



# SFP\_HSI Daughter Card

## Reference Manual

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## SFP\_HSI

### Reference Manual

#### About this Document

This document has been written for design managers, system engineers, and designers of ASICs and FPGAs who are evaluating or using the PLDA SFP\_HSI daughter card. Prior knowledge of PCI Express is assumed.

#### Document Change History

Date	Card Version	Change
May 2008	1.1	• Updated to add new compatible mother boards
March 2008	1.1	• Added mother boards XpressLXT, XpressAGX and XpressV5LC • Updated pinout, block diagram, and mechanical description • Added description of SFP_HSI features available with mother boards
November 2006	1.0	• First Release

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## Chapter 1 Purpose of the SFP\_HSI

The SFP\_HSI daughter card extends the latest generation of PLDA boards by adding three (or two, when used with the XpressAGX and XpressV5LC boards) Small Form Factor Pluggable (SFP) connectors for optical or copper links that support various types of transceivers, such as the Infineon V23848-M3052-C56 and the Stratos SPLC product family.

Compatible boards include:

- XpressFX100 version 2.0
- XpressGXII version 1.0
- XpressGen2GX version 1.0
- XpressLXT version 2.0
- XpressGen2V5 version 1.0
- XpressAGX version 1.0
- XpressV5LC version 1.0

You can download the Reference Manuals for these boards from [www.plda.com](http://www.plda.com).

## Chapter 2 SFP\_HSI Architecture

### 2.1 SFP\_HSI Components

The following figure illustrates the SFP\_HSI daughter card:

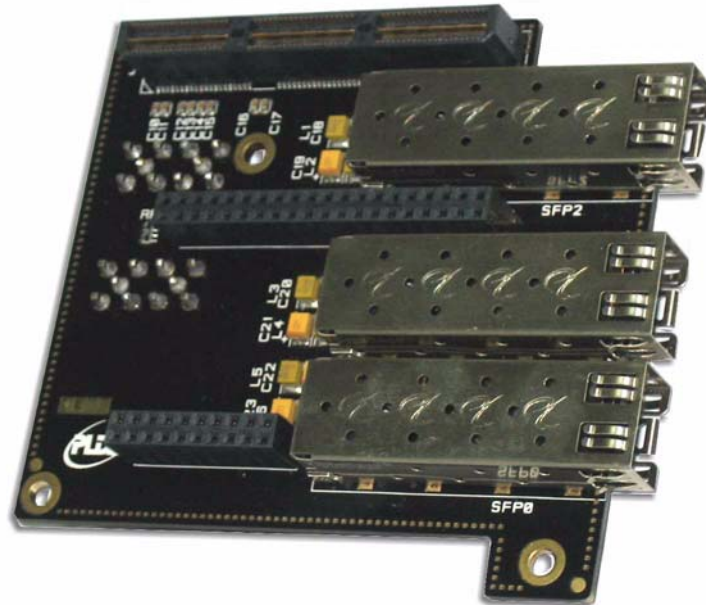


Figure 1: SFP\_HSI layout

### 2.2 Block Diagram of the SFP\_HSI

The SFP\_HSI provides access to four gigabit links from the mother board, available on:

- Three (or two, if used with the XpressAGX or XpressV5LC boards) SFP connectors, including control signals
- Four SMA connectors

Four switches are also available for core configuration as shown below:

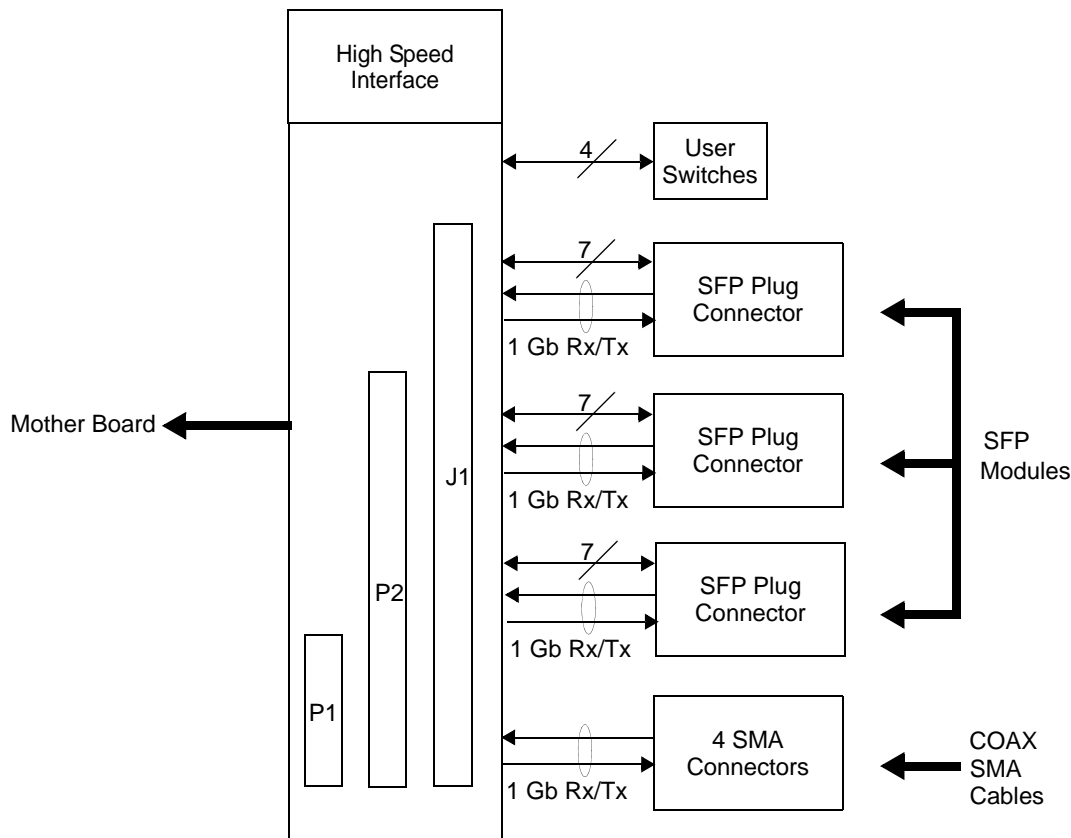


Figure 2: SFP\_HSI block diagram

### 2.3 SFP\_HSI Features and Mother Boards

The following table lists the SFP\_HSI features that are available with each compatible mother board:

Table 1: SFP\_HSI features available with mother boards

SFP_HSI Features				
	SFP0	SFP1	SFP2	SMA Link
XpressFX100	Y	Y	Y	Y
XpressGXII	Y	Y	Y	Y
XpressGen2GX	Y	Y	Y	Y
XpressLXT	Y	Y	Y	Y
XpressGen2V5	Y	Y	Y	Y
XpressAGX	Y	Y	N	Y
XpressV5LC	Y	Y	N	Y

## 2.4 Mechanical Description of the SFP\_HSI

The following figure illustrates the mechanical architecture of the SFP\_HSI:

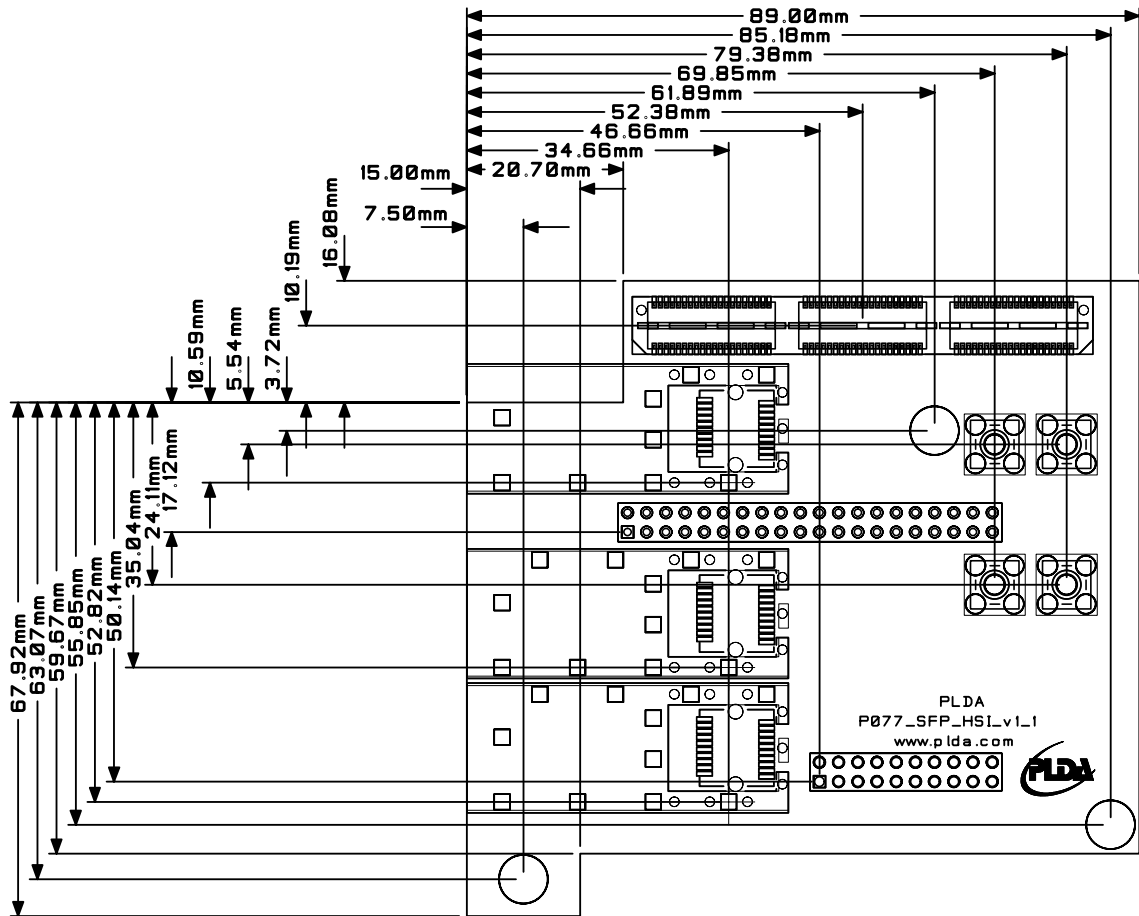


Figure 3: SFP\_HSI mechanical architecture

## Chapter 3 SFP\_HSI Resources

The following tables lists pin assignments between the SFP\_HSI and the corresponding pin assignments on compatible mother boards.

### 3.1 SFP Connector 0

Table 2: Pin assignments between SFP Connector 0 and the mother boards

SFP pin	SFP signal	Mother board signal	XpressFX100	XpressLXT XpressGen2V5	XpressGXII XpressGen2GX	XpressAGX	XpressV5LC
J1-3	SFP_Txp0	Gbit_Tx0p	A25	B10	C4	V4	B2
J1-4	SFP_Rxp0	Gbit_Rx0p	A28	A9	C1	V1	C1
J1-5	SFP_Txn0	Gbit_Tx0n	A26	B9	C5	V5	C2
J1-6	SFP_Rxn0	Gbit_Rx0n	A29	A8	C2	V2	D1
P2-7	LOS0	Matrix_IO16	R6	D16	B12	B14	T5
P2-4	Tx_Disable0	Matrix_IO32	U7	D17	C11	A13	U5
P2-8	Rate_Select0	Matrix_IO34	R7	D14	A12	C12	R8
P2-1	Tx_Fault0	Matrix_IO13	T10	E17	D11	A12	Y4
P2-5	MOD0_Def0	Matrix_IO15	U6	F16	D12	C10	T8
P2-6	MOD0_Def1	Matrix_IO33	R8	E16	C12	B13	T7
P2-3	MOD0_Def2	Matrix_IO14	T9	G17	B10	C11	W4

### 3.2 SFP Connector 1

Table 3: Pin assignments between SFP Connector 1 and the mother boards

SFP pin	SFP signal	Mother board signal	XpressFX100	XpressLXT XpressGen2V5	XpressGXII XpressGen2GX	XpressAGX	XpressV5LC
J1-15	SFP_Txp1	Gbit_Tx2p	A15	B4	E4	AD4	H2
J1-16	SFP_Rxp1	Gbit_Rx2p	A18	A3	E1	AB1	J1
J1-17	SFP_Txn1	Gbit_Tx2n	A14	B3	E5	AD5	J2
J1-18	SFP_Rxn1	Gbit_Rx2n	A17	A2	E2	AB2	K1
P2-16	LOS1	Matrix_IO38	R9	G21	B15	E14	N8
P2-9	Tx_Disable1	Matrix_IO17	P6	D15	B13	D10	R5
P2-13	Rate_Select1	Matrix_IO19	P9	B15	D15	D14	P6
P2-10	Tx_Fault1	Matrix_IO35	P7	C14	C13	C14	R6
P2-14	MOD1_Def0	Matrix_IO37	K3	G20	C15	D13	K8
P2-11	MOD1_Def1	Matrix_IO18	N8	C15	D13	C13	R7
P2-12	MOD1_Def2	Matrix_IO36	L5	A14	C14	D12	P8

### 3.3 SFP Connector 2

Table 4: Pin assignments between SFP Connector 2 and the mother boards

SFP pin	SFP signal	Mother board signal	XpressFX100	XpressLXT XpressGen2V5	XpressGXII XpressGen2GX
J1-9	SFP_Txp2	Gbit_Tx1p	A23	B5	A6
J1-10	SFP_Rxp2	Gbit_Rx1p	A20	A6	A3
J1-11	SFP_Txn2	Gbit_Tx1n	A24	B6	A7
J1-12	SFP_Rxn2	Gbit_Rx1n	A21	A7	A4
P2-15	LOS2	Matrix_IO20	K4	A15	A14
P2-21	Tx_disable2	Matrix_IO22	F3	B17	B16
P2-18	Rate_Select2	Matrix_IO39	H3	F23	D16
P2-25	Tx_Fault2	Matrix_IO24	F4	F18	F17
P2-17	MOD2_Def0	Matrix_IO21	J4	B16	A15
P2-20	MOD2_Def1	Matrix_IO40	G3	C17	C16
P2-23	MOD2_Def2	Matrix_IO23	H4	G18	A16

**Note:** The SFP Connector 2 is not available when the SFP\_HSI is used with the XpressAGX or XpressV5LC boards.

### 3.4 SMA Connectors

Table 5: Signal/pin assignments between SMA connectors and the mother boards

SFP pin	SFP signal	Mother board signal	XpressFX100	XpressLXT XpressGen2V5	XpressGXII XpressGen2GX	XpressAGX	XpressV5LC
J1-21	SMA_Txp0	Gbit_Tx3p	A13	E2	G4	AF4	N2
J1-22	SMA_Rxp0	Gbit_Rx3p	A10	D1	G1	AD1	M1
J1-23	SMA_Txn0	Gbit_Tx3n	A12	D2	G5	AF5	M2
J1-24	SMA_Rxn0	Gbit_Rx3n	A9	C1	G2	AD2	L1

### 3.5 User Switches

Four user-dedicated micro switches are available on the board, as shown below. ON means a logic 1..



Figure 4: Photograph of the user switches

The table below shows pin assignments for the switches:

**Table 6: Pin assignments between the switches and the mother boards**

SFP Pin	SFP signal	Mother board signal	XPressFX100	XPressLXT	XPressGXII	XPressAGX	XPressV5LC
P2-33	SW1_A	Matrix_IO28	F5	D20	C18	J10	H6
P2-35	SW1_B	Matrix_IO29	G5	E21	D18	K12	G4
P2-37	SW1_C	Matrix_IO30	L6	D21	C19	K11	F5
P2-39	SW1_D	Matrix_IO31	M8	D22	F19	K10	K7

## Chapter 4 Installation Examples

**Note:** The P1 and P2 connectors required to mount the SFP\_HSI daughter card on compatible mother boards are included in the SFP\_HSI package.

### 4.1 Mounting the SFP\_HSI on the XpressFX100

The following figure shows the SFP\_HSI daughter card mounted on the XpressFX100:

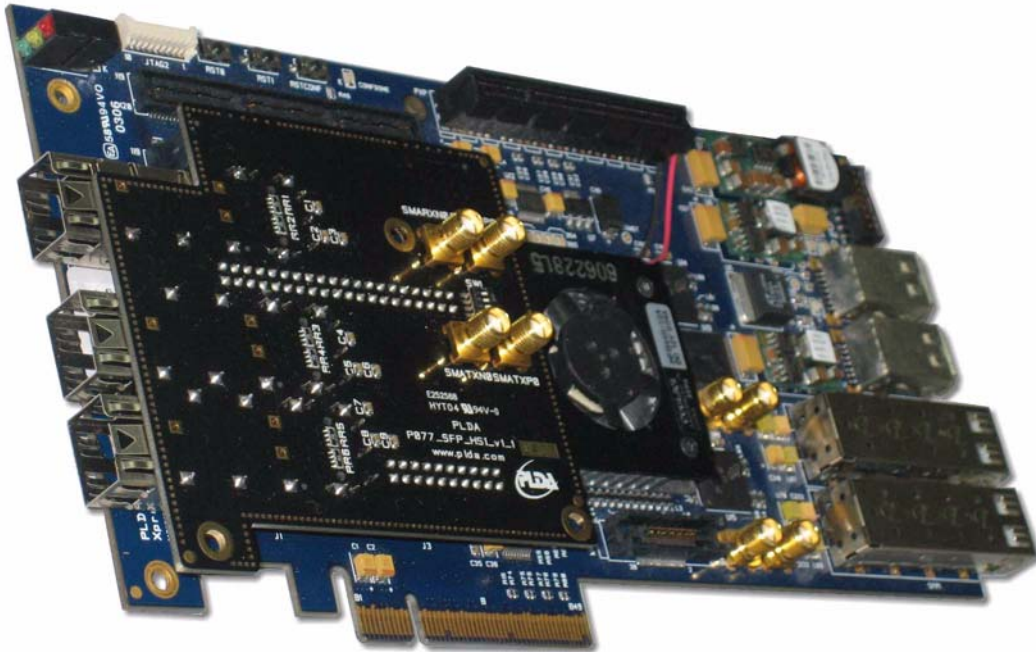


Figure 5: SFP\_HSI mounted on the XpressFX

### 4.2 Mounting the SFP\_HSI on the XpressGXII

The following figure shows the SFP\_HSI daughter card mounted on the XpressGXII:

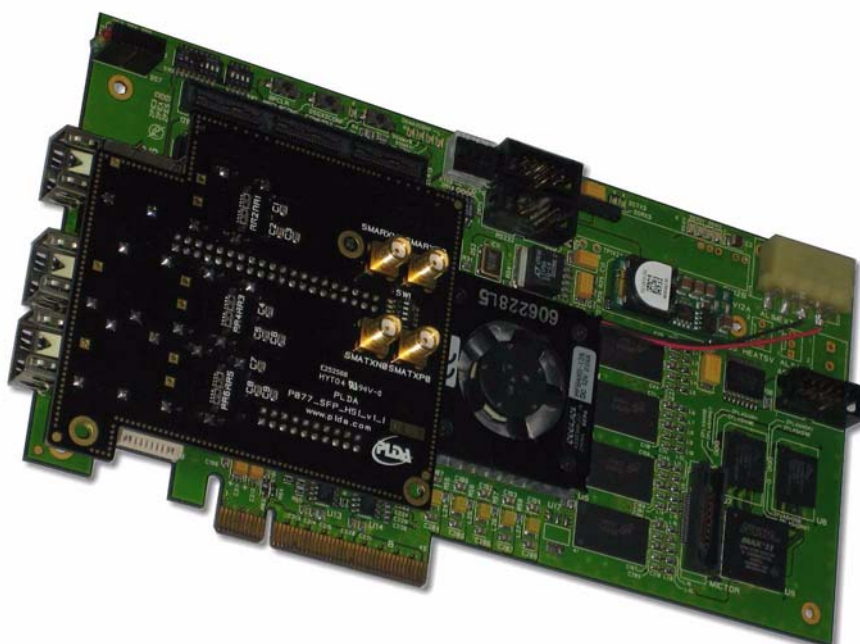


Figure 6: SFP\_HSI mounted on the XpressGXII

## 4.3 Mounting the SFP\_HSI on the XpressLXT

The following figure shows the SFP\_HSI daughter card mounted on the XpressLXT:

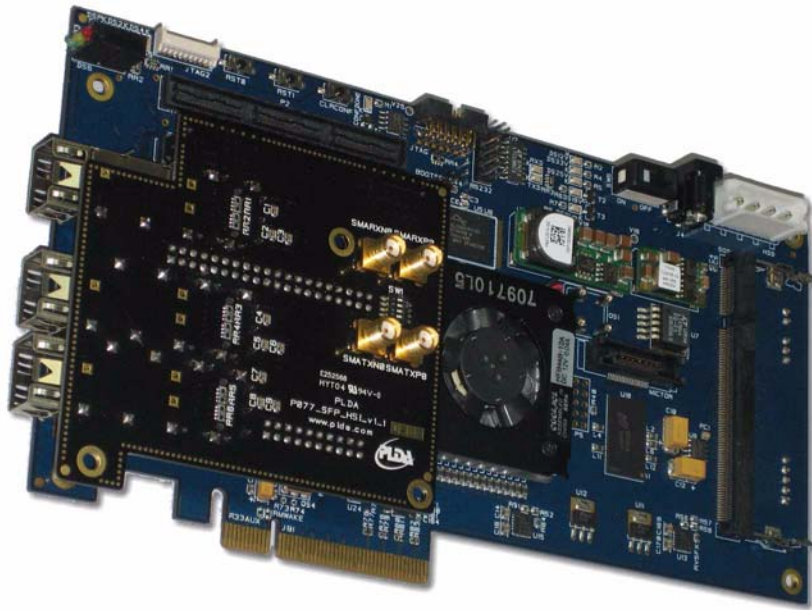


Figure 7: SFP\_HSI mounted on the XpressLXT

## 4.4 Mounting the SFP\_HSI on the XpressAGX

The following figure shows the SFP\_HSI daughter card mounted on the XpressAGX:

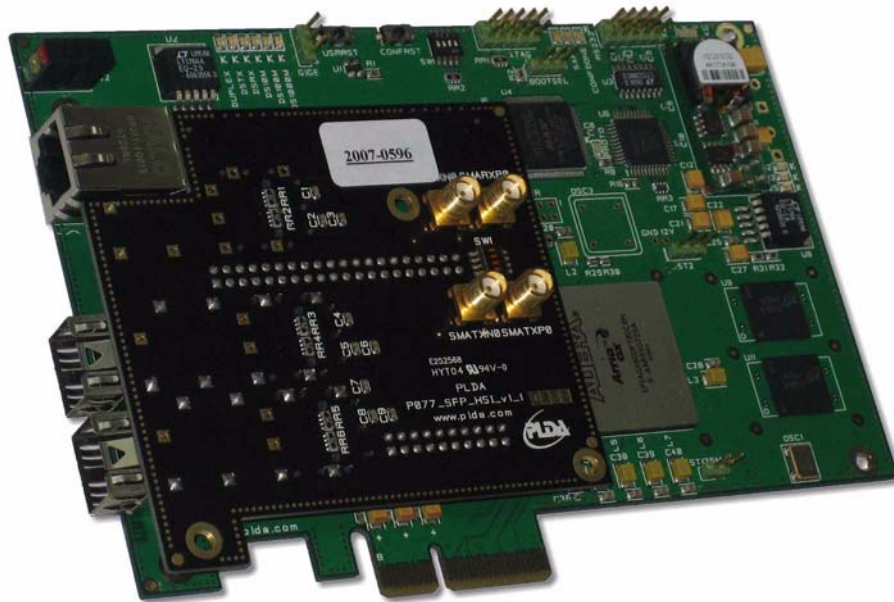


Figure 8: SFP\_HSI mounted on the XpressAGX

## 4.5 Mounting the SFP\_HSI on the XpressV5LC

The following figure shows the SFP\_HSI daughter card mounted on the XpressV5LC:

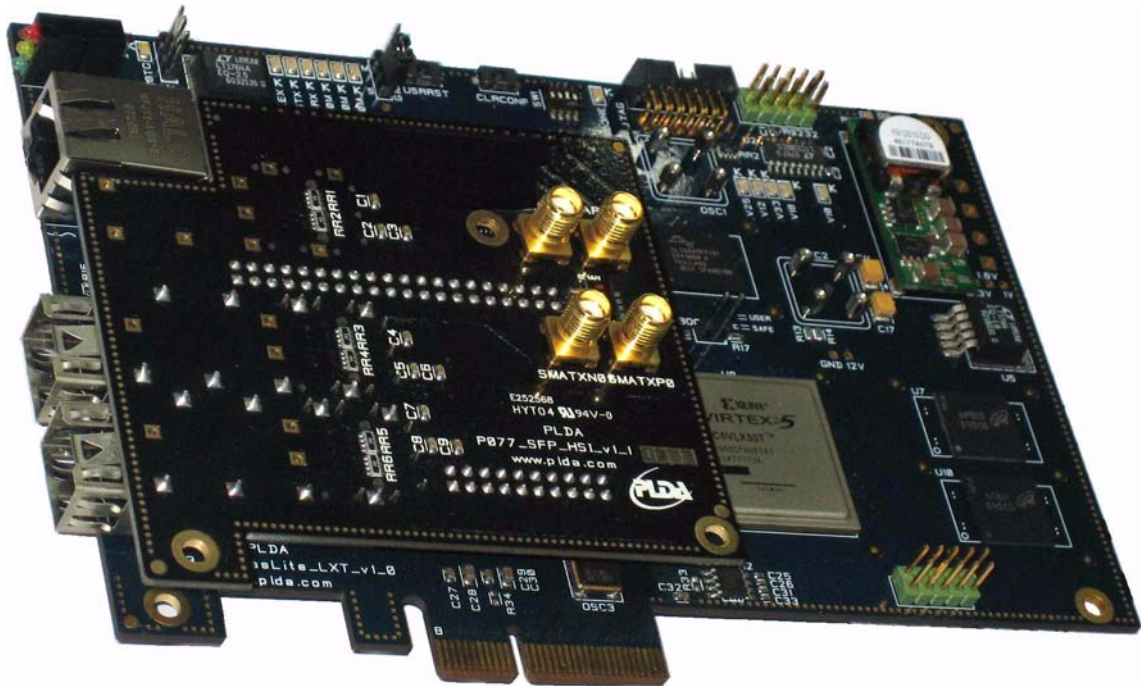


Figure 9: SFP\_HSI mounted on the XpressV5LC