Evaluates: MAX96705/MAX96711 with Coax or STP Cable

General Description

The MAX96705/MAX96711 coax evaluation kit (EV kit) provides a proven design to evaluate the MAX96705 and MAX96711 high-bandwidth gigabit multimedia serial link (GMSL) serializers with spread spectrum and full-duplex control channel, through the use of a standard FAKRA coax or STP cable. The EV kit also includes Windows Vista®- and Windows 7-compatible software that provides a simple graphical user interface (GUI) for exercising features of the device. The EV kit comes with either a MAX96705GTJ+ or MAX96711GTJ+ IC installed.

For complete GMSL evaluation using a standard FAKRA coax cable, order the MAX96705 or MAX96711 EV kit and a companion deserializer board (the MAX96706 or MAX96708 EV kit are referenced in this document). For testing with STP cable, also order the MAXCOAX2STP-HSD adapter kit and refer to its data sheet. Only one adapter kit is required per link (connecting the serializer and deserializer boards).

Note: In the following sections, MAX96705/11 and the term "serializer" refer to the MAX96705 or MAX96711 ICs and MAX96706/08 and the term "deserializer" refer to the MAX96706 or MAX96708 ICs.

Note: This document applies to both coax and STP EV kits. This document covers coax cables, but the information provided applies equally to STP cables.

Ordering Information appears at end of data sheet.

Features

- Accepts 16-Bit Parallel Input Data and Outputs GMSL Serial Data through FAKRA Connectors
- Windows Vista-, and Windows 7-Compatible Software
- USB-Controlled Interface (Cable Included)
- USB Powered
- Proven PCB Layout
- Fully Assembled and Tested

Items Included in the EV Kit Package

DECRIPTION	QTY
MAX96705 or MAX96711 coax EV kit board	1
USB cable	1

MAX96705/MAX96711 EV Kit Files

FILE	DECRIPTION
MAXSerDesEV-N_Vxxxx_ Install.EXE	Installs the EV kit files on your computer
MAXSerDesEV-N.EXE	Graphical user interface (GUI) program
CDM20600.EXE	Installs the USB device driver
USB_Driver_Help_200.PDF	USB driver installation help file

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Quick Start

Required Equipment

- MAX96705 or MAX96711 serializer EV kit
- MAX96706 or MAX96708 deserializer EV kit
- 2m FAKRA cable assembly (included with the deserializer EV kit)
- > 20MHz function generator
- PC with Windows Vista or Windows 7 and a spare USB port (direct 500mA connection required; do not use a bus-powered hub)
- 5V DC, 500mA power supply

Note: In the following sections, software-related items are identified by bolding. Text in **bold** refers to items from the EV kit software. Text in **bold and underlined** refers to items from the Windows operating system.

Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation:

- Visit <u>www.maximintegrated.com/EVkitsoftware</u> to download and install the latest version of the EV kit software:
 - Search for MAX9288. Then select MAX9288 | Design Resources | Software | GMSL SerDes Evaluation Kit Software-Nuvoton.
 - The installation application will try to download and install the USB driver for the Nuvoton microcontroller. If the USB driver installation was not successful, install the appropriate USB driver for your PC available from the link below, and refer to the USB_Driver_Help_200.PDF file, if needed: www.ftdichip.com/Drivers/VCP.htm.
- 2) Verify that jumpers on the serializer board are in their default positions, as shown in Figure 14.
- 3) Verify that jumpers on the deserializer board are in their default positions, as shown in Figure 15.
- 4) Set up the system, as shown in Figure 1.
- 5) Connect the FAKRA cable from the OUT+ terminal on the serializer board to the IN0+ terminal on the deserializer board. Both the serializer and deserializer evaluation boards have power-over-coax (POC) circuitry that is active by default, configured such that the deserializer board is the source of the power for the serializer board.
- 6) Connect the USB cable between the PC and USB port on the Nuvoton microcontroller daughter board

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on the serializer board.

- 7) Verify that LED_PWR on the deserializer board lights up, indicating that the deserializer board has power.
- Verify that LED_PWR on the serializer board lights up, indicating that the serializer board has power. Both serializer and deserializer have a power-overcoax (POC) circuit that is active by default.
- 9) Verify that LOCK_LED on the deserializer board lights up, indicating that the link has been successfully established. If the LOCK_LED is off, or ERR_LED is on, go to the <u>Troubleshooting</u> section and fix the problem before continuing. **Note:** If you are working with an earlier version of the deserializer IC, you must write value of 0xA6 to register address 0x9b at slave address 0x90 to enable the control channel. In the current revision of the IC, this step is no longer needed.
- 10) Start the EV kit software by selecting Start | Programs | Maxim Integrated | MAXSerDesEV-N | MAXSerDesEV-N.
- 11) The Configuration Settings window opens (see <u>Figure 2</u>) and the GUI automatically searches for any active listener in both I²C and UART mode and identifies a valid GMSL product. Once a valid device is identified, the corresponding configuration jumpers are displayed to help users configure the serializer and deserializer.
- 12) In case an operating evaluation board with a Nuvoton microcontroller is not found, a window appears (Figure 3) warning as such. Press OK to continue and start the GUI anyway, or press Cancel to terminate the application. See the <u>Troubleshooting</u> section at the end of this document and fix the problem before continuing.
- 13) When an operating Nuvoton microcontroller is found, the GUI checks the firmware version in the microcontroller and prompts the user to update (Figure 4).
- 14) While the **Configuration Settings** window is open, press the **Identify Devices** button to search for the devices connected.
- 15) Only Link Type and Device Address selections on the Configuration Settings window affects the EV kit operation. Other items are for user reference only.
- 16) Press the Connect button to open the Evaluation Kit window and the devices under test (DUT) register maps (Figure 5). The GUI will read all internal registers of the serializer and deserializer and update the corresponding tabs.

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- 17) Press the **Read All MAX96705** button in the **Serial**izer group box to read all the serializer registers.
- 18) Press the **MAX96705 Des** tab (Figure 6) and then press the **Read All MAX96706** button in the **Deserializer** group box to read all the deserializer registers.
- 19) Select any of the other tabs to evaluate other serializer/deserializer (SerDes) functions.

