

Evaluates: MAX96724/F/R

MAX96724 DPHY Evaluation Kit

General Description

The MAX96724 DPHY evaluation kit (EV kit) provides a proven design and reliable platform to evaluate the MAX96724, MAX96724F, and MAX96724R devices using standard FAKRA coaxial cables or a MATE-AX cable. These deserializer devices support high-bandwidth, gigabit multimedia serial links (GMSL-1 or GMSL-2) and offer spread spectrum and full-duplex control channel features. The EV kit includes a simple-to-use Windows 10® or higher compatible graphical user interface (GUI) to exercise device features. The EV kit comes with a MAX96724, MAX96724F, or MAX96724R IC installed on board.

For complete GMSL-2 evaluation using standard FAKRA coax cables, order the MAX96724 coax EV kit along with a companion serializer board, such as the MAX96717 coax EV kit. For a detailed look at all GMSL-2 features, including information on how to use the parts, see the newest GMSL-2 User Guide found in Analog Devices' GMSL customer portal folder. For more information on how to design customized hardware with GMSL2 devices, see the newest GMSL2 Hardware Design Guide in Analog Devices' GMSL customer portal folder.

Note that throughout this document:

- Deserializer refers to the MAX96724, MAX96724F, and MAX96724R.
- Serializer refers to any GMSL-1 or GMSL-2 serializer device, particularly the MAX96705 or MAX96717.
- Coax cables refer to both coax and MATE-AX applications. The MATE-AX connector is not installed by default, and the EV kit does not come with a MATE-AX cable. See the Bill of Materials for ordering information.
- GMSL1 links are required to use high-immunity mode. Links that do not use high-immunity mode are not recommended for new designs.

Features

- The MAX96724 Deserializer Accepts GMSL Data from the Serializers and Converts it into MIPI CSI-2.
 - Backward-Compatible to Accept GMSL-1 Serial Data
 - Quad Inputs can Mix and Match GMSL-1 and GMSL-2
 - Outputs are Compliant to MIPI D-PHY v1.2 and CSI-2 v1.3 Specifications
- Windows 10® or Higher Compatible Software Support
- USB-Controlled Interface (Cable Included)
- Powerful, Simple-to-Use GUI for Comprehensive Device Feature Evaluation
- Board Powered by USB, 12V Wall Adapter, or External Power Supply
- Proven PCB Layout
- Fully Assembled and Tested

MAX96724 DPHY EV Kit Files

FILE	DESCRIPTION
MAXSerDesEV-GMSLInstall.exe	Installs the EV kit software (GUI) onto Windows 10 or higher computers. Includes GUI user's guide, microcontroller firmware, and documentation.
MAXSerDesEV-GMSL.exe	GMSL graphical user interface (GUI) program.

Ordering Information appears at end of data sheet.

