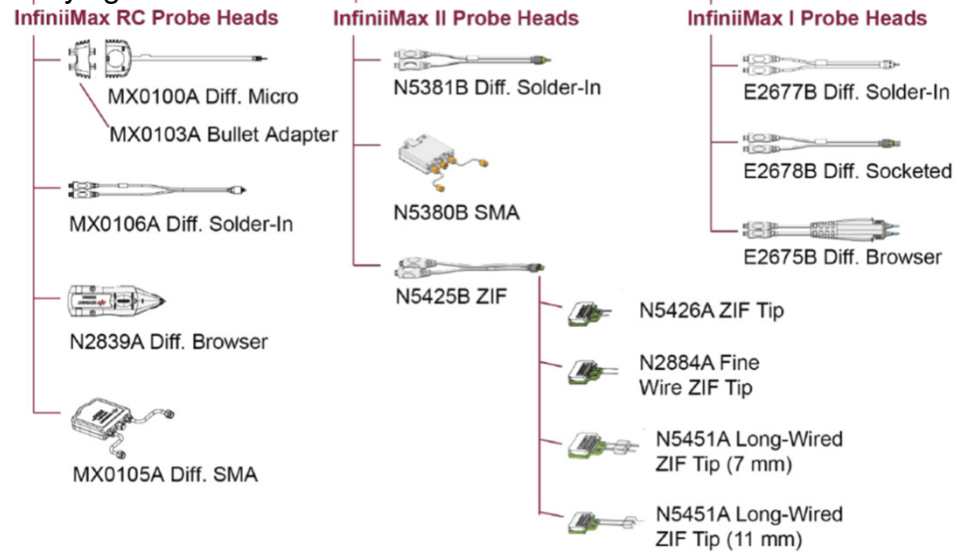
Re-routing any signal on ZX180V-LPC may be implemented by cutting the designated 0402 SMD shunt and re-routing to new location.

**Accessories:** The following accessories compliment ZX180V-LPC for testing purpose.

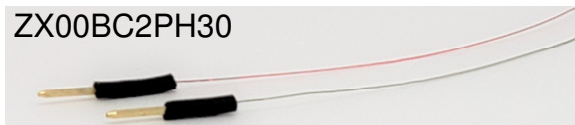
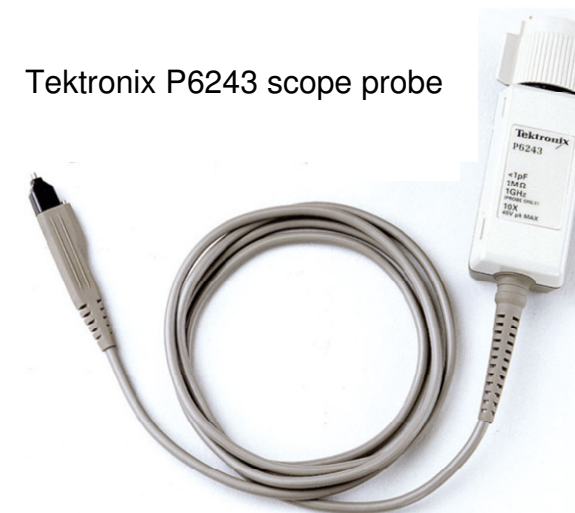
[ZX00BC2PH30](#) 30AWG Bare Copper wire to pin header wire assembly – It can be easily soldered to any pads on the ZX180V-LPC for scope probe interface.

[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 ZX180V-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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