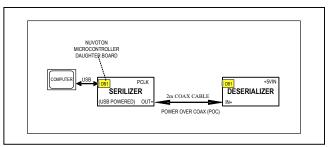


Figure 1. Serializer Test Setup Block Diagram

JUMPER	SIGNAL	SHUNT POSITION	FUNCTION	
J1	+12V	—	+12V AC adapter input	
J2	+5VIN	—	+5V power-supply input positive terminal	
J3	GND	—	+5V power-supply input negative terminal	
J4	OUT+	—	GMSL OUT+ FAKRA connector	
J5	OUT-	—	GMSL OUT- FAKRA connector	
J6	EXT_UC	—	4-pin header to apply user microcontroller	
J11	U15 ch3	Open**	VLC3 = U15 level shifter, channel 3 low side VLC4 = U15 level shifter, channel 4 low side	
J13	U15 ch4	Open**	VHC3 = U15 level shifter, channel 3 high side VHC4 = U15 level shifter, channel 4 high side	
	GPIO5/LMN1	L	Connected to GND	
J23		GPIO5/LMN1	GPIO5/LMN1	Н
		Open**	Not connected	
J25		Short**	µC connected to U4 oscillator	
J25	U4_SCL	Open	μC not connected to U4 oscillator	
	IDT_OE	L	U4 oscillator output not enabled	
J26		H**	U4 oscillator output enabled	
		Open	U4 oscillator OE pin not connected	
		L**	U4 oscillator FSEL0 pin pulled low	
J27	FSEL0	Н	U4 oscillator FSEL0 pin pulled high	
		Open	U4 oscillator FSEL0 pin not connected (internal low)	
		L**	U4 oscillator FSEL1 pin pulled low	
J28	FSEL1	Н	U4 oscillator FSEL1 pin pulled high	
		Open	U4 oscillator FSEL1 pin not connected (internal low)	
		RX	U1 RX/SDA pin connected to μ C RX pin	
J29	UC_RX/SDA	SDA**	U1 RX/SDA pin connected to μ C SDA pin	
		Open	U1 RX/SDA pin left open	

Table 1. Jumper Description*

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Table 1. Jumper Description* (continued)

JUMPER	SIGNAL	SHUNT POSITION	FUNCTION
J30	GPIO2	Short	Shorted to IOVDD
330	GFIOZ	Open**	Shorted to GND
J32	GPIO3	Short	Shorted to IOVDD
J32	GPIO3	Open**	Shorted to GND
		L	Connected to GND
J33	GPIO4/LMN0	Н	Connected to IOVDD
		Open**	Not connected
J35	U4_SDA	Short**	μC connected to U4 oscillator
135	04_5DA	Open	μC not connected to U4 oscillator
		IDT**	U1 PCLKIN connected to U4 output
J38		SMA	U1 PCLKIN connected to PCLK_SMA connector
120	PCLK_IN	GND	GND terminal for externally applied PCLK to J38.1
		Open	U1 PCLKIN pin not connected
	UC_TX/SCL	ТХ	U1 TX/SCL pin connected to µC RX pin
J39		SCL**	U1 TX/SCL pin connected to µC SDA pin
		Open	U1 TX/SCL pin left open
	GPIO1/BWS	L**	Connected to GND
J40		Н	Connected to IOVDD
		Open	Not connected
		L	Connected to GND
J41	LCCN	H**	Connected to IOVDD
		Open	Not connected
		L**	Connected to GND
J42	CONF0	Н	Connected to IOVDD
		Open	Not connected
		L**	Connected to GND
J43	CONF1	Н	Connected to IOVDD
		Open	Not connected
14.4		Short	U1 GPO/HIM pin pulled up to IOVDD
J44	HIM_HI	Open**	U1 GPO/HIM state depends on J45
145		Short	U1 GPO/HIM pin connected to IOVDD
J45	GPO_LOW	Open**	U1 GPO/HIM state depends on J44
146		Short**	U1 GPO/HIM pin connected to IOVDD
J46	IOVDD_DUT	Open	Apply ammeter to measure current drawn by U1 IOVDD

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Table 1. Jumper Description* (continued)

JUMPER	SIGNAL	SHUNT POSITION	FUNCTION			
		L	Connected to GND			
J47	MS/HVEN	Н	Connected to IOVDD			
		Open**	Not connected			
J48	PWDN	L	U1 powered down			
J40	PVUN	H**	U1 powered up			
		DBL-L	U1 TX/SCL/DBL pin connected to GND			
150		U15_TC/SCL	U1 TX/SCL/DBL pin is connected to U15_TX/SCL			
J50	TX/SCL/DBL	DBL-H	U1 TX/SCL/DBL pin is connected to IOVDD			
		Open	No POC			
		POC5VOUT	5V POC is sourced by the serializer			
154	500.	POC5VIN**	5V POC is expected from the deserializer			
J51	POC+	POC12V	12V POC can be applied by either the serializer or deserializer			
		Open	No POC			
	POC-	POC5VOUT	5V POC is sourced by the serializer			
150		500	500	500	POC5VIN**	5V POC is expected from the deserializer
J52		POC12V	12V POC can be applied by either the serializer or deserializer			
		Open	No POC			
	VDD_REF	+3.3V**	Reference voltage for external μ C signals set to +3.3V			
J53		+5V	Reference voltage for external µC signals set to +5V			
		Open	Reference voltage for external µC signals applied to J6.VDD_REF			
15.4		Short**	On-board pullup applied on external µC SDA signal			
J54	EXSDAPU	Open	External µC SDA signal must be pulled up externally			
155		Short**	On-board pullup applied on external µC SCL signal			
J55	EXSCLPU	Open	External µC SCL signal must be pulled up externally			
J56	LFR+	Short**	Line fault can be monitored by the remote device on the OUT+ terminal (LFAVDD must be short and LFR-, LFL+, LFL- must be open)			
		Open	Line fault monitored by local device or OUT- terminal			
J57	LFR-	Short	Line fault can be monitored by the remote device on the OUT- terminal (LFAVDD must be short and LFR+, LFL+, LFL- must be open)			
		Open**	Line fault monitored by local device or OUT+ terminal			
J58	LFL+	Short	Line fault can be monitored by the local device on the OUT+ terminal (LFAVDD must be short and LFR+, LFR-, LFL- must be open)			
		Open**	Line fault monitored by remote device or OUT- terminal			
J59	LFL-	Short	Line fault can be monitored by the local device on the OUT- terminal (LFAVDD must be short and LFR+, LFR-, LFL+ must be open)			
		Open**	Line fault monitored by remote device or OUT+ terminal			

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JUMPER	SIGNAL	SHUNT POSITION	FUNCTION
J60	LFAVDD	Short**	Line-fault circuit powered, connected to AVDD
100	LFAVDD	Open	Line fault is powered, nonfunctional
		+3.3V**	U1 IOVDD set to on-board 3.3V
JU2	IOVDD	EXT	U1 IOVDD supplied through EXT-IOVDD terminal (J20)
		+1.8V	U1 IOVDD set to on-board 1.8V
JU3		INT**	U1 DVDD supplied from internal source
303	U3 DVDD —	EXT	U1 DVDD supplied through EXT-DVDD terminal (J19)
		INT**	U1 AVDD supplied from internal source
JU4	AVDD	EXT	U1 AVDD supplied through EXT-AVDD terminal (J18)

Table 1. Jumper Description* (continued)

*Jumper selections in the **Serializer/Deserializer** group boxes on the **Configurations Settings** window are for reference only and do not affect software operation.

**Default position.

Detailed Description of Software

To start the serializer evaluation kit GUI, select <u>Start |</u> <u>All Programs | Maxim Integrated | MAXSerDesEV-N |</u> <u>MAXSerDesEV-N</u>.

Configuration Settings Window

The **Configuration Settings** window is the first window that opens after successful program launch. It allows the user to specify serializer and deserializer board setup and mode of operation (Figure 2).

Controller Group Box

In the **Controller** group box, select **Coax** or **STP** from the **Link Type** drop-down list, **I2C** or **UART** from the **Bus** drop-down list, and whether the **Serializer** or **Deserializer** should be connected to the USB controller. Upon changing any of these parameters, conflicting jumper settings will be highlighted, guiding the user to check and make the corresponding changes to the evaluation boards. Only the **Link Type** and **Device Address** selections on the **Configuration Settings** window affect EV kit operation. Other items, including jumper selection, are for user reference only.