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319-100923; Rev 4; 1/23

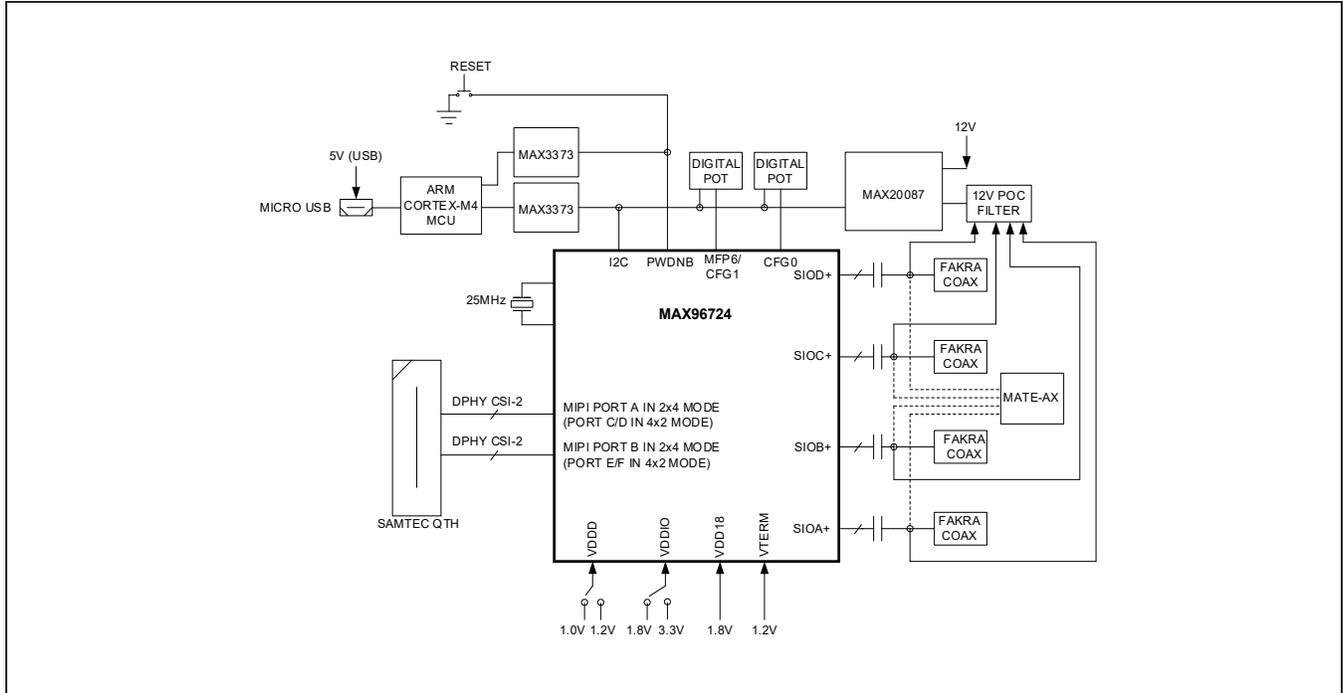


Figure 1. MAX96724 DPHY EV Kit Block Diagram

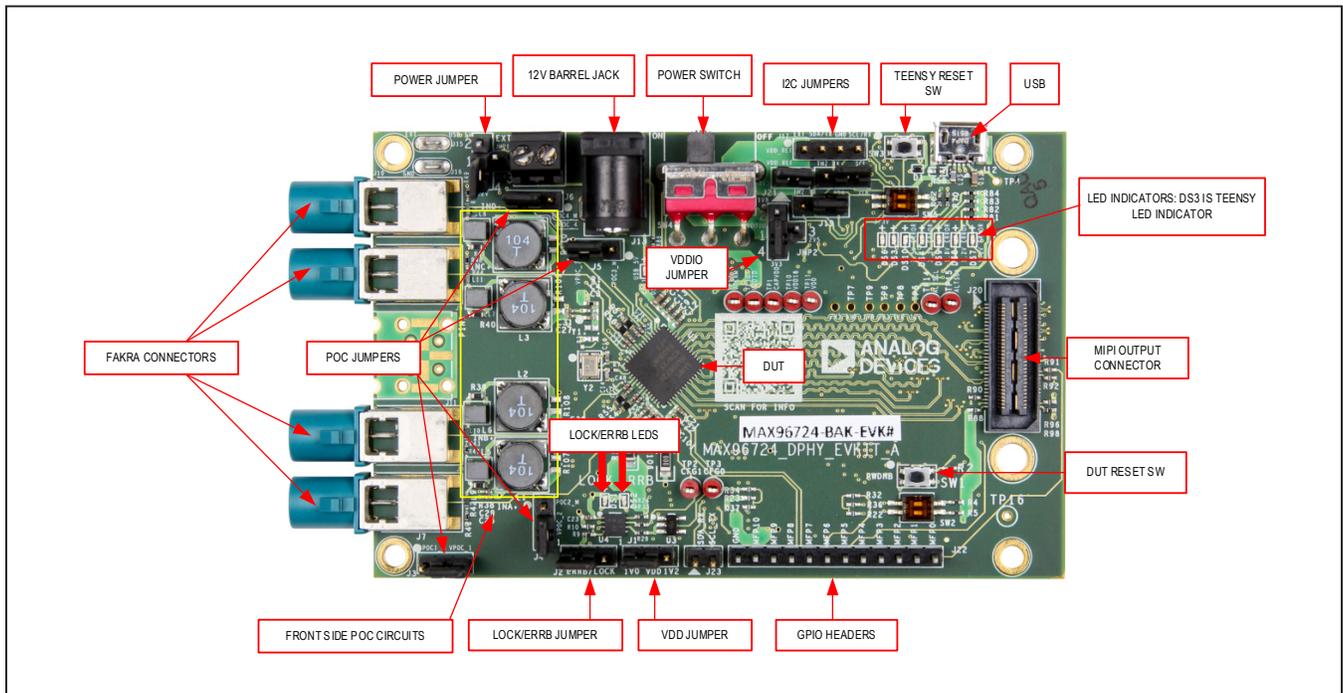


Figure 2. MAX96724 DPHY EV Kit Key Components on Front of Board

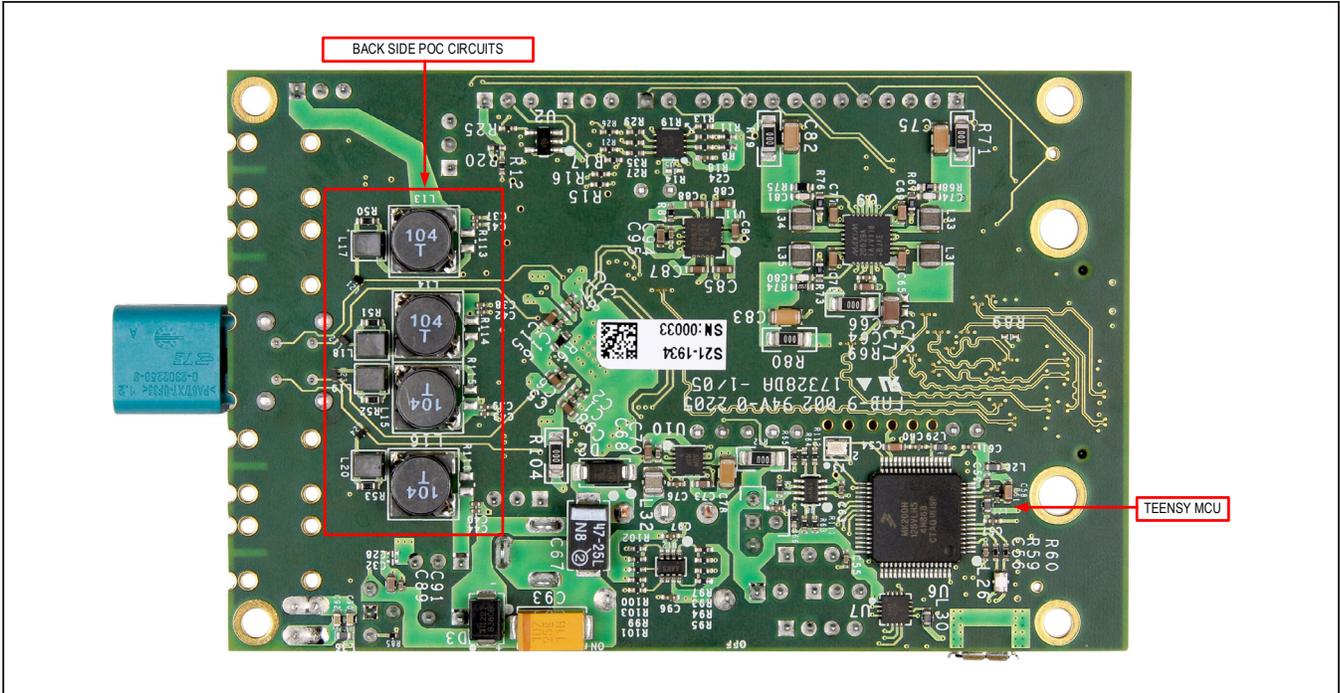


Figure 3. MAX96724 DPHY EV Kit Key Components on Back of Board

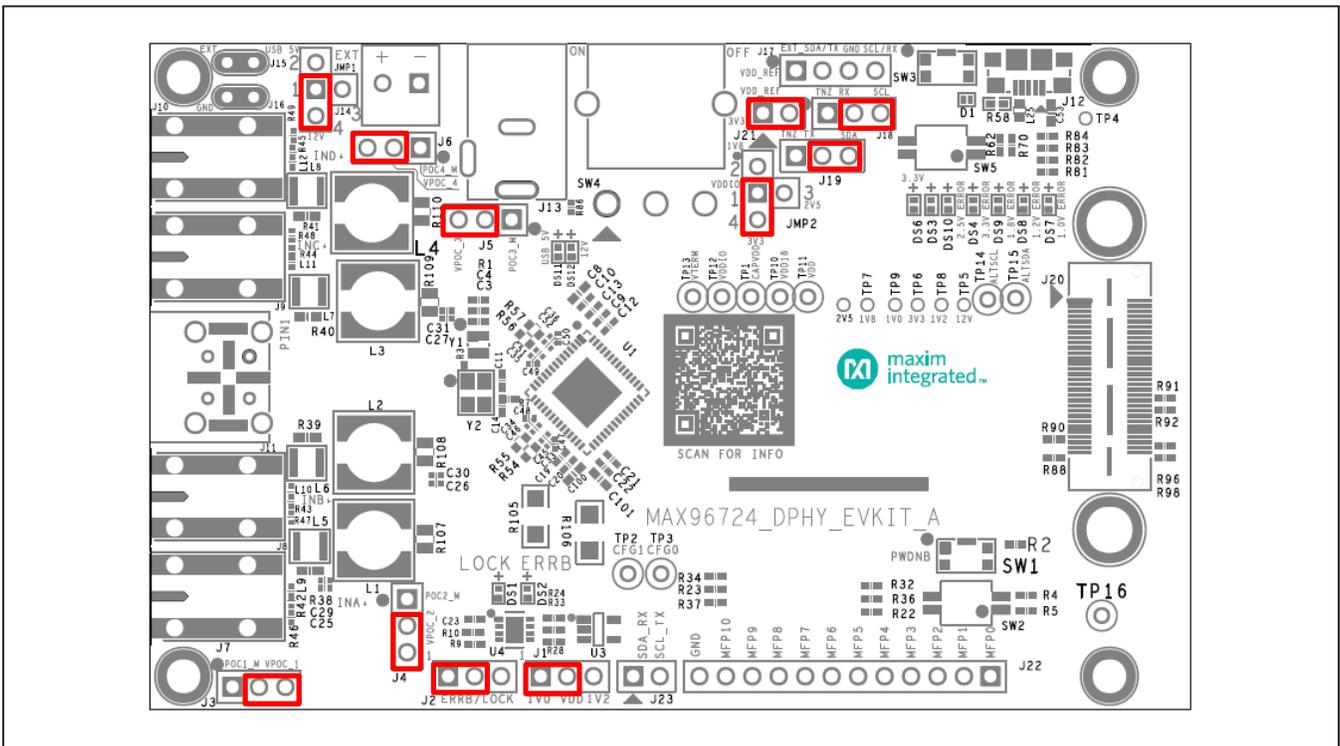


Figure 4. MAX96724 DPHY EV Kit Default Jumper Positions

Quick Start

This procedure applies to both coax and MATE-AX EV kits. [Figure 5](#) shows a typical application using a MAX96724 family deserializer to interface with four MAX96717 or MAX96705 camera modules.

Required Equipment

The following equipment is required to successfully use the MAX96724 DPHY EV kit in a serial link coax cable configuration:

- MAX96724 DPHY EV kit
- MAX96717 or MAX96705 serializer EV kits or camera modules
- FAKRA coax cable assembly
- PC with Windows 10® or higher and GMSL-2 software
- Power supply source (500 mA USB port, 5V/1A DC supply, or 12V barrel jack DC supply)
- Micro-USB cable

Procedure

The MAX96724 DPHY EV kit is shipped with the fully assembled and tested PCB. Follow these steps to verify the board operation:

- 1) Connect the MAX96724 DPHY EV kit PCB through the board's Micro-USB port (J12) to a Windows 7® or Windows 10® PC.
- 2) Download and install the latest GMSL-2 GUI software from the Analog Devices Sharefile site to the PC. If needed, contact the factory for additional information on accessing the software. Refer to the GMSL GUI User Guide for detailed software instruction.
- 3) Verify the MAX96724 DPHY EV kit PCB's red power switch (SW4) is OFF.
- 4) Verify all jumper positions on the PCB are properly set to meet the requirements of the application. [Figure 4](#) shows the possible jumper positions for various configurations. The default jumper settings place the device under test (DUT) into the I²C mode, selects 3.3V as the VDDIO voltage and 1.2V as the VDD voltage, and selects the board to be powered by the 12V DC barrel jack.
- 5) Connect a power supply to the MAX96724 DPHY EV kit. The board provides three power supply options (selected through the jumper JMP1):
 - A 12V DC supply connected through the barrel jack (J13) or terminal block (J14)
 - A 5 V DC supply from the Micro-USB port (J12) connected to the PC
 - An external 5V to 17V DC supply through EXT (J15) and GND (J16) test points
- 6) Define the application specific power-up configuration for the DUT, using the GMSL-2 GUI to set the device's CFG pins into the required modes. This requires power (see the following [Configuration \(CFG\) Pin Settings](#) section). The MAX96724 must be configured to have the same link data rate (3Gbps or 6Gbps) and mode (tunnel or pixel) as the companion serializer board. The DUT must be power cycled if any changes are made to the CFG pins (or use SW1, the RESET button on the board, to reset the DUT).
- 7) Power up the board by moving the red power switch (SW4) to the ON position. The green power LEDs for DS6, DS11, and DS12 light indicate the correct power settings. The Teensy LED (DS3) flashes to indicate the board firmware is functional. If the Teensy LED is not flashing, see the [Troubleshooting](#) section.
- 8) Verify the LOCK LEDs on both the serializer and deserializer EV boards light up, indicating the link is successfully established. If the LOCK_LED is off, see the [Troubleshooting](#) section.
- 9) Start the GMSL2 EVKIT Software (GUI).
- 10) The GUI automatically searches for any active listener in both the I²C and UART modes, and identifies valid GMSL products. Once the serializer and deserializer are identified, they appear as tabs in the GUI.
- 11) Read register 0x00 in both the serializer and deserializer to ensure both devices are active. This can be verified by an I²C ACK.

After completing these steps, basic board initialization is complete, the link is established, and the system is ready for use. Use the GMSL-2 GUI to access internal registers locally or remotely. Ensure both the serializer and deserializer are identified correctly in the GUI. Refer to the GMSL GUI User Guide for GUI operation, and the GMSL2 User Guide to configure this device and its available features.

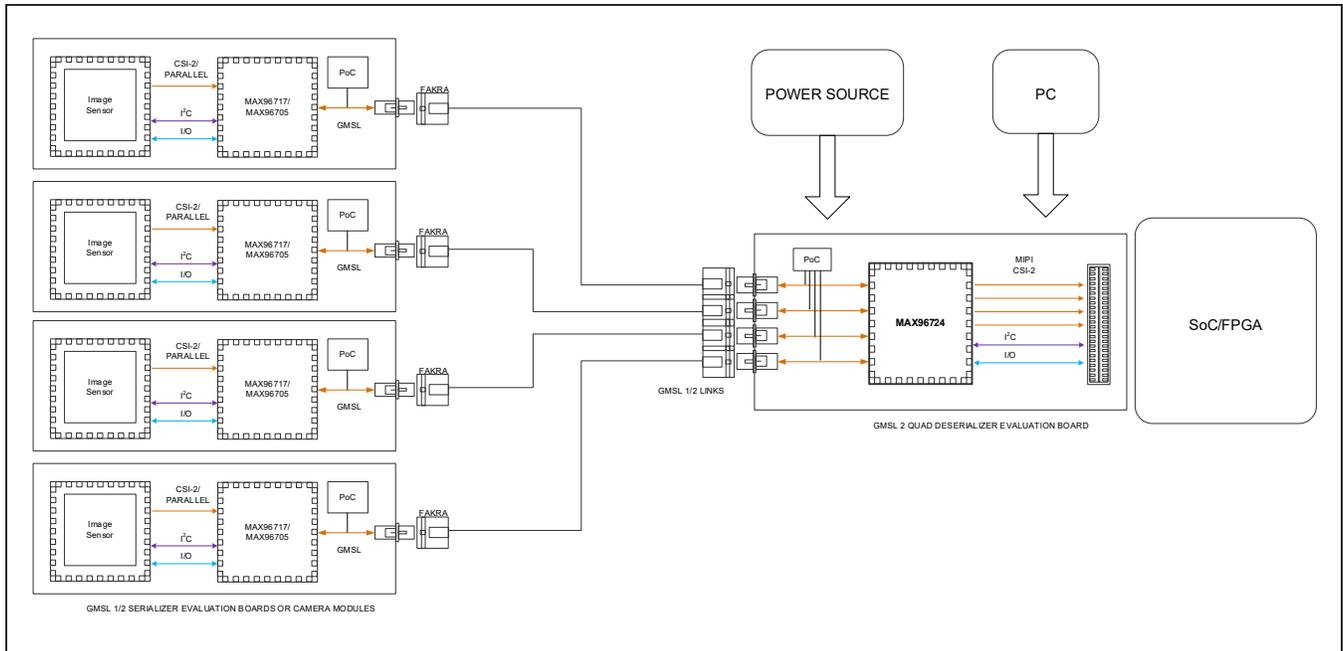


Figure 5. Typical Application Block Diagram using MAX96724 DPHY EV Kit

Configuration (CFG) Pin Settings

- 1) Like other GMSL2 devices, configuration pins are used to set desired working modes during power-up for the MAX96724.
- 2) There are two analog and two digital (I²C configurable) potentiometers on board to set the CFG pin levels. The digital potentiometers are connected by default. Alternatively, rework the 0 Ω resistors to connect the analog potentiometers and tune the voltage manually. Voltages on CFG pins can be monitored through CFG0 and CFG1 test points (loop type terminals). Use the default connection and configure the power-on reset (POR) mode through the GUI using the **Config Options** page under **Options**. For more details, refer to the GUI User Guide.
- 3) [Table 1](#) and [Table 2](#) indicate the voltages for the CFG pins for different modes of operations. The CFG pin voltages latch at power-up and are not volatile after power-off due to the digital potentiometers' EEPROM. Any of the settings can be changed by the software through register writes after power-up. The CFG0 pin sets the device address for I²C. For example, a default 0x4E I²C address (8-bit write) is CFG0 state 0 (0% of VDDIO, i.e., pulldown). The CFG1 pin sets CXTIP (coax or twisted-pair mode), GMSL-2 versus GMSL-1 mode, the default forward rate (3Gbps or 6Gbps) when in GMSL-2 mode, and the high-immunity mode (HIM) (enabled or disabled) when in GMSL-1 mode. For example, a default value for GMSL-1 coax HIM enabled is CFG1 state 7 (100% of VDDIO).

Table 1. MAX96724 CFG Pin Settings

CGP INPUT (% VDDIO)		CFG0	CFG1		
CFG STATE	MIN/TYP/MAX % OF VDDIO	DEVICE I ² C ADDR	CXTP	GMSL-1/GMSL-2 MODE	HIM/GMSL-2 RATE
0	0.00 / 0.00 / 11.7	0x4E	COAX	GMSL-2	6Gbps
1	16.9 / 20.2 / 23.6	0x5C			3Gbps
2	28.8 / 32.1 / 35.5	0x9C		STP	GMSL-1
3	40.7 / 44.0 / 47.4	0x9E	GMSL-2		6Gbps
4	52.6 / 56.0 / 59.3	RSVD			3Gbps
5	64.5 / 67.9 / 71.2	RSVD	GMSL-1		HIM Enabled
6	76.4 / 79.8 / 83.1	RSVD			HIM Disabled*
7	88.3 / 100 / 100	RSVD	COAX	GMSL-1	HIM Enabled

*Note: High-immunity mode (HIM) is required for new designs.

Table 2. MAX96724F and MAX96724R CFG Pin Settings

CGP INPUT (% V _{DDIO})		CFG0	CFG1		
CFG STATE	MIN/TYP/MAX % OF V _{DDIO}	DEVICE I ² C ADDR	CXTP	GMSL-1/GMSL-2 MODE	HIM/GMSL-2 RATE
0	0.00 / 0.00 / 11.7	0x4E	COAX	GMSL-2	3 Gbps
1	16.9 / 20.2 / 23.6	0x5C			
2	28.8 / 32.1 / 35.5	0x9C		STP	GMSL-1
3	40.7 / 44.0 / 47.4	0x9E	GMSL-2		3 Gbps
4	52.6 / 56.0 / 59.3	RSVD			
5	64.5 / 67.9 / 71.2	RSVD	GMSL-1		HIM Enabled
6	76.4 / 79.8 / 83.1	RSVD			HIM Disabled*
7	88.3 / 100 / 100	RSVD	COAX	GMSL-1	HIM Enabled

*Note: High-immunity mode (HIM) is required for new designs.

Deserializer Jumper/Connector/Switch/Test Point Descriptions

The following table contains details of all the connectors, jumpers, switches, and test points of the EV kit.

The power configuration of the EV kit hardware can be reconfigured to allow external supply connections. [Figure 6](#) shows the power connection options.

Table 3. Deserializer Jumper/Connector/Switch/Test Point Descriptions

VALUE	NAME	DEFAULT POSITION	FUNCTION
JMP1	VSUP	*12V	Board powered from 12V Barrel Jack or 12V Power-over-Coax (POC)
		USB_5V	Board powered from USB 5V sourced from Micro-USB connector.
		EXT	Board powered from external loop connector (EXT) ranged from 5V up to 17V
J1	VDD	*1V	VDD connect to 1V
		1V2	VDD connect to 1.2V
J2	LOCK	*LOCK	LOCK LED indicates lock status of GMSL link
		ERRB/LOCK	LOCK LED indicates ERRB/LOCK status
JMP2	VDDIO	1V8	VDDIO connect to 1.8V
		*3V3	VDDIO connect to 3.3V
		2V5	This should not be used and is unsupported
J21	VDD_REF	Open	Reference voltage for level shifter from external supply
		*Short	Reference voltage for level shifter from on-board 3.3V
J18	TX_SCL	*TNZ_SCL	U1 SCL/Tx pin connected to Teensy uC SCL pin
		TNZ_RX	U1 SCL/Tx pin connected to Teensy uC Rx pin
J19	RX_SDA	*TNZ_SDA	U1 SDA/Rx pin connected to Teensy uC SDA pin
		TNZ_RX	U1 SDA/Rx pin connected to Teensy uC Tx pin
J23	EXP	SDA_RX	U1 SDA/RX pin for testing and probing
		SCL_TX	U1 SCL/TX pin for testing and probing
J3	POCA+	*VPOC_1	PoC voltage from MAX20087 output1
		Open	PoC disabled
J4	POCB+	*VPOC_2	PoC voltage from MAX20087 output2
		Open	PoC disabled
J5	POCC+	*VPOC_3	PoC voltage from MAX20087 output3
		Open	PoC disabled
J6	POCD+	*VPOC_4	PoC voltage from MAX20087 output4
		Open	PoC disabled
J12	USB	--	On-board USB connector
J13	+12V	--	12V Input barrel jack connector
J14	+12V	--	12V Input terminal block connector.
J15	EXT	--	Loop connector to apply external voltage (3.7V to 17V)
J16	GND	--	GND loop connector
J17	EXT_I2C	--	Header connections for external I ² C.

Table 3. Deserializer Jumper/Connector/Switch/Test Point Descriptions (continued)

VALUE	NAME	DEFAULT POSITION	FUNCTION
SW1	SW1	--	Push button switch for U1 power-down/reset
SW2	SW2	ON/OFF	Slide switches to external pullups for MFP7/MFP8 when used as I ² C
SW3	SW3	--	Push button switch to program Teensy uC
SW4	SW4	ON/OFF	Slide switch for board power-up
SW5	SW5	ON/OFF	Enable/Disable I ² C to high-speed connector
TP1	CAPVDD	--	CAPVDD test point
TP2	CFG1	--	CFG1 test point
TP3	CFG0	--	CFG0 test point
TP4	USB5V	--	USB 5 V power test point
TP5	12V	--	12V rail test point for input barrel jack connector
TP6	3V3	--	3V3 rail test point
TP7	1V8	--	1V8 rail test point
TP8	1V2	--	1V2 rail test point
TP9	1V0	--	1V0 rail test point
TP10	VDD18	--	VDD18 test point
TP11	VDD	--	VDD test point
TP12	VDDIO	--	VDDIO test point
TP13	VTERM	--	VTERM test point
TP14	ALTSCL	--	Teensy uC alternate SCL pin test point. (Debug only)
TP15	ALTSDA	--	Teensy uC alternate SDA pin test point. (Debug only)
IMPORTANT LED INDICATORS			
VALUE	NAME	DEFAULT POSITION	FUNCTION
DS1	LOCK	--	LOCK LED (green)
DS2	ERRB	--	ERRB LED (red)
DS3	DS3	--	TEENSY LED (red)
DS4	3.3V ERROR	--	3.3V ERROR (red)
DS6	3.3V	--	3.3V (green)
DS7	1.0V ERROR	--	1.0V error (red)
DS8	1.2V ERROR	--	1.2V error (red)
DS9	1.8V ERROR	--	1.8V error (red)
DS10	2.5V ERROR	--	2.5V error (red)
DS11	USB 5V	--	USB 5V (green)
DS12	12V	--	12V (green)

*Default Position

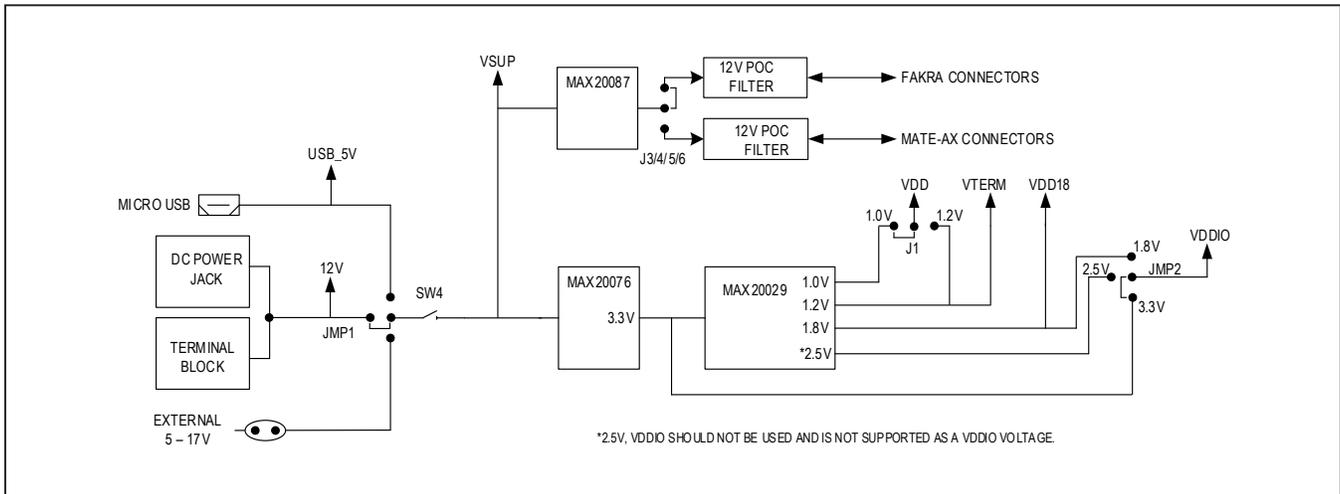


Figure 6. Deserializer Evaluation Board Power Connection Diagram

Troubleshooting

If the MAX96724 DPHY EV kit fails to power-up or does not function properly, try the following appropriate remedial actions:

- 1) Verify the board's red power switch (SW4) is set to ON.
- 2) Verify each of the green power LEDs (12V, 3.3V, and 1.8V) on the MAX96724 DPHY EV kit lights up. The 5V LED lights up only when the Micro-USB is connected. The 1.0V, 1.2V, 1.8V, 2.5V, 3.3V LEDs (red) light up if the voltages are not present.
- 3) Verify all jumpers are correctly set. Refer to the default jumper settings table in the serializer and deserializer EV kit data sheets for details. Ensure all jumpers are firmly attached and replace the loose or damaged ones.
- 4) Verify the USB cable is properly connected.
- 5) Verify the coax cable connection between the serializer and deserializer is stable. Occasionally, the issue can be that the coax cable is not properly connected between the OUT+ of the serializer to the IN+ of the deserializer.
- 6) Validate the DUT is not inadvertently put into the Teensy reset mode. The board's TEENSY_RST button should only be pressed when the firmware is flashed to the DUT. If the button is pressed during normal operation, the device goes into the Teensy reset mode. Power cycle the board to resume normal operation with the current firmware.
- 7) Validate the correct CFG pin voltages correspond to the expected device mode. Check the method of biasing the CFG voltage at power-up. Measure the voltages at the pins. For further details, see the [Configuration \(CFG\) Pin Settings](#) section.
- 8) The LOCK LED does not light up when connected to the GMSL1 serializers without proper control link configurations.
- 9) The LOCK LED only lights up when all enabled links (configured through register 0x0006) are locked in the GMSL2 mode.
- 10) Validate the microcontroller firmware is active by observing the blinking red Teensy LED (DS3) at power-up. It should remain constantly on afterwards. If the LED is not blinking, or not constantly on after power-up, refer to the available software documentation to reprogram the microcontroller.
- 11) Verify the PC is detecting the COM port when the Micro-USB cable is connected. Use the Windows Device Manager to check the COM port status.
- 12) Power-cycle the board and reopen the GUI.
- 13) Use a new or different serializer or deserializer board.

MAX96724 DPHY EV Kit Package Contents

ITEM DESCRIPTION	QTY
MAX96724 DPHY EV Kit	1
Micro-USB Cable	1
12V DC Wall Supply	1
Coax Cables	1

Major Component Suppliers

SUPPLIER	PHONE	WEBSITE
ECS, Inc.	913-782-7787	www.ecsxtal.com
KYOCERA	N/A	https://global.kyocera.com/
Murata Electronics North America, Inc.	770-436-1300	www.murata-northamerica.com
Rosenberger Hochfrequenztechnik GmbH	011-49-86 84-18-0	www.rosenberger.de
TDK Corp.	847-803-6100	product.tdk.com/info/en/catalog/index.html
Diodes Inc.	972-987-3900	www.diodes.com
Vishay	1-402-563-6866	www.vishay.com
Sullins Electronics Corp	760-744-0125	www.sullinscorp.com
Panasonic North America	N/A	na.panasonic.com/us/
Coilcraft	847-639-6400	www.coilcraft.com

Ordering Information

PART	TYPE
MAX96724-BAK-EVK#	D-PHY Deserializer 3G/6G COAX EVKIT
MAX96724F-BAK-EVK#	D-PHY Deserializer 3G COAX EVKIT
MAX96724R-BAK-EVK#	D-PHY Deserializer 3G COAX EVKIT

RoHs Compliant

MAX96724 DPHY Evaluation Kit

Evaluates: MAX96724/F/R

MAX96724 EV Kit Bill of Materials

ITEM	QTY	REF DES	VAR STATUS	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	30	C1, C3, C6, C9, C10, C16, C17, C20, C22-C28, C55-C57, C59-C63, C66, C70, C76, C91, C94, C96, C97	Pref	20-000U1-B68	GRM155R71E104KE14; C1005X7R1E104K050BB; TMK105B7104KVH; CGJ2B3X7R1E104K050BB	MURATA;TDK;TAIYO YUDEN;TDK	0.1UF	CAP; SMT (0402); 0.1UF; 10%; 25V; X7R; CERAMIC
2	10	C2, C12, C13, C18, C19, C21, C29-C32	Pref	20-00U01-B60	C0402C103K5RAC; GRM155R71H103KA88; C1005X7R1H103K050BE; CL05B103KBSNNN; UMK105B7103KV	KEMET;MURATA;TDK;SAMSUNG ELECTRONIC;TAIYO YUDEN	0.01UF	CAP; SMT (0402); 0.01UF; 10%; 50V; X7R; CERAMIC
3	1	C4	Pref	20-0001U-B8	C0402C105K8PAC; CC0402KRX9R6BB105	KEMET;YAGEO	1UF	CAP; SMT (0402); 1UF; 10%; 10V; X5R; CERAMIC
4	16	C5, C8, C15, C53, C64, C68, C84-C89, C95, C98, C100, C101	Pref	20-0010U-BA92	GRT188R61C106KE13	MURATA	10UF	CAP; SMT (0603); 10UF; 10%; 16V; X5R; CERAMIC
5	1	C11	Pref	20-0027P-27	C0402C0G500270JNP; GRM1555C1H270JA01	VENKEL LTD.;MURATA	27PF	CAP; SMT (0402); 27PF; 5%; 50V; C0G; CERAMIC
6	1	C14	Pref	20-0022P-27J	C1005C0G1H220G050	TDK	22PF	CAP; SMT (0402); 22PF; 2%; 50V; C0G; CERAMIC
7	8	C33-C36, C45, C46, C51, C52	Pref	20-00U22-DA26	CGA2B1X7R1V224K050BE	TDK	0.22UF	CAP; SMT (0402); 0.22UF; 10%; 35V; X7R; CERAMIC
8	6	C54, C58, C65, C69, C77, C79	Pref	20-002U2-11D	GRM188Z71C225KE43	MURATA	2.2UF	CAP; SMT (0603); 2.2UF; 10%; 16V; X7R; CERAMIC
9	1	C67	Pref	20-0047U-EA34	293D476X9025E	VISHAY SPRAGUE	47UF	CAP; SMT (7343-43); 47UF; 10%; 25V; TANTALUM
10	1	C71	Pref	20-0047U-Y7	C3216X5R1C476M160AB; GRM31CR61C476ME44	TDK;MURATA	47UF	CAP; SMT (1206); 47UF; 20%; 16V; X5R; CERAMIC
11	1	C73	Pref	20-0001U-BA46	C1608X7R1V105K080AC	TDK	1UF	CAP; SMT (0603); 1UF; 10%; 35V; X7R; CERAMIC
12	1	C74	Pref	20-0075P-B69	C0603C750F2GAC	KEMET	75PF	CAP; SMT (0603); 75PF; 1%; 200V; C0G; CERAMIC
13	4	C75, C78, C82, C83	Pref	20-0022U-CA10	GRM31CR71A226ME15	MURATA	22UF	CAP; SMT (1206); 22UF; 20%; 10V; X7R; CERAMIC
14	1	C80	Pref	20-0015P-E4	C0603C150K1GAC	KEMET	15PF	CAP; SMT (0603); 15PF; 10%; 100V; C0G; CERAMIC
15	1	C81	Pref	20-0020P-Z1	C0603HQ101-200JNP	VENKEL LTD.	20PF	CAP; SMT (0603); 20PF; 5%; 100V; C0G; CERAMIC
16	2	C90, C92	Pref	20-0047U-X3	C1608X5R0J475M080AB; GRM188R60J475ME19; JMK107B1475MA	TDK;MURATA;TAIYO YUDEN	4.7UF	CAP; SMT (0603); 4.7UF; 20%; 6.3V; X5R; CERAMIC
17	1	C93	Pref	20-0100U-CA04	T491X107K025A	KEMET	100UF	CAP; SMT (7343-43); 100UF; 10%; 25V; TANTALUM
18	1	D1	Pref	30-RCLAMP3321PTNT-00	RCLAMP3321P.TNT	SEMTECH	3.3V	DIODE; TVS; SMT (0402); VRM=3.3V; IPP=3A
19	1	D2	Pref	30-ES1D-00	ES1D	FAIRCHILD SEMICONDUCTOR	ES1D	DIODE; RECT; SMA (DO-214AC); PIV=200V; IF=1A
20	1	D3	Pref	30-B360B13F-00	B360B-13-F	DIODES INCORPORATED	B360B-13-F	DIODE; SCH; SCHOTTKY BARRIER DIODE; SMB; PIV=60V; IFS=3A; -55 DEGC TO +125 DEGC
21	4	DS1, DS6, DS11, DS12	Pref	ED111000007297	SML-P11MTT86R	ROHM SEMICONDUCTOR	SML-P11MTT86R	DIODE; LED; YELLOW GREEN; SMT; VF=1.9V; IF=0.02A
22	7	DS2-DS4, DS7-DS10	Pref	ED111000007305	SML-P11UTT86R	ROHM SEMICONDUCTOR	SML-P11UTT86R	DIODE; LED; RED CLEAR; PICOLED; SMT; VF=1.8V; IF=0.001A
23	8	J1-J6, J18, J19	Pref	01-PBC03SAAN3P-21	PBC03SAAN	SULLINS	PBC03SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS; -65 DEGC TO +125 DEGC
24	4	J7-J10	Pref	01-59S2AQ40MTS215P-01	59S2AQ-40MTS-Z_1	ROSENBERGER	59S2AQ-40MTS-Z_1	CONNECTOR; MALE; THROUGH HOLE; FAKRA-HF RIGHT ANGLE PLUG PCB WITH HOUSING; RIGHT ANGLE; 5PINS
25	1	J12	Pref	01-198156815P-26	1981568-1	TE CONNECTIVITY	1981568-1	CONNECTOR; FEMALE; SMT; MICRO USB STANDARD TYPE B ASSY; RIGHT ANGLE; 5PINS
26	1	J13	Pref	01-PJ002AH3P-27	PJ-002AH	CUI INC.	PJ-002AH	CONNECTOR; MALE; THROUGH HOLE; DC POWER JACK; RIGHT ANGLE; 3PINS
27	1	J14	Pref	01-3935700022P-25	393570002	MOLEX	393570002	CONNECTOR; FEMALE; THROUGH HOLE; 0.3MM PITCH BEAU EUROSTYLE FIXED MOUNT PCB TERMINAL BLOCK; RIGHT ANGLE; 2PINS
28	2	J15, J16	Pref	01-9020BUSS20AWG-00	9020 BUSS	WEICO WIRE	MAXIMPAD	EVK KIT PARTS; MAXIM PAD; WIRE; NATURAL; SOLID; WEICO WIRE; SOFT DRAWN BUS TYPE-S; 20AWG
29	1	J17	Pref	01-PBC04SAAN4P-21	PBC04SAAN	SULLINS ELECTRONICS CORP.	PBC04SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 4PINS; -65 DEGC TO +125 DEGC
30	1	J20	Pref	01-QSH-03001LDA60P-19	QSH-030-01-L-D-A	SAMTEC	QSH-030-01-L-D-A	EVKIT PART - CONNECTOR; MALE; SMT; HI-SPEED GROUND PLANE SOCKETS; STRAIGHT THROUGH; 60PINS; -55 DEGC TO +125DEGC; NOTE: CUSTOMIZED FOOTPRINT WITH 4-40 PEMNUT MOUNTING OPTION
31	2	J21, J23	Pref	01-PBC02SAAN2P-21	PBC02SAAN	SULLINS ELECTRONICS CORP.	PBC02SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 2PINS
32	1	J22	Pref	01-PEC12SAAN12P-21	PEC12SAAN	SULLINS ELECTRONICS CORP.	PEC12SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 12PINS; -65 DEGC TO +125 DEGC
33	2	JMP1, JMP2	Pref	01-PEC04SAAN4P-21	PEC04SAAN	SULLINS ELECTRONICS CORP.	PEC04SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 4PINS
34	4	L1-L4	Pref	EL111000001784	MSS7341T-104ML	COILCRAFT	100UH	INDUCTOR; SMT; FERRITE; 100UH; 20%; 1.15A
35	4	L5-L8	Pref	00-SAMPLE-03	1210POC-223MR	COILCRAFT	22UH	EVKIT PART-INDUCTOR; SMT; FERRITE; CHOKE; TOL=+/-20%; 0.4A
36	4	L9-L12	Pref	EL111000001785	PFL1005-561MR	COILCRAFT	560NH	INDUCTOR; SMT (0402); SHIELDED; 560NH; 20%; 0.53A
37	5	L25, L27-L30	Pref	51-00600-0AU	BLM18K601SN1	MURATA	600	INDUCTOR; SMT (0603); FERRITE-BEAD; 600; TOL=+/-25%; 1.3A
38	1	L26	Pref	50-RFCMF1220100M3-00	RFCMF1220100M3	WALSIN TECHNOLOGY CORPORATION	RFCMF1220100M3	INDUCTOR; SMT; CERAMIC CHIP; CHOKE; 0.3A
39	4	L31, L33-L35	Pref	EL1997	TFM252012ALMA1R5MTAA	TDK	1.5UH	INDUCTOR; SMT; THIN FILM; 1.5UH; 20%; 3.1A
40	1	L32	Pref	50-004U7-0FE	DFE252012P-4R7M=P2	MURATA	4.7UH	INDUCTOR; SMT (2520); FERRITE CORE; 4.7UH; TOL=+/-20%; 1.7A
41	1	L36	Pref	50-00120-SM3A	BLM18SG121TR1	MURATA	120	INDUCTOR; SMT (0603); FERRITE-BEAD; 120; TOL=+/-25%; 3A
42	1	R1	Pref	80-0005R-C4	RCC-0402PW5R00J	INTERNATIONAL MANUFACTURING SERVICE	5	RES; SMT (0402); 5; 5%; +/-100PPM/DEGC; 0.0630W

MAX96724 EV Kit Bill of Materials (continued)

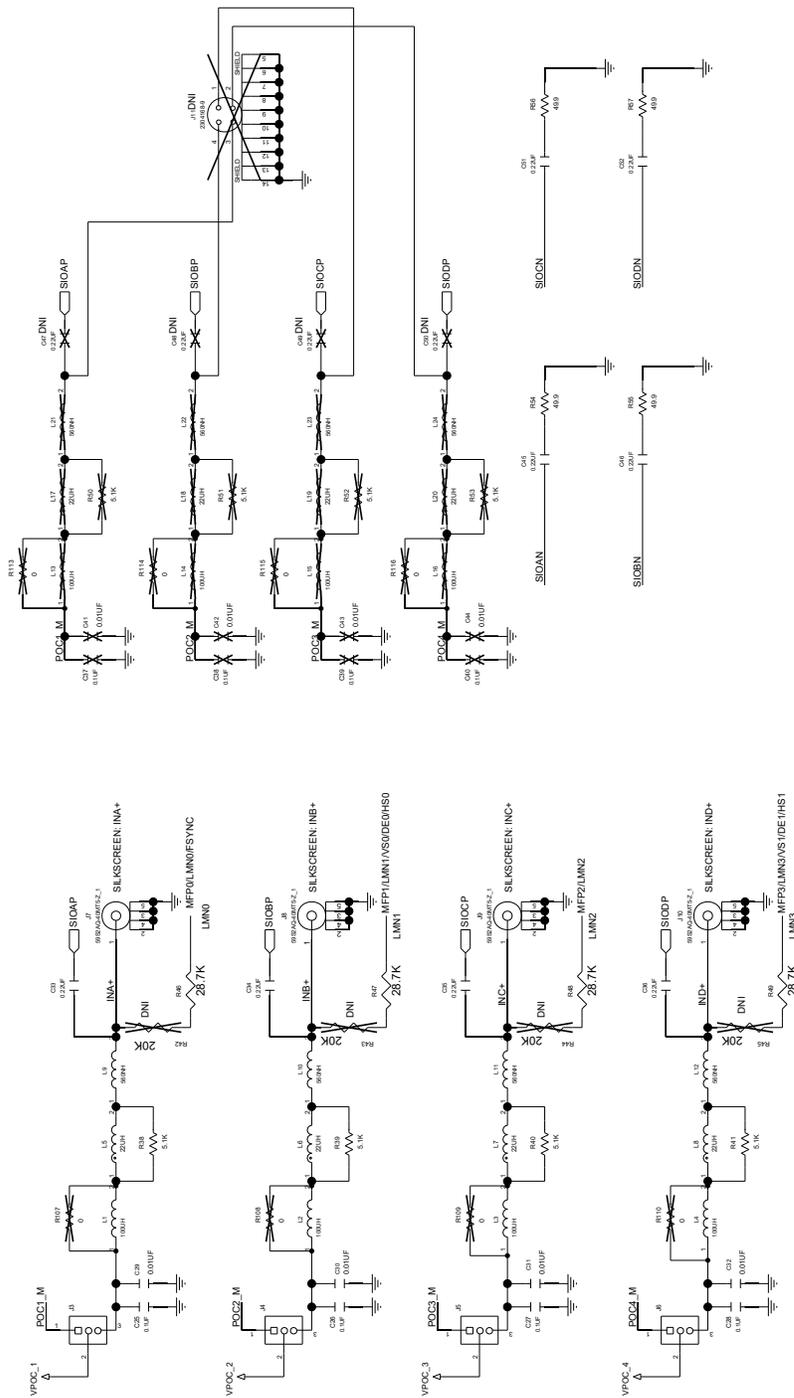
ITEM	QTY	REF DES	VAR STATUS	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
43	5	R2, R25, R26, R62, R78	Pref	80-0001K-18	ERJ-2RKF1001	PANASONIC	1K	RES; SMT (0402); 1K; 1%; +/-100PPM/DEGC; 0.1000W
44	15	R4, R5, R8, R11, R21, R63, R65, R66, R86, R95, R97, R99, R100, R103, R111	Pref	80-0010K-Q6	ERJ-2GEJ103	PANASONIC	10K	RES; SMT (0402); 10K; 5%; +/-200PPM/DEGC; 0.1000W
45	1	R6	Pref	80-0402R-24	CRCW0603402RFK	VISHAY DALE	402	RES; SMT (0603); 402; 1%; +/-100PPM/DEGC; 0.1000W
46	19	R7, R9, R12, R13, R15-R19, R33, R35, R58, R64, R93, R94, R98, R101, R102, R112	Pref	80-0000R-26A	ERJ-2GE0R00	PANASONIC	0	RES; SMT (0402); 0; JUMPER; JUMPER; 0.1000W
47	1	R20	Pref	80-0470K-23	ERJ-2RKF4703	PANASONIC	470K	RES; SMT (0402); 470K; 1%; +/-100PPM/DEGC; 0.0630W
48	4	R24, R27-R29	Pref	80-04K99-18	ERJ-2RKF4991	PANASONIC	4.99K	RES; SMT (0402); 4.99K; 1%; +/-100PPM/DEGC; 0.1000W
49	4	R38-R41	Pref	80-005K1-24	ERJ-3KEF5101	PANASONIC	5.1K	RES; SMT (0603); 5.1K; 1%; +/-100PPM/DEGC; 0.1000W
50	4	R46-R49	Pref	80-028K7-AA18	CRCW040228K7FK	VISHAY DALE	28.7K	RES; SMT (0402); 28.7K; 1%; +/-100PPM/DEGC; 0.0630W
51	4	R54-R57	Pref	80-049R9-24	CRCW060349R9FK	VISHAY DALE	49.9	RES; SMT (0603); 49.9; 1%; +/-100PPM/DEGC; 0.1000W
52	2	R59, R60	Pref	80-0033R-23	CRCW040233R0FK	VISHAY DALE	33	RES; SMT (0402); 33; 1%; +/-100PPM/DEGC; 0.0630W
53	1	R61	Pref	80-0470R-AA23	ERJ-2RKF4700	PANASONIC	470	RES; SMT (0402); 470; 1%; +/-100PPM/DEGC; 0.1000W
54	3	R67, R73, R76	Pref	80-0010K-CA17	CRCW060310K0FKEAHP	VISHAY DRALORIC	10K	RES; SMT (0603); 10K; 1%; 100PPM; 0.2500W
55	1	R68	Pref	80-0002K-Q3	CRCW06032K00FKEAHP	VISHAY DALE	2K	RES; SMT (0603); 2K; 1%; +/-100PPM/DEGC; 0.2500W
56	8	R69, R71, R72, R79, R80, R104-R106	Pref	80-0000R-U22	RC3216J000CS	SAMSUNG	0	RES; SMT (1206); 0; 5%; JUMPER; 0.2500W
57	6	R70, R81-R85	Pref	80-002K2-23	RC0402FR-072K2L	YAGEO	2.2K	RES; SMT (0402); 2.2K; 1%; +/-100PPM/DEGC; 0.0630W
58	1	R74	Pref	80-0015K-24	CRCW060315K0FK	VISHAY DALE	15K	RES; SMT (0603); 15K; 1%; +/-100PPM/DEGC; 0.1000W
59	1	R75	Pref	80-0008K-EA24	RT0603BRE078KL	YAGEO	8K	RES; SMT (0603); 8K; 0.10%; +/-50PPM/DEGC; 0.1000W
60	1	R87	Pref	80-0100K-23	CRCW0402100KFK;RC0402FR-07100KL	VISHAY;YAGEO	100K	RES; SMT (0402); 100K; 1%; +/-100PPM/DEGC; 0.0630W
61	2	SW1, SW3	Pref	11-KMR421GLFS-00	KMR421G LFS	C&K COMPONENTS	KMR421G LFS	SWITCH; SPST; SMT; STRAIGHT; 32V; 0.05A; MICROMINIATURE SMT TOP ACTUATED; RCOIL=0.1 OHM OHM; RINSULATION=1G OHM OHM
62	2	SW2, SW5	Pref	11-97C02-00	97C02	GRAYHILL	97C02	SWITCH; SPST; SMT; 24V; 0.025A; UNSEALED HALF-PITCH DIP SWITCH; RCOIL= 0.1 OHM; RINSULATION=100M OHM; GRAYHILL_40 DEGG TO +85 DEGG
63	1	SW4	Pref	11-1101M2S3AQE2-00	1101-M2-S3-A-Q-E-2	C&K COMPONENTS	1101-M2-S3-A-Q-E-2	SWITCH; SPST; THROUGH HOLE; RIGHT ANGLE; 120V; 6A; 1000 SERIES; RCOIL=0.1 OHM; RINSULATION=100G OHM
64	9	TP1-TP3, TP10-TP15	Pref	02-TPMINI5000-00	5000	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; RECOMMENDED FOR BOARD THICKNESS=0.062IN; NOT FOR COLD TEST
65	1	U1	Pref	00-SAMPLE-04	MAX96724GTN/VY+	MAXIM	MAX96724GTN/VY+	EVKIT PART-IC; QUAD GMSL2 TO CSI-2 DESERIALIZER WITH GMSL1 COMPATIBILITY; PACKAGE OUTLINE DRAWING: 21-10046; PACKAGE CODE: T5688Y+6; PACKAGE LAND PATTERN: 90-100048
66	2	U2, U3	Pref	10-74LVC1G88GV-U	74LVC1G88GV	NXP	74LVC1G88GV	IC; XOR; 2-INPUT EXCLUSIVE-OR GATE; SOT753
67	1	U4	Pref	10-MAX5419META-T	MAX5419META+	MAXIM	MAX5419META+	IC; DPOT; 200K OHM; 256-TAP NONVOLATILE I2C-INTERFACE DIGITAL POTENTIOMETER; TDFN8-EP
68	1	U5	Pref	10-MAX5419LETA-T	MAX5419LETA+	MAXIM	MAX5419LETA+	IC; DPOT; 200K OHM; 256-TAP NONVOLATILE I2C-INTERFACE DIGITAL POTENTIOMETER; TDFN8-EP
69	1	U6	Pref	10-MK20DX256VLH7-C	MK20DX256VLH7	FREESCALE	MK20DX256VLH7	IC; UCON; KINETIS K2X MCU FAMILY; LQFP64
70	1	U7	Pref	10-ICMKL02Z32QFN16-G	IC_MKL02Z32_QFN16	PJRC	IC_MKL02Z32_QFN16	IC; UCON; KINETIS KL02 32 KB FLASH; 48 MHZ CORTEX-M0+ BASED MICROCONTROLLER; MKL02 CHIP WITH PRE-PROGRAMMED TEENSY LC AND 3.2 BOOTLOADER; QFN16-EP
71	2	U8, U12	Pref	10-MAX3373EEKA-K	MAX3373EEKA+	MAXIM	MAX3373EEKA+	IC; TRANS; +/-15KV ESD-PROTECTED; 16MPBS; DUAL LOW-VOLTAGE LEVEL TRANSLATOR; SOT23-8
72	1	U9	Pref	10-MAX20029ATIAV-T	MAX20029ATIAV+	MAXIM	MAX20029ATIAV+	IC; VCON; AUTOMOTIVE QUAD LOW-VOLTAGE STEP-DOWN DC-DC CONVERTERS; TOFP28-EP
73	1	U10	Pref	00-SAMPLE-05	MAX20076ATCB/V+	MAXIM	MAX20076ATCB/V+	EVKIT PART - IC; MAX20076; 36V; 1.2AMPERE MINI BUCK CONVERTER WITH SMCRO-AMPERE IQ; PACKAGE OUTLINE DRAWING: 21-0664; LAND PATTERN DRAWING: 90-0397; PACKAGE CODE: TD1233+2C; TDFN12
74	1	U11	Pref	00-SAMPLE-06	MAX20087ATPA/VY+	MAXIM	MAX20087ATPA/VY+	EVKIT PART - IC; MAX20087; QUAD CAMERA POWER PROTECTOR; TQFN20-EP; PACKAGE OUTLINE DRAWING: 21-0139; LAND PATTERN DRAWING: 90-0409; PACKAGE CODE: T2044+4C
75	1	Y2	Pref	60-0025M-OCB	ECS-250-18-33Q-DS	ECS INC	25MHZ	CRYSTAL; SMT; 25MHZ; 18PF; TOL = +/-30PPM; STABILITY = +/-100PPM
76	1	Y3	Pref	60-0016M-OCN	CX2016DB16000DOWZRC1	KYOCERA	16MHZ	CRYSTAL; SMT; 16MHZ; 8PF; TOL = +/-50PPM; STABILITY = +/-200PPM
77	1	PCB	-	EPCB96724DPHY	MAX96724DPHY	MAXIM	PCB	PCB;MAX96724DPHY
78	11	EV_KIT_BOX4, EV_KIT_BOX6	Pref	01-NPC02SXON2P-24	NPC02SXON-RC	SULLINS ELECTRONICS CORP.		CONNECTOR; FEMALE; MINI SHUNT; 0.100IN CC; OPEN TOP; JUMPER; STRAIGHT; 2PINS
79	1	EV_KIT_BOX3	Pref	EH111000002600	GKFYACRYL-001	GEEKIFY	N/A	EVKIT PART-ACCESSORY; PLASTIC COVER; TOP PLASTIC COVER WITH MAXIM LOGO
80	1	EV_KIT_BOX3	Pref	EH111000003630	GKFYACRYL-002	GEEKIFY	N/A	EVKIT PART-ACCESSORY; PLASTIC COVER; BOTTOM PLASTIC COVER WITHOUT MAXIM LOGO
81	4	EV_KIT_BOX3	Pref	EH111000002553	BS34CLO6X25AP	BUMPER SPECIALTIES INC.	N/A	BUMPER; CLEAR-CYLINDRICAL SHAPE; 0.375D/0.125H; POLYURETHANE
82	4	EV_KIT_BOX3	Pref	EH11197	4802	KEYSTONE	N/A	STANDOFF; MALE; FEMALE-THREADED; HEX; 4.40IN; 0.50IN; NYLON
83	4	EV_KIT_BOX3	Pref	EH111000002612	1902D	KEYSTONE	N/A	STANDOFF; FEMALE-THREADED; HEX; 4.40IN; 3/4IN; NYLON
84	8	EV_KIT_BOX3	Pref	EH111000002614	NY PMS 440 0025 PH	B&F FASTENER SUPPLY	N/A	MACHINE SCREW; PHILLIPS; PAN; 4.40; 1/4IN; NYLON
85	2	EV_KIT_BOX5	Pref	EH111000004160	24480	KEYSTONE	N/A	STANDOFF; FEMALE-THREADED; HEX; M3; 5MM; STEEL
86	4	EV_KIT_BOX5	Pref	02-MSM30004P-02	RM3X4MM 2701	APM HEXSEAL	N/A	MACHINE SCREW; PHILLIPS; PAN; M3; 4MM; STAINLESS STEEL
TOTAL	298							

MAX96724 EV Kit Bill of Materials (continued)

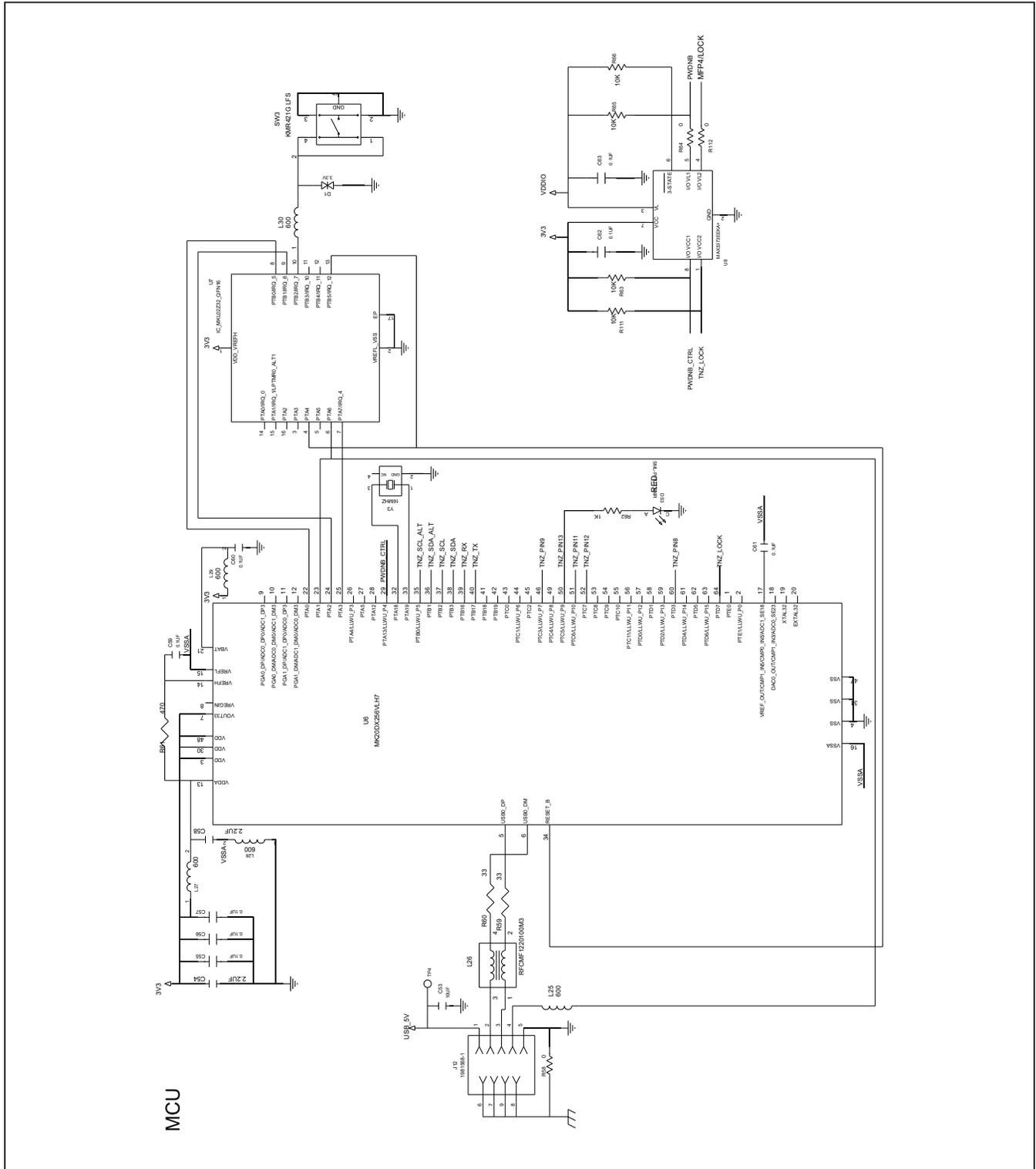
ITEM	QTY	REF DES	VAR STATUS	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
DO NOT PURCHASE(DNP)								
ITEM	QTY	REF DES	VAR STATUS	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	4	C37-C40	DNP	20-000U1-B68	GRM155R71E104KE14;C1005X7R1E104K050BB,TMK105B7104KVH;CGJ2B3X7R1E104K050BB	MURATA;TDK;TAIYO YUDEN;TDK	0.1UF	CAP; SMT (0402); 0.1UF; 10%; 25V; X7R; CERAMIC
2	4	C41-C44	DNP	20-00U01-B60	C0402C103K5RAC;GRM155R71H103KA88;C1005X7R1H103K050BE;CL05B103KB5NNN;UMK105B7103KV	KEMET;MURATA;TDK;AMSUNG ELECTRONIC;TAIYO YUDEN	0.01UF	CAP; SMT (0402); 0.01UF; 10%; 50V; X7R; CERAMIC
3	4	C47-C50	DNP	20-00U22-DA26	CGA2B1X7R1V224K050BE	TDK	0.22UF	CAP; SMT (0402); 0.22UF; 10%; 35V; X7R; CERAMIC
4	1	C72	DNP	20-0010U-BA92	GRT188R61C106KE13	MURATA	10UF	CAP; SMT (0603); 10UF; 10%; 16V; X5R; CERAMIC
5	1	J11	DNP	EH111000004688	2304168-9	TE CONNECTIVITY	2304168-9	CONNECTOR; FEMALE; THROUGH HOLE; MATE-AX HEADER ASSEMBLY; DATA CONNECTIVITY HEADERS; CODE A; WIRE-TO-BOARD; RIGHT ANGLE; 4PINS
6	4	L13-L16	DNP	EL111000001784	MSS7341T-104ML	COILCRAFT	100UH	INDUCTOR; SMT; FERRITE; 100UH; 20%; 1.15A
7	4	L17-L20	DNP	N/A	1210POC-223MR	COILCRAFT	22UH	EVKIT PART-INDUCTOR; SMT; FERRITE; CHOKE; TOL=+/-20%; 0.4A
8	4	L21-L24	DNP	EL111000001785	PFL1005-561MR	COILCRAFT	560NH	INDUCTOR; SMT (0402); SHIELDED; 560NH; 20%; 0.53A
9	4	R3, R32, R34, R91	DNP	80-0000R-26A	ERJ-2GEOR00	PANASONIC	0	RES; SMT (0402); 0; JUMPER; JUMPER; 0.1000W
10	2	R10, R14	DNP	80-0010K-Q6	ERJ-2GEJ103	PANASONIC	10K	RES; SMT (0402); 10K; 5%; +/-200PPM/DEGC; 0.1000W
11	4	R22, R23, R36, R37	DNP	80-04K99-18	ERJ-2RKF4991	PANASONIC	4.99K	RES; SMT (0402); 4.99K; 1%; +/-100PPM/DEGC; 0.1000W
12	4	R42-R45	DNP	80-0020K-23	CRCW040220K0FK	VISHAY DALE	20K	RES; SMT (0402); 20K; 1%; +/-100PPM/DEGC; 0.0630W
13	4	R50-R53	DNP	80-005K1-24	ERJ-3EKF5101	PANASONIC	5.1K	RES; SMT (0803); 5.1K; 1%; +/-100PPM/DEGC; 0.1000W
14	5	R88-R90, R92, R96	DNP	80-0000R-26A	ERJ-2GEOR00	PANASONIC	0	RES; SMT (0402); 0; JUMPER; JUMPER; 0.1000W
15	8	R107-R110, R113-R116	DNP	80-0000R-28A	RC0805JR-070RL	YAGEO PHYCOMP	0	RES; SMT (0805); 0; 5%; JUMPER; 0.1250W
16	1	TP16	DNP	02-TPMINI5000-00	5000	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; RED; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH; RECOMMENDED FOR BOARD THICKNESS=0.062IN; NOT FOR COLD TEST
17	1	Y1	DNP	EX111000006159	SIT8924BAF71-18N-25.000000	SITIME CORPORATION	SIT8924BAF71-18N-25.000000	OSCILLATOR; SMT 2X1.6; 15PF; 25MHZ; +/-20PPM; NOTE: PURCHASE DIRECT FROM THE MANUFACTURER
TOTAL	69							
PACKOUT (PURCHASED PARTS BUT NOT ASSEMBLED ON PCB AND ARE SHIPPED WITH PCB)								
ITEM	QTY	REF DES	VAR STATUS	MAXINV	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION
1	1	EV_KIT_BOX1	Pref	88-00713-LRG	88-00713-LRG	N/A		BOX;+LARGE BROWN 15 1/8" X 8 3/4 X 3"
2	1	EV_KIT_BOX1	Pref	87-02163-000	87-02163-000	N/A		ESD BAG;+BAG; STATIC SHIELD ZIP 8"X10"; W/ ESD LOGO
3	1	EV_KIT_BOX1	Pref	85-MAXKIT-PNK	85-MAXKIT-PNK	N/A		PINK FOAM;FOAM;ANTI-STATIC PE 12inX12inX5MM - PACKOUT
4	1	EV_KIT_BOX1	Pref	EVINSERT	EVINSERT	N/A		WEB INSTRUCTIONS FOR MAXIM DATA SHEET
5	1	EV_KIT_BOX1	Pref	85-84003-006	85-84003-006	N/A		LABEL(EV KIT BOX) - PACKOUT
6	1	EV_KIT_BOX1	Pref	EH111000002613	AK67421-0.5	ASSMANN		CONNECTOR; USB CABLE; MALE-MALE; USB_2.0; 5PINS-4PINS; 500MM
7	1	EV_KIT_BOX1	Pref	EH111000001907	WSU120-2000	TRIAD MAGNETICS		ACCESSORY; WALL ADAPTER; V1(90-284VAC); VO-(12VDC); 6FT
8	4	EV_KIT_BOX1	Pref	EH111000002347	SK-5115	AMPHENOL ADRONICS		CONNECTOR; COAX CABLE; MALE-FEMALE; WIREMOUNT; 2000MM;NOTE:SPECIAL ORDER ONLY
TOTAL	11							

MAX96724 EV Kit Schematics (continued)

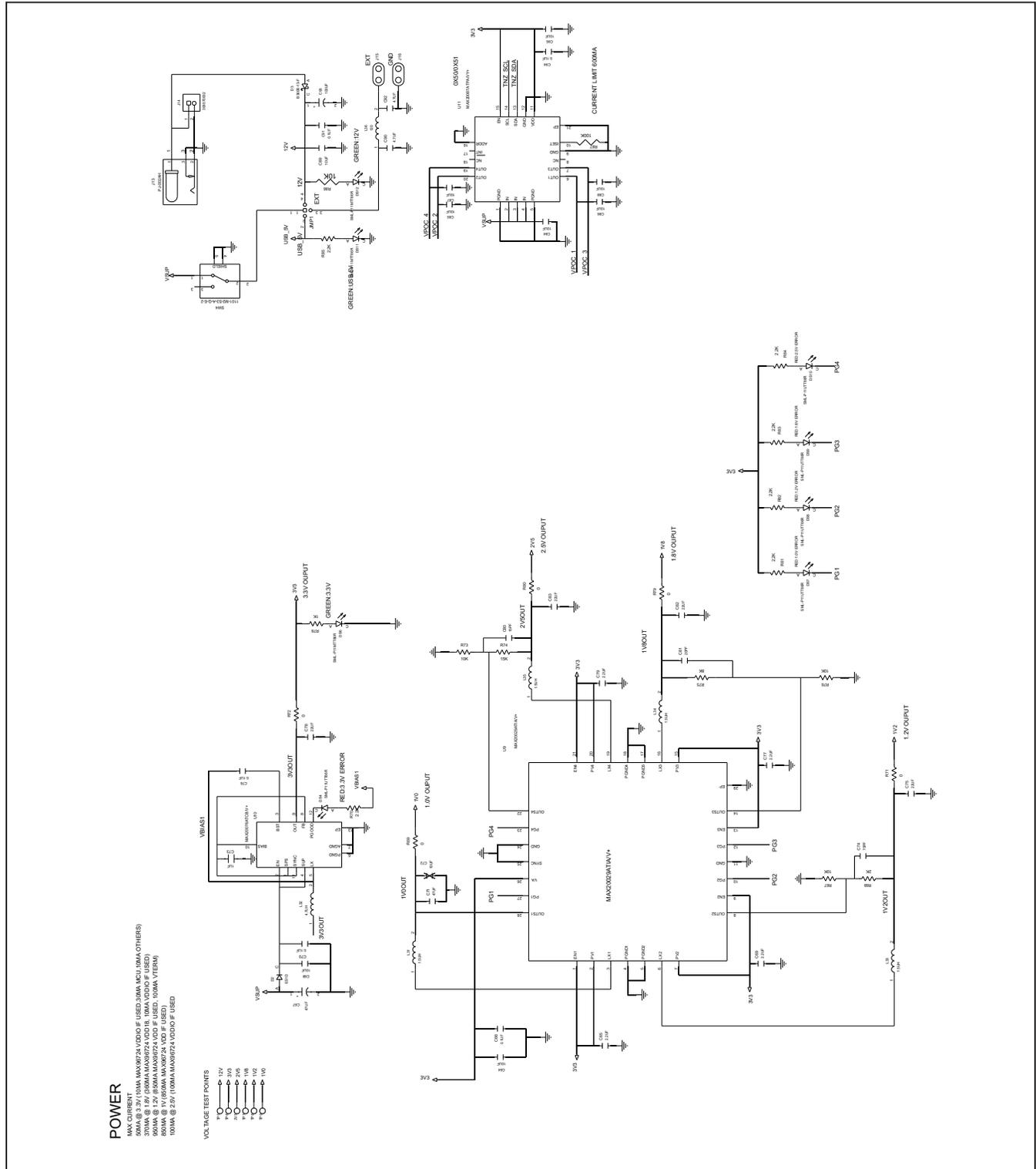
GMSL2-COAX



MAX96724 EV Kit Schematics (continued)

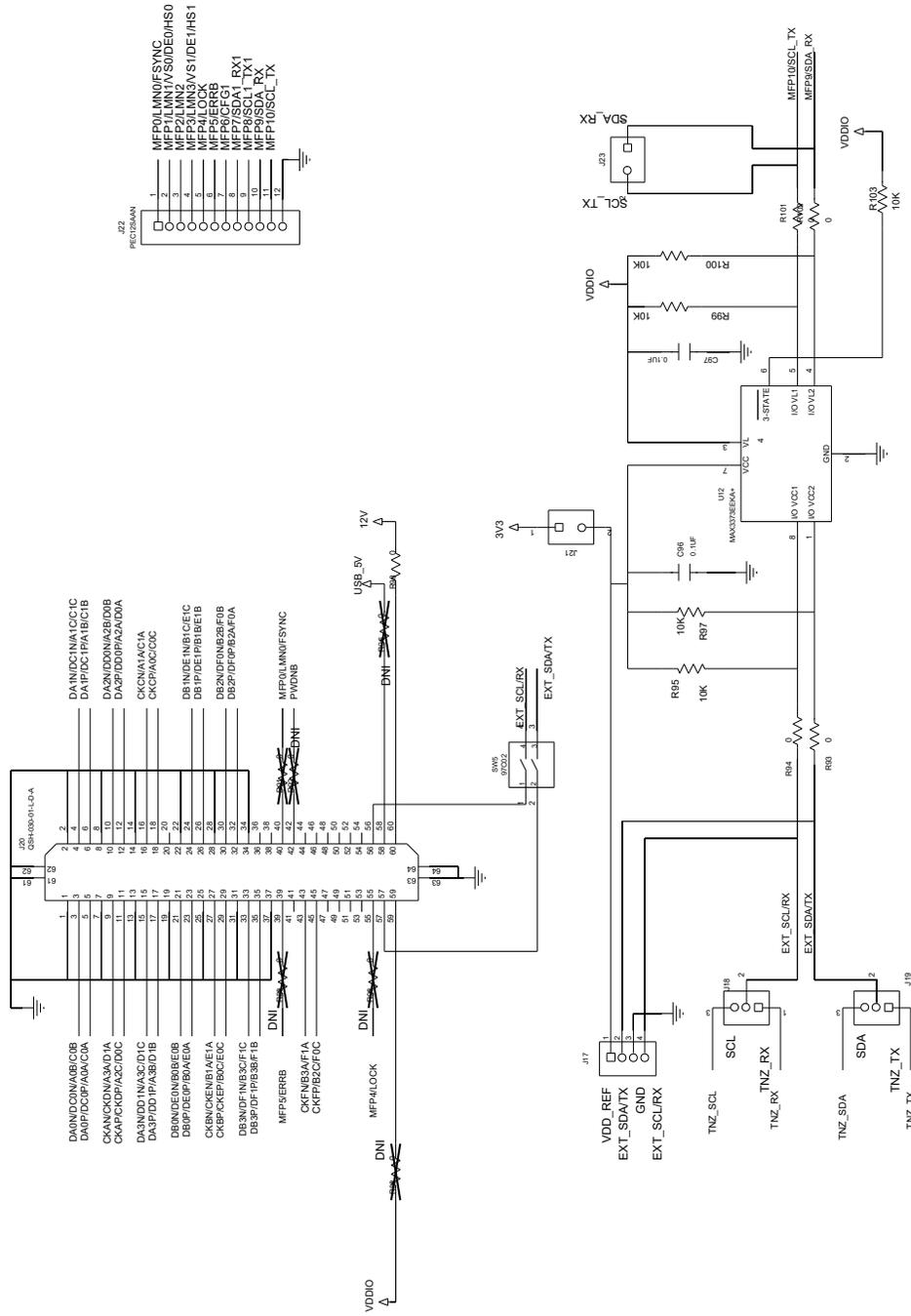


MAX96724 EV Kit Schematics (continued)



MAX96724 EV Kit Schematics (continued)

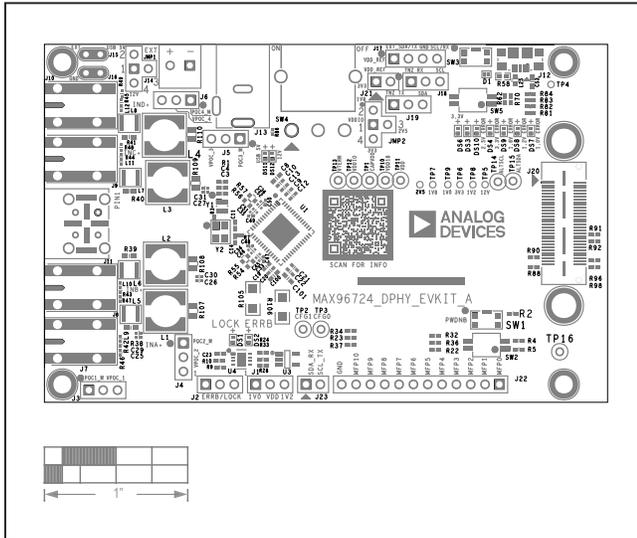
CONNECTORS



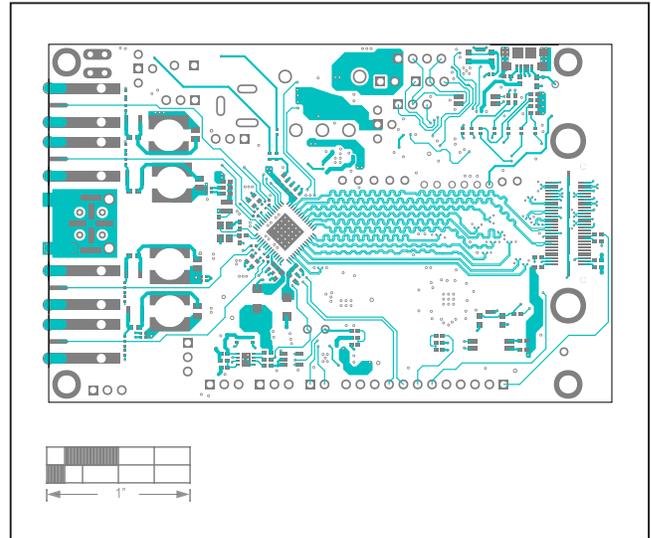
MAX96724 DPHY Evaluation Kit

Evaluates: MAX96724/F/R

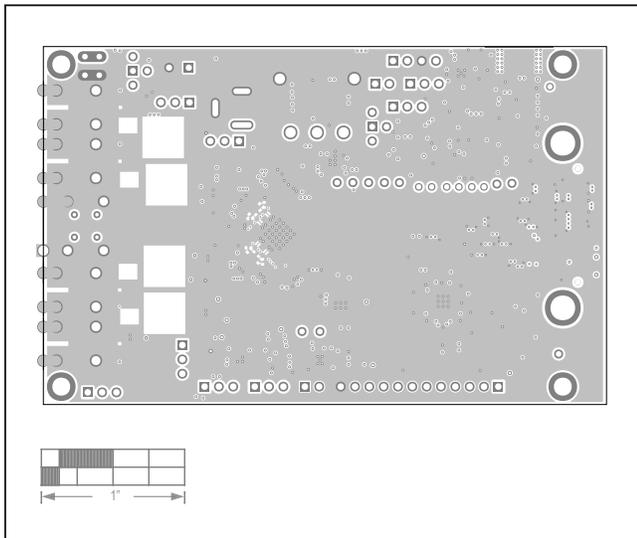
MAX96724 EV Kit PCB Layouts



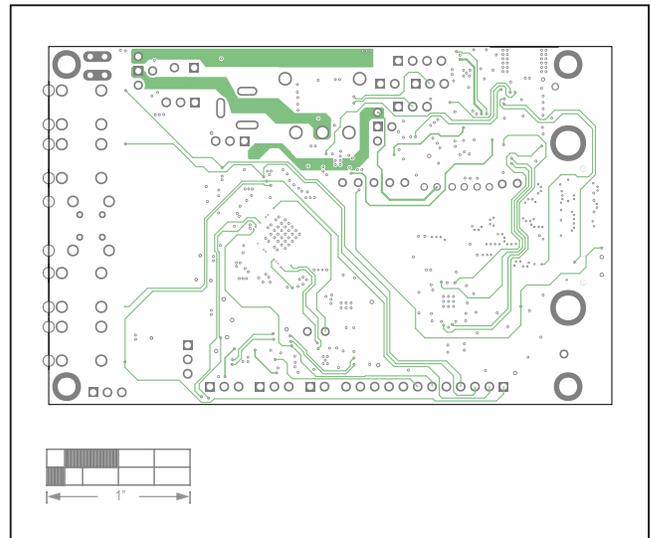
MAX96724 EV Kit—Silk Top



MAX96724 EV Kit—Top

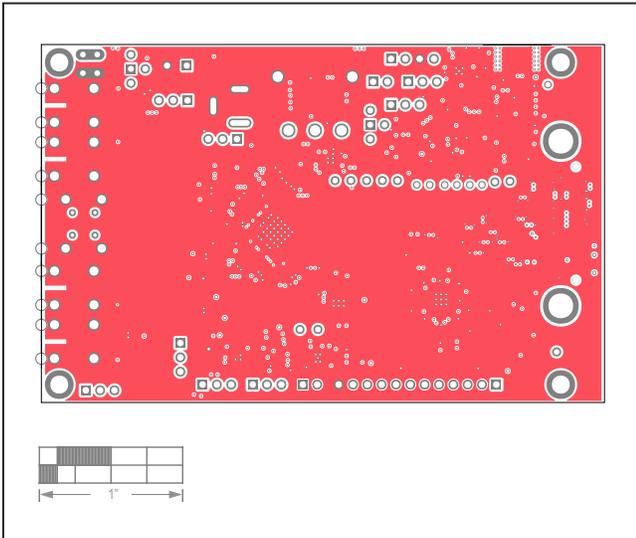


MAX96724 EV Kit—Layer2

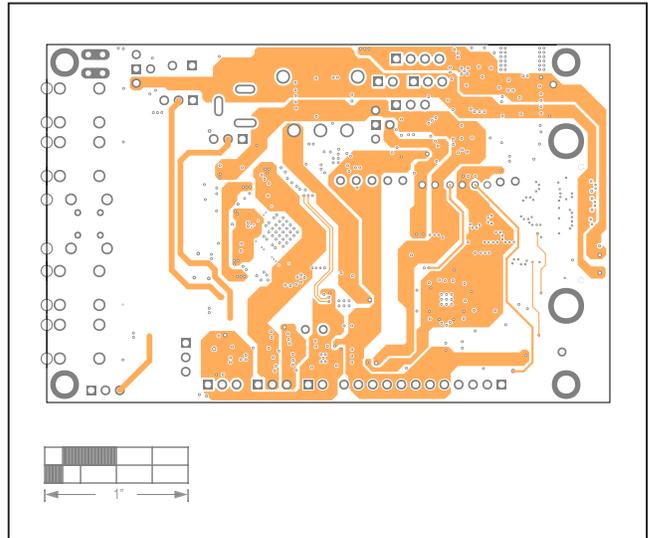


MAX96724 EV Kit—Layer3

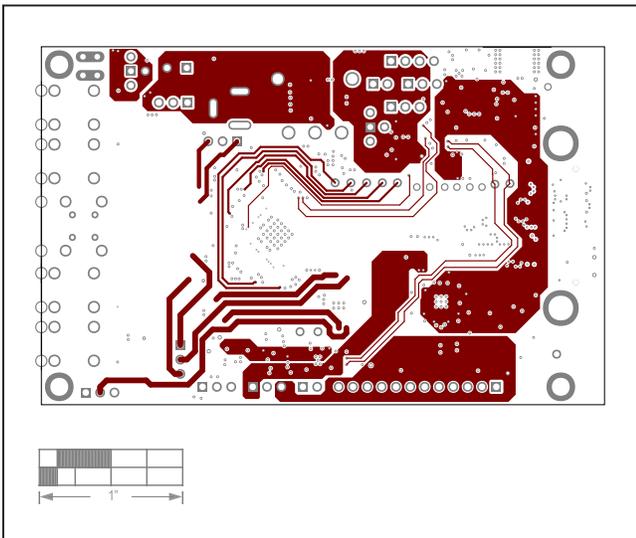
MAX96724 EV Kit PCB Layouts (continued)



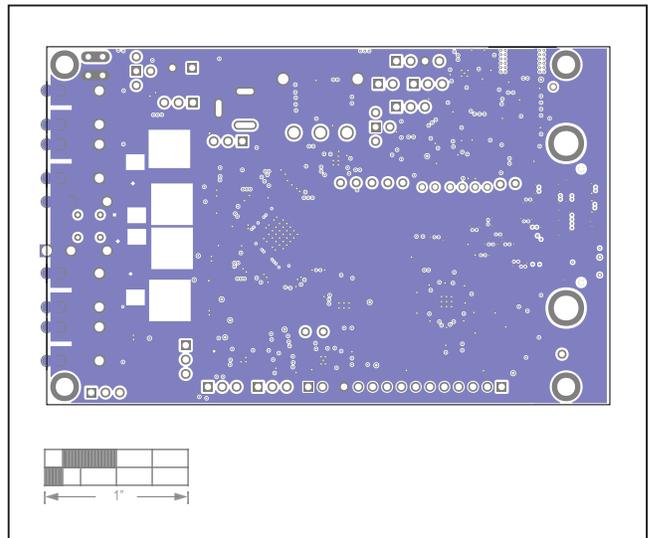
MAX96724 EV Kit—Layer4



MAX96724 EV Kit—Layer5



MAX96724 EV Kit—Layer6



MAX96724 EV Kit—Layer7

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	5/22	Initial Release	—
1	8/22	Updated <i>Ordering Information</i> table	10
2	9/22	Updated part numbers in header, Updated MAX9295A to MAX96717 in <i>General Description</i> , <i>Quick Start</i> , and Figure 5	All pages
3	9/22	Added MAX96724 to part numbers in header. Removed asterisks from MAX96724 in <i>Ordering Information</i> table.	All pages
4	1/23	Added R version to part numbers in header. Removed asterisks from MAX96724R and future product note in <i>Ordering Information</i> table.	All pages



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