Serializer and Deserializer Jumper Selection Blocks

The **Serializer** and **Deserializer Jumper Selection** blocks list jumpers on the evaluation boards of the selected Device ID and displays the correct shunt positions based on the conditions selected in the **Controller** block.

Identify Devices Button

The **Identify Devices** button causes the GUI to scan the system and hunt for slave addresses on the bus. Upon successful communication, it reads the **Device ID** register from the DUTs and displays the corresponding jumper lists on the **Serializer** and **Deserializer Jumper Selection** blocks. It is also possible to select a device from the **Device ID** drop-down list and manually change the slave address in the **Device Address** edit box. It is a good practice to utilize the **Identify Devices** button and verify communication with the DUTs before attempting to **Connect**.

Figure 14 shows jumper settings on the serializer PCB for coax cable and I²C communication with a USB cable connected to the serializer board. Refer to the respective SerDes IC data sheets for detailed configuration information. See Table 1 for the serializer jumper descriptions.

Connect Button

The **Connect** button opens the **Evaluation Kit** window. The GUI reads the SerDes registers and updates the register maps for both. Successful register map updates are indicated by green LED indicators. In case of a communication problem, the LED indicators turn red.

Cancel - Do not Connect Button

The **Cancel- Do Not Connect** button opens the **Evaluation Kit** main window without attempting to connect to the microcontroller. Although there is no communication with the microcontroller, all functions and tabs corresponding to the selected **Device ID**s on the **Evaluation Kit** window become active once there.

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Controller					
Controller connected to: Serializer		Link Type	Coax	Bus 12C	
Serializer			Deserializer		
Device ID	Device Address 0x 80	+	Device ID	Device Address 0x 90	+
0x41=MAX96705 (16-bit Parall	el Input) Coax/STP w/HBM/HIM	~	0x4A=MAX96706 (14-bit Paral	lel Output) Coax/STP w/HBM/HIM	~
MAX96705 EVKIT Jumper Selec	tion		MAX96706 EVKIT Jumper Selec	tion	
CONF1:CONF0:(CXTP,PCLK L	atch Edge,I2CSEL)		ADD3:ADD2:ADD1:ADD0 (De	fault Device Address)	
	L:L Coax,Falling,I2C	~		L:L:L:L 0x90	~
LCCN:BWS	H:L= enable ctrl chan	~	CXTP/DE	Short: Coax	~
LCNN:MS/HEVEN	H:L Select Base Mode	~	MS/HEVEN	L:Select Base Mode	~
HIM_HI:GPO_LOW	Open:Open HIM Pulled Low	~	нім	Open:Bypass Mode	~
REG 0x07: BWS:HIBW	0:0 = 24-bit	~	REG 0x07: BWS:HIBW	0:0 = 24-bit	~
POC+	5VIN: POC sourced by the Deserializer	~	I2CSEL	Short = I2C Mode	~
POC- OPEN: no POC	OPEN: no POC	*	PWDN	H = DeSerializer On	
PWDN	H = Serializer On	*	RXSDA	SDA=I2C	~
RXSDA	SDA=I2C	-	TXSCL	SCL=I2C	~
TXSCL	SCL=I2C	*	POC1+	5VOUT: from the DeSerilaizer thru CH1+	~
LINE FAULT MONITOR	LVAVDD=SHORT,Remote Dev on OUT+	~	POC1-	OPEN: no POC	~
GPI05/LMN1:LMN1 GPI04/LM	MNO:LMNO		POC0+	5VOUT: from DeSer CH0+	~
	LFR+ = SHORT LFL+ = OPEN	~	POCO-	OPEN: no POC	~
			LINE FAULT MONITOR	LFAVDD=SHORT,Local Dev on IN0+ & IN1+	• •
			LMNO = LMNO+ LMN1 = LMN	1+	
			LFR0+ = OPEN LFL0+ = SHO	ORT LFR1+ = OPEN LFL1+ = SHORT	4
Connect	Identify Devices	Cancel -	Do Not Connect	Exit Application	
	Enable CLINK before Identify				
	Cafty	uses, Usesia	n N 1.0.4.15	Firmware: Version N FV	W 1 10

Figure 2. MAXSerDesEV-N EV Kit Software: Configuration Settings Window (shown with MAX96705 and MAX96706 EV Kits Connected)

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GMSL SerDes Ev	aluation Kit Software with Nuvoton uController Is NOT Detected!
Please verify tha	at the Evaluation Kit Hardware contains the Nuvoton uController and that it is properly connected to the USB Port of the PC
Also verify all jur	nper settings and click 'Connect' from the Configuration Settings.
It may be neces:	sary to reset the Evaluation Kit hardware.
Click 'OK' to cont	inue or 'Cancel' to exit the application.

Figure 3. MAXSerDesEV-N EV Kit Software: Warning! (Nuvoton µController is NOT Detected!)

/arning!	
MicroController firmware is	not the latest version. Some GUI functions may not operate correctly. Please update firmware
Click 'OK' to continue with t	he existing firmware or 'Cancel' to exit the application.
	OK Cancel

Figure 4. MAXSerDesEV-N EV Kit Software: Warning! (Microcontroller Firmware is Not the Latest Version)

Evaluation Kit Window

The **Evaluation Kit** window shown in <u>Figure 5</u> provides access to all internal registers and functions of the DUTs by means of reading and writing registers through different tabs, thus enabling the user to evaluate various functions of the serializer and deserializer.

The **Read All** button updates the SerDes register maps by reading the DUT's internal registers.

The **Serializer** group box provides pushbuttons to update the serializer's register map from the DUT using the **Read All MAX96705** button. The **Load** button reads and updates from a previously saved file and the **Save** button saves the existing register values into a new file.

The **Deserializer** group box provides pushbuttons to update the deserializer's register map from the DUT using the **Read All MAX96706** button. The **Load** button reads and updates from a previously saved file and the **Save** button saves the existing register values into a new file.

The **Wake Up** button applies the register write sequence described in the IC data sheets to wake the DUTs from sleep mode.

The **Open Configuration** button returns to the **Configuration Settings** window.

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MAX96705 Ser Tab

The **MAX96705 Ser** tab (Figure 5) lists the serializer's register bitmaps. The **Read** and **Write** buttons in each register group box allows access to each bit or group of bits that specify a function or condition, as defined in the respective serializer IC data sheet. The color of the small LED indicator next to the **Read/Write** buttons indicates the communication status. Green indicates successful communication and red indicates failed communication.

File Device Option:	s Windows Help		
	MAX96705 Ser	M4X96706 Des Additional Features Log\Low Level HDCP	
Read All	Register 0x00		1
Serializer	Read	Device Address of MAX96705 Serializer 80 🗄 CF6BLOCK	-
Read All MAX96705	Write		
98 of 98 Read	Register 0x01		
From Address 0x80	Read	Device Address of Deserializer 90 📫	
Save	Write	Device Address of Desenalizer	
Load	Register 0x02		
eserializer	Read	SS 000: None (d) V PRNG 11: Auto Detect (d) V SRNG 11: Auto Detect (d) V	
	Write		
Read All MAX96706	Register 0x03		
46 of 46 Read From Address 0x90	Read		
Save	Write	AUTOFM 00: One Time 💌 SDIV 0 📫	
Save	Register 0x04		
Load	Read		
	Write	SEREN CLINKEN PRBSEN SLEEP INTTYPE 01: UART V REVCCEN V FWDCCEN	
	Register 0x05		
Wake Up	Read		
Open Configuration	Write	I2CMETHOD PRBS_LEN 00: Continuous	
Exit Application	Register NvRR		
E XIL Application	<		>

Figure 5. MAXSerDesEV-N EV Kit Software: Evaluation Kit Window (MAX96705 Ser Tab (Serializer))

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MAX96706 Des Tab

The **MAX92706 Des tab** (Figure 6) lists the deserializer's register bitmaps. The **Read** and **Write** buttons in each register group box allows access to each bit or group of bits that specify a function or condition, as defined in the respective dserializer data sheet. The color of the small LED indicator next to the **Read/Write** buttons indicates the communication status. Green indicates successful communication and red indicates failed communication.

File Device Option	Windows Help				
	MAX96705 Ser MAX96706 Des Additional Features Log\Low Level HDCP				
Read All	Register 0x00	1			
Serializer	Read O Device Address of Serializer 80 ±				
Read All MAX96705	Write Device Address of Jenanzer				
98 of 98 Read	Register 0x01				
From Address 0x80	Read O Device Address of MAX96706 DeSerializer 90 CF6BLOCK				
Save	Device Address of MAX96706 DeSerializer 90 CFGBLOCK				
Load	Register 0x02				
eserializer	Read INVPINE 5 INVPINE 4 INVPINE 3 INVPINE 2 INVPINE 1 INVPINE 0 SBNG 11: Auto Detect V				
resenalizer	Write INVPINH_5 INVPINH_4 INVPINH_3 INVPINH_2 INVPINH_1 INVPINH_0 SRNG 11: Auto Detect V				
Read All MAX96706	Register 0x03				
46 of 46 Read From Address 0x90	Read				
Save					
Load	Register 0x04				
	Read UCKED OUTENB PRBSEN SLEEP INTTYPE 01: UART V REVCCEN V FWDCCEN				
	Write				
	Register 0x05				
Wake Up	Read O I2CMETHOD DCS V HVTR MODE V EN EQ EQTUNE 1001: 9.7 dB (d) V				
Open Configuration	Write IZCMETHOD DCS VHVTR_MODE VEN_EQ EQTUNE 1001: 9.7 dB (d)				
Exit Application	Ranister DvDR	>			

Figure 6. MAXSerDesEV-N EV Kit Software: Evaluation Kit Window (MAX96706 Des Tab (Deserializer))

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Additional Features Tab

The **Additional Features** tab (Figure 7) provides pushbuttons for specific functions that connected devices can perform. By pressing a button, a new window pops up, launching the specific function selected. Function buttons not supported by the selected device are grayed out.

File Device Options	s Windows Help				
	MAX96705 Ser	MAX96706 Des	Additional Features	Log\Low Level HDCP	
Read All	MAX96705			MAX96706	
Serializer		rializer Access EDID Tab	la Cantanta	Deserializer Access Lookup Table Contents	
Read All MAX96705	36	nalizer Access EDID Tal	le Contents	Desenalizer Access Lookup Table Contents	
98 of 98 Read From Address 0x80		Serializer Crossbar S	witch	Deserializer Crossbar Switch	
Save		Timing Generato		Equalizer Visualization	
Load				Eye Width Measurement	
Deserializer	8			Enable Comm Link	
Read All MAX96706					
46 of 46 Read From Address 0x90		Show PRBS Tes	t		
Save					
Load					
Wake Up					
Open Configuration					
Exit Application					

Figure 7. MAXSerDesEV-N EV Kit Software: Evaluation Kit Window (Additional Features Tab)

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On the Additional Features tab, press the Serializer Crossbar Switch button to launch the Serializer Crossbar Switch Configuration function (Figure 8). This capability allows the rerouting of data between the parallel input/output by the serializer. Refer to the respective IC data sheet for a detailed description and operation on the embedded crossbar switches.

evice Operation	ns Fi	ile Operation:	s						
Read	from DUT	9	Save To File						
Write	e to DUT	L	oad From File						
Force Invert	Input		Output	Force Invert	Input	Output	Force Invert	Input	Output
	Low Word DINO (XBIO) 🗸	XBOO		High Word DINO (XBI16) 🛛 🗸	XB016		Low Word DIN14 (XE	BI14) 🐱 XBOHS
	Low Word DIN1 (XBI1) 🔽	XB01		High Word DIN1 (XBI17) 🛛 👻	XB017		Low Word DIN15 (XE	BI15) 🔽 XBOVS
	Low Word DIN2 (XBI2) 🔽	XBO2		High Word DIN2 (XBI18) 🛛 👻	XB018		Low Word DIN13 (XE	BI13) 🔽 XBODE
	Low Word DIN3 (XBI3) 🔽	ХВО3		High Word DIN3 (XBI19) 🛛 🗸	XBO19			
	Low Word DIN4 (XBI4) 🔽	XB04		High Word DIN4 (XBI20) 🛛 👻	XBO20	DOLK I		
	Low Word DIN5 (XBI5) 🗸	XB05		High Word DIN5 (XBI21) 🛛 🗸 🗸	XBO21	PCLK		
	Low Word DIN6 (XBI6) 🔽	XB06		High Word DIN6 (XB122) 🛛 👻	XB022			N-4
	Low Word DIN7 (XBI7) 🗸	XB07		High Word DIN7 (XBI23) 🛛 👻	XB023	PIXEL	N I	N+1
	Low Word DIN8 (XBI8) 💌	XB08		High Word DIN8 (XBI24) 🛛 🗸	XBO24	managers dentilit	GH LOW	HIGH LOW
	Low Word DIN9 (XBI9) 🖌 🗸	XBO9		High Word DIN9 (XBI25) 🛛 👻	XBO25		331 XBI15 330 XBI14	XB31 XBI15 XB30 XBI14
	Low Word DIN10 (XBI	10) 🖌 🖌	XB010		High Word DIN10 (XBI26) 🛛 🗸	XBO26		329 XBI13	XB29 XBI13
	Low Word DIN11 (XBI	11) 🔽	XB011		High Word DIN11 (XBI27) 🛛 👻	XB027	DIN1 XE	 317 XBI1	XB17 XBI1
	Low Word DIN12 (XBI	12) 🗸	XB012		High Word DIN12 (XBI28) 🛛 🔽	XB028		316 XBI0	XB16 XBI0
	Low Word DIN13 (XBI	13) 🗸 🗸	XB013		High Word DIN13 (XBI29) 🛛 🐱	XBO29			
	Low Word DIN14 (XBI	14) 🔽	XB014		High Word DIN14 (XBI30) 🛛 👻	XBO30			
	Low Word DIN15 (XBI	15) 🗸	XB015						

Figure 8. MAXSerDesEV-N EV Kit Software: Evaluation Kit Window (Serializer Crossbar Switch Configuration Window)

Evaluates: MAX96705/MAX96711 with Coax or STP Cable

On the **Additional Features** tab, press the **Deserializer Crossbar Switch** button to launch the **Deserializer Crossbar Switch Configuration** function for the deserializer (Figure 9). This capability enables rerouting data between the parallel input/output by the deserializer. Refer to the respective IC data sheet for a detailed description and operation on the embedded crossbar switches.

ice Operations	File	Operations
Read from DUT		Save To File
Write to DUT		Load From File
Input		Output
×BI0	~	XBO0 (DOUT0)
XBI1	~	XB01 (DOUT1)
XBI2	~	XBO2 (DOUT2)
XBI3	~	XBO3 (DOUT3)
×BI4	~	XB04 (DOUT4)
XBI5	~	XBO5 (DOUT5)
×BI6	~	XBO6 (DOUT6)
×BI7	~	XB07 (DOUT7)
×B18	~	XBO8 (DOUT8)
XBI9	~	XBO9 (DOUT9)
XBI10	*	XB010 (DOUT10)
XBI11	~	XB011 (DOUT11)
XBI12	*	XB012 (DOUT12)
XBI13	~	XB013 (DOUT13)

Figure 9. MAXSerDesEV-N EV Kit Software: Evaluation Kit Window (Deserializer Crossbar Switch Configuration Window)

Evaluates: MAX96705/MAX96711 with Coax or STP Cable

On the **Additional Features** tab, press the **Timing Generator** button to launch this function (Figure 10), which allows the user to utilize the programmable video timing generator to generate/retime the input sync signals. Refer to the respective IC data sheet for a detailed description.

		File Operations						
Read fro	om DUT	Save To	o File					
Write t	o DUT	Load Fro	m File					
Ŋ	/S_IN			~~~~		Л	_	
VS				vs_L			\square	
HS		✓ +□< ^{HS_L} →□	ПП	Π	חו	ПП		
		— 」∟ ,						
	DE_DLY	2010 EV 1010		S_CNT (PULSE C	OUNT)			
DE				_ ل_حها ل_				
		DE_H	DE_	CNT (PULSE COU	NT)			
	0 · Disable	VS_DLY	0	HS_DLY	0	DE_DLY	0	
GEN_VS	0 - Disable	VS_H	0	HS_H	0	DE_H	0	
GEN_VS GEN_HS		VS_L	0	HS_L	0	DE_L	0	
and the second s	0 · Disable			HS_CNT	0	DE_CNT	0	
GEN_HS	0 - Disable 1 - Rising	VS_INV	0 - Normal 🛛 👻	Ho_cht			1000	

Figure 10. MAXSerDesEV-N EV Kit Software: Evaluation Kit Window (Timing Generator Window)

Evaluates: MAX96705/MAX96711 with Coax or STP Cable

On the **Additional Features** tab, press the **Equalizer Visualization** button to launch this function (Figure 11), which allows compensating for higher cable attenuation and higher frequencies. Refer to the respective IC data sheet for a detailed description.

ngle EQTU	NE Sweep		PCLK Sweep Settings		File Operations
Sta	art Single EQTUNE	Sweep	Start PCLK and EQ	TUNE Sweep	Save To File
🗸 PCLK Fr	equency (MHz)	78	Start Frequency (MHz)	20	Load From File
			End Frequency (MHz)	50	
			Step Size (MHz)	10	
Eye Width (%)	92 80.2 68.4 56.6 44.8				20MHz AEQ 20MHz 30MHz AEQ 30MHz 40MHz AEQ 40MHz 50MHz AEQ 50MHz
	33 0 1	2 3	4 5 6 7 Boost Level	8 9 10	11 Clear Cha

Figure 11. MAXSerDesEV-N EV Kit Software: Evaluation Kit Window (Equalizer Visualization Window)

Evaluates: MAX96705/MAX96711 with Coax or STP Cable

On the **Additional Features** tab, press the **Show PRBS Test** button to perform a PRBS test (Figure 12). Enter test duration (maximum 32,767s = 9.1hrs) in the **Duration** edit box and press **Start** to start the test. At test completion, the number of bit errors are read from the PRBSERR register, and displayed in the **PRBS Error Counter** box.

Log\Low Level Tab

The Log\Low Level tab (Figure 13) logs all activities between the GUI and DUTs.

The **Register Access** group box allows reads or writes of the specified slave and register addresses. Use the **Send String to EVKIT** button to communicate with non-register-based devices (such as the MAX7324). The **SerDes Baud Rate** dropdown list sets the communications baud rate. Note that the baud rate should be changed in small increments/decrements (one step change is forced by the GUI).

Detailed Description of Firmware

The Nuvoton microcontroller on the daughter board runs a custom firmware that ensures reliable communication between the PC and DUTs. The firmware records 9-bit even-parity data received from the USB interface while RTS is set, and plays back the 9-bit data with 1.5 stop bits timing when RTS is cleared. Data received from the DUTs is immediately relayed to the USB port.

Detailed Description of Hardware

The MAX96705/MAX96711 coax EV kit provides a proven design and layout for the MAX96705 and MAX96711 GMSL serializers, which was designed to be reliable with ease of use, flexibility, parallel input, and FAKRA coaxial cable serialized output. On-board level translators and easy-to-use USB-PC connections are included on the EV kit.

File Device Options	Windows Help	
	MAX96705 Ser MAX96706 Des Additional	Features Log/Low Level HDCP
Read All	MAX96705	MAX96706
erializer	Serializer Access EDID Table Contents	Deserializer Access Lookup Table Contents
Read All MAX96705	Senalizer Access EDID Table Contents	Desenalizer Access Lookup Table Contents
98 of 98 Read From Address 0x80	Serializer Crossbar Switch	Deserializer Crossbar Switch
Save	Timing Generator	Equalizer Visualization
Load		Eye Width Measurement
eserializer		Enable Comm Link
Read All MAX96706		Enable Comm Link
46 of 46 Read From Address 0x90	Hide PRBS Test	
Save	Bit Error Rate Test	
Load	Duration 1 😂 Sec Disable T	(imer (Manual Stop Required)
	Start Stop	
Wake Up	PRBS Error Counter PRBSERR:	Status:
Open Configuration	Magas units (MCROTCH)	
Exit Application		

Figure 12. MAXSerDesEV-N EV Kit Software: Evaluation Kit Window (Show PRBS Test Window, Expanded)

The MAX96705/MAX96711 coax EV kit board consists of four principal functional blocks:

- 1) Microcontroller daughter board
- 2) MAX96705/MAX96711 application circuit block
- 3) Power-supply block
- 4) Oscillator (PCLK) circuit block

Microcontroller Daughter Board

The Nuvoton-based microcontroller daughter board provides UART and I^2C interfaces that communicate with both serializer and deserializer boards when they are powered on and properly configured. The Nuvoton microcontroller is programmed with the latest firmware at the time of manufacturing.

To use the EV kit with an externally applied controller, remove the Nuvoton microcontroller board from the EV kit board (DB1 position) and apply the RX/SDA, TX/SCL, VDD, and GND signals from the user microcontroller to the corresponding signals on J6 of the serializer board. Use one of the logic levels from the VDD_REF, J53 header, or apply externally.

Evaluates: MAX96705/MAX96711 with Coax or STP Cable

Application Circuit

The application circuit block includes the serializer and all other components and circuits suggested in the respective IC data sheet, and test points and provisions to provide access to internal functions of the serializer for evaluation of the product.

Power Supplies

On-board LDO regulators U2, U3, and U12 generate various voltage levels required to operate the EV kit board. There are four options to power the board:

- 1) USB port (default)
- 2) 12V AC adapter
- 3) 5V power supply applied power over coax cable
- 4) Power jumper (JU1 selects from the four power sources)

To operate the EV kits with voltage levels different from what are generated by on-board regulators, move desired IOVDD (JU2), DVDD (JU3), and AVDD (JU4) shunt from INT to EXT positions and apply the external voltage to the corresponding wire-loop terminal.

	MAX96705 Ser	MAX96706 Des	Additional Fea	atures	Log\Low Level	HDCP				
Read All		CADINATION Film (2001)		HAVE				^	SerDes Baud Rate (12C and Uart)	:
Serializer	Appdir = C:\Prog	: C:\Program Files (x86)' am Files\Maxim Integra	<pre>ted\MAXSerDesE\</pre>	/MAXSerDest/ /-N\Devices\	-N (Devices)				921600	~
Read All MAX96705	UartOrI2C Current Serdes In UartOrI2C 0	iterface is: I2C								
98 of 98 Read	Current Serdes In								Clear Hist	ory
From Address 0x80	UartOrI2C Current Serdes Inte								16-Bit Register Addre	iss Read
Save	UartOrI2C 0 Current Serdes In	1.0 10 100							Device Address	0x 60
Load	New Serdes Inte RB 90 1E 1								Register Address Number of	0x 3000
Deserializer	4A RB 80 1E 1								Registers to Read:	0x 10
Read All MAX96706	41 RB 90 07 1								Read w/16-	Bit Address
46 of 46 Read	02 RB 80 07 1									
From Address 0x90	10							~	Load w/16-Bit Ad	dress, 8-bit Data
Save	Raw TX Byte Co	des						-		101201
Load	Register Access						Send String to	EAKII	Load w/16-Bit Ad	dress, 16-bit Data
2000							Read			
	Device Addres	s 80 Registe	r Address 1A		egisters to Read	1	-			
V./-I 11-				Data to V	/rite: F0 00 0D		Write	•		
Wake Up		Device ID of Activ	ve Listeners:							
Open Configuration	Scan For Actin Listeners	/e								
Exit Application										

Figure 13. MAXSerDesEV-N EV Kit Software: Evaluation Kit Window (Log\Low Level Tab)

Evaluates: MAX96705/MAX96711 with Coax or STP Cable

Oscillator (PCLK) Circuit Block

An on-board custom oscillator (U4) to supply PCLK is provided to facilitate the serializer/deserializer evaluation. This is an I²C-programmable oscillator with four custom preprogrammed and jumper-selectable frequencies. FSEL0 and FSEL1 jumpers positions select one of the preprogrammed frequencies per list below:

FSEL1 FSEL0 PCLK (MHz)

L	L	25.0
L	Н	37.0
Н	L	78.0
Н	Н	104.0

Place jumper IDT_EN (J26) in the "L" position to disable the oscillator output. To operate the the oscillator at a frequency other than the four preprogrammed frequencies, refer to the oscillator data sheet available at www.idt.com/products/clocks-timing/quartz-crystaloscillator-ics-xo-crystal-clock-oscillators-and-lowpower-oscillator-circuits/8n0q001-quad-frequencyprogrammable-xo-0, or contact the manufacturer.

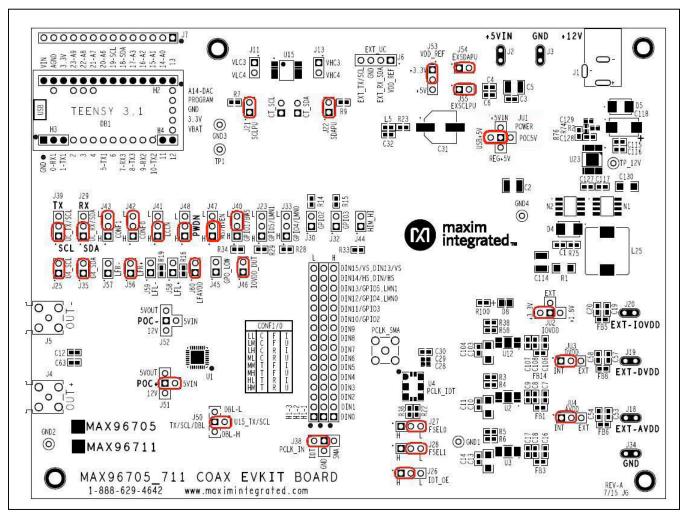


Figure 14. MAX96705/MAX96711 Coax EV Kit Jumper Settings for Coax Link and I²C Communication

Evaluates: MAX96705/MAX96711 with Coax or STP Cable

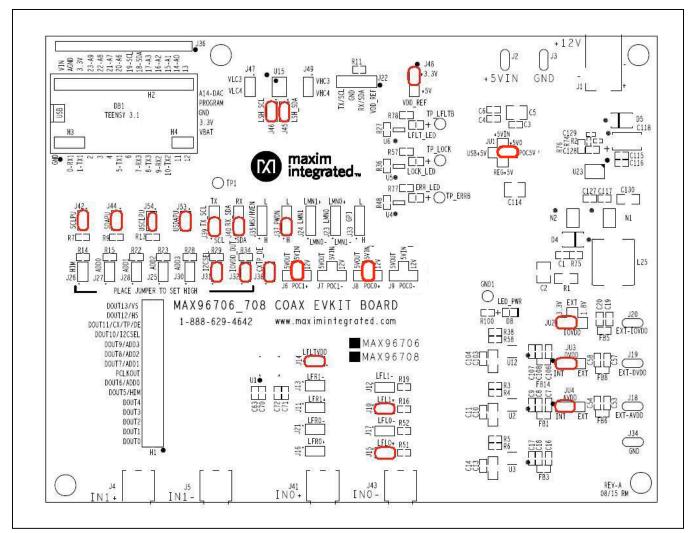


Figure 15. MAX96706/MAX96708 Coax EV Kit Jumper Settings for Coax Link and I²C Communication

Troubleshooting

Possible causes of board test failure:

- 1) Coax cable not properly connected between the serializer OUT+ to the deserializer IN+.
- PCLKIN not applied (e.g., FG output is disabled): Verify signal at the pins on the board.
- 3) PCLKIN and function generator output are not correct: Verify signal at the pins on the board.
- 4) Incorrect jumper setting on the deserializer board: Reverify.
- 5) Incorrect jumper setting on the serializer board: Reverify.

- 6) Bus selection on the GUI is not consistent with jumpers' position on the boards: Check and verify that USB cable is properly connected.
- 7) USB port has locked: Exit application GUI, remove USB cable from the board, reinsert and relaunch the GUI.
- Nuvoton µC is not communicating: Exit application GUI, remove USB cable from the board, reinsert and relaunch the GUI.
- 9) Deserializer board is faulty: Try a different board (if available).
- 10) Serializer board is faulty: Try a different board (if available).

Evaluates: MAX96705/MAX96711 with Coax or STP Cable

Component Suppliers

SUPPLIER	PHONE	WEBSITE
Amphenol RF	800-627-7100	www.amphenolrf.com
Hong Kong X'tals Ltd.	852-35112388	www.hongkongcrystal.com
Integrated Device Technology (IDT)	908-766-4941	www.idt.com
Murata Americas	770-436-1300	www.murataamericas.com
ON Semiconductor	602-244-6600	www.onsemi.com
Rosenberger Hochfrequenztechnik GmbH	011-49-86 84-18-0	www.rosenberger.de
TDK Corp.	847-803-6100	www.component.tdk.com

Note: Indicate that you are using the MAX96705 or MAX96711 when contacting these component suppliers.

Component List

Click on the links below for component information, schematics, and PCB layout diagrams:

- MAX96705/MAX96711 EV Kit BOM
- MAX96705/MAX96711 EV Kit Schematics
- MAX96705/MAX96711 EV Kit PCB Layout

Ordering Information

PART	TYPE
MAX96705COAXEVKIT#	EV Kit
MAX96711COAXEVKIT#	EV Kit
MAXCOAX2STP-HSD#	Adapter Kit

#Denotes RoHs compliant.

Note: The MAX96705 and MAX96711 coax EV kits are normally ordered with a companion board:

- MAX96706 coax EV kit (MAX96706COAXEVKIT#)
- MAX96708 coax EV kit (MAX96708COAXEVKIT#)*

Evaluates: MAX96705/MAX96711 with Coax or STP Cable

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	12/15	Initial release	_
1	3/16	Removed future product designation from MAX96711COAXEVKIT# in Ordering Information	20

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at www.maximintegrated.com.

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TITLE: Bill of Materials

DATE: 12/2015

DESIGN: max96705_711_evkit_a

NOTE: DNI = DO NOT INSTALL ; DNP = DO NOT PROCURE

REF_DES	DNI/DNP	QTY	VALUE	DESCRIPTION	MFG PART #	MANUFACTURER
				CAPACITOR; SMT (0603); CERAMIC CHIP;		
				1500PF; 50V; TOL=10%; MODEL=C SERIES;		
				HIGH TEMPERATURE; TG=-55 DEGC TO +150		
C1	-	1	1500PF	DEGC; TC=X8R	C1608X8R1H152K080	ТДК
				CAPACITOR; SMT (1210); CERAMIC CHIP;		
				10UF; 16V; TOL=20%; MODEL=; TG=-55	C1210C106M4RAC;	
C2	-	1	10UF	DEGC TO +125 DEGC; TC=X7R	C3225X7R1C106M200AB	KEMET/TDK
				CAPACITOR; SMT (0603); CERAMIC CHIP;		
C3, C8, C18, C30, C32, C108,				10UF; 16V; TOL=20%; TG=-25 DEGC TO +85		
C115, C127	-	8	10UF	DEGC; TC=JB	C1608JB1C106M080AB	TDK
				CAPACITOR; SMT (0603); CERAMIC CHIP;		
C4, C6, C7, C9, C16, C17,				0.1UF; 25V; TOL=10%; MODEL=C SERIES;		
C106, C107, C116, C117	-	10	0.1UF	TG=-55 DEGC TO +125 DEGC; TC=X7R	C1608X7R1E104K080AA	TDK
				CAPACITOR; SMT (1210); CERAMIC CHIP;		
				100UF; 10V; TOL=20%; MODEL=CL SERIES;		
C5, C34, C64, C114	-	4	100UF	TG=-55 DEGC TO +85 DEGC; TC=X5R	CL32A107MPVNNN	SAMSUNG ELECTRONICS
				CAPACITOR; SMT (1206); CERAMIC CHIP;		
				10UF; 10V; TOL=20%; MODEL=C SERIES; TG=		
C10, C13, C103, C130	-	4	10UF	55 DEGC TO +85 DEGC; TC=X5R	C3216X5R1A106M160	ТДК
				CAPACITOR; SMT (0603); CERAMIC; 4.7UF;	C1608X5R0J475M080AB;	
C11, C14, C19, C20, C53, C54,				6.3V; TOL=20%; MODEL=C SERIES; TG=-55	GRM188R60J475ME19;	
C57, C58, C104	-	9	4.7UF	DEGC TO +85 DEGC; TC=X5R	JMK107BJ475MA-T	TDK/MURATA/TAIYO YUDEN
				CAPACITOR; SMT (0603); CERAMIC CHIP;		
				0.22UF; 50V; TOL=10%; MODEL=C SERIES;		
C12, C33, C62, C63	-	4	0.22UF	TG=-55 DEGC TO +125 DEGC; TC=X7R	C1608X7R1H224K080	TDK
					C0402X7R160-104KNE;	
					CL05B104KO5NNNC;	
					GRM155R71C104KA88;	
				CAPACITOR; SMT (0402); CERAMIC CHIP;	C1005X7R1C104K;	VENKEL LTD./SAMSUNG
C15, C21, C22, C27, C28, C35,				0.1UF; 16V; TOL=10%; TG=-55 DEGC TO	CC0402KRX7R7BB104;	ELECTRONICS/MURATA/TDK/YAGEO
C61	-	7	0.1UF	+125 DEGC; TC=X7R;	EMK105B7104KV	PHICOMP/TAIYO YUDEN

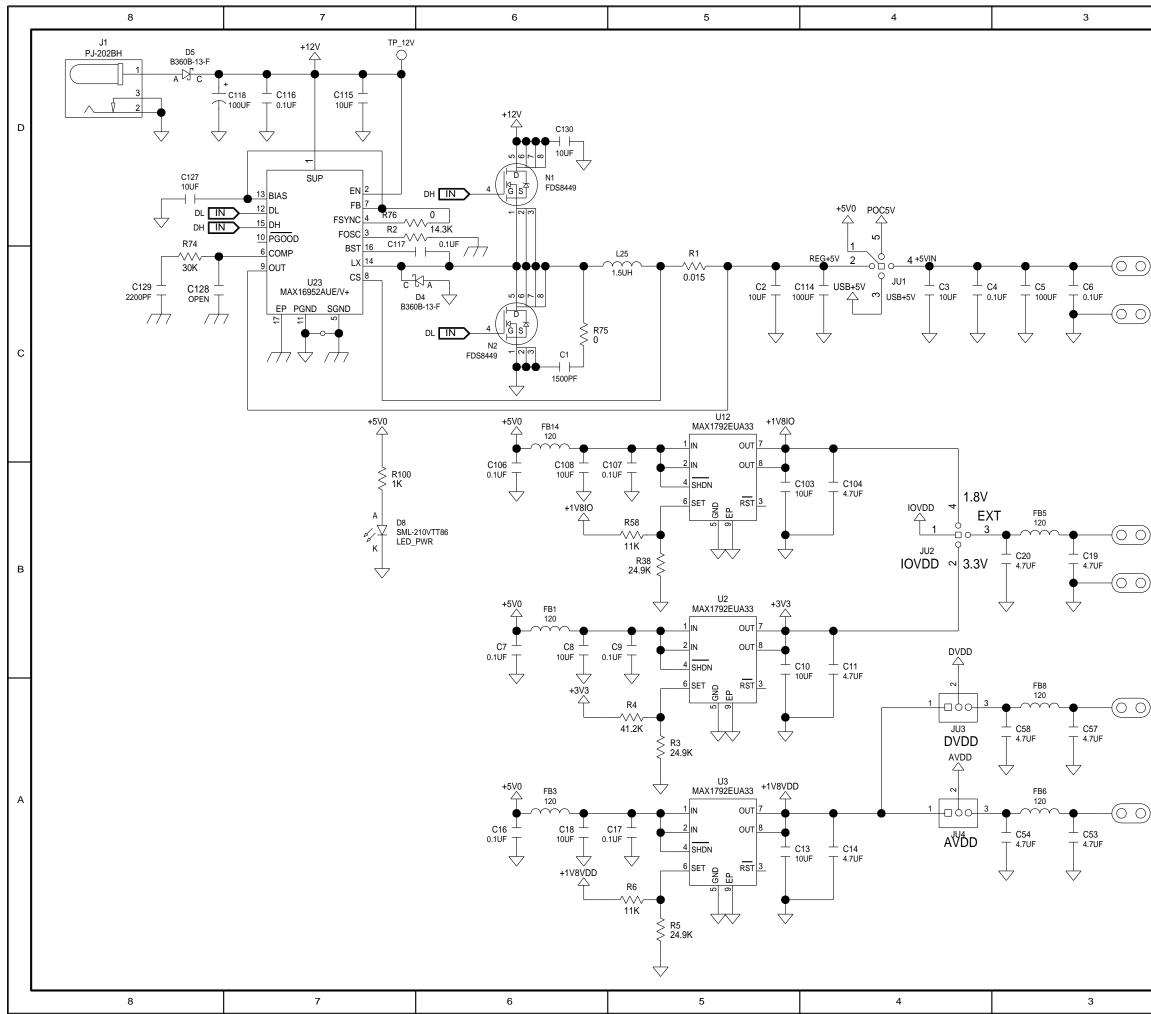
REF_DES	DNI/DNP	QTY	VALUE	DESCRIPTION	MFG PART #	MANUFACTURER
				CAPACITOR; SMT (0402); CERAMIC CHIP;		
				1000PF; 50V; TOL=10%; MODEL=C SERIES;		
C23-C26, C36, C60, C97	-	7	1000PF	TG=-55 DEGC TO +125 DEGC; TC=X7R	C1005X7R1H102K050BA	ТДК
				CAPACITOR; SMT (0402); CERAMIC; 0.1UF;		
				16V; TOL=10%; MODEL=GRM SERIES; TG=-		
C29, C85, C96, C99, C100	-	5	0.1UF	55 DEGC to +85 DEGC; TC=X5R	GRM155R61C104KA88	MURATA
				CAPACITOR; SMT (CASE_F); ALUMINUM-		
				ELECTROLYTIC; 470UF; 16V; TOL=20%;		
				MODEL=CR SERIES; TG=-55 DEGC TO +105		
C31	-	1	470UF	DEGC	PCR1C471MCL6	NICHICON
				CAPACITOR; SMT (7343); TANTALUM CHIP;		
C118	-	1	100UF	100UF; 16V; TOL=20%; MODEL=TQC SERIES	16TQC100MYF	PANASONIC
				CAPACITOR; SMT (0402); CERAMIC CHIP;		
				2200PF; 50V; TOL=10%; MODEL=C SERIES;		
C129	-	1	2200PF	TG=-55 DEGC TO +125 DEGC; TC=X7R	C1005X7R1H222K050BA	TDK
				DIODE; SCH; SCHOTTKY BARRIER DIODE;		
				SMB; PIV=60V; Io=3A; -55 DEGC TO +125		
D4, D5	-	2	B360B-13-F	DEGC	B360B-13-F	DIODES INCORPORATED
				DIODE; LED; SML-21 SERIES; RED; SMT		
D8	-	1	SML-210VTT86	(0805); PIV=2V; IF=0.02A	SML-210VTT86	ROHM
L4, L5, FB1, FB3, FB5, FB6,				INDUCTOR; SMT (0603); FERRITE-BEAD; 120;		
FB8, FB14	-	8	120	TOL=+/-25%; 3A	BLM18SG121TN1	MURATA
				TEST POINT; PIN DIA=0.1IN; TOTAL		
				LENGTH=0.3IN; BOARD HOLE=0.04IN; RED;		
				PHOSPHOR BRONZE WIRE SILVER PLATE		
TP1, GND1-GND4, TP_12V	-	6	N/A	FINISH;	5000	KEYSTONE
				CONNECTOR; MALE; THROUGH HOLE;		
				BREAKAWAY; STRAIGHT; 16PINS; -65 DEGC		
H1-1-H1-3	-	3	PBC16SAAN	TO +125 DEGC	PBC16SAAN	SULLINS ELECTRONICS CORP.
				CONNECTOR; FEMALE; THROUGH HOLE; LFB		
				SERIES; 2.54MM CONTACT CENTER;		
H2	-	1	PPPC141LFBN-RC	STRAIGHT; 14PINS	PPPC141LFBN-RC	SULLINS ELECTRONICS CORP
				CONNECTOR; FEMALE; THROUGH HOLE;		
				HEADER; STRAIGHT THROUGH; 3PINS; -40		
Н3	-	1	PPTC031LFBN-RC	DEGC TO +105 DEGC	PPTC031LFBN-RC	SULLINS
				CONNECTOR; FEMALE; THROUGH HOLE; LFB		
				SERIES; 2.54MM CONTACT CENTER;		
H4	-	1	PPPC021LFBN-RC	STRAIGHT; 2PINS	PPPC021LFBN-RC	SULLINS ELECTRONICS CORP

REF_DES	DNI/DNP	QTY	VALUE	DESCRIPTION	MFG PART #	MANUFACTURER
				CONNECTOR; MALE; THROUGH HOLE; PJ-		
				202BH; DC POWER JACK; RIGHT ANGLE;		
J1	-	1	PJ-202BH	RIGHT ANGLE; 3PINS	PJ-202BH	CUI INC.
				EVK KIT PARTS; MAXIM PAD; WIRE;		
				NATURAL; SOLID; WEICO WIRE; SOFT		
J2, J3, J18-J20, J34	-	6	MAXIMPAD	DRAWN BUS TYPE-S; 20AWG	9020 BUSS	WEICO WIRE
				CONNECTOR; MALE; THROUGH HOLE;		
				RIGHT ANGLE PLUG FOR PCB; RIGHT ANGLE;		
J4, J5	-	2	59S2AX-400A5-Z	5PINS	59S2AX-400A5-Z	ROSENBERGER
				CONNECTOR; MALE; THROUGH HOLE;		
1e	-	1	PEC04SAAN	BREAKAWAY; STRAIGHT; 4PINS	PEC04SAAN	SULLINS ELECTRONICS CORP.
				CONNECTOR; MALE; THROUGH HOLE;		
				BREAKAWAY; STRAIGHT; 14PINS; -65 DEGC		
J7	-	1	PBC14SAAN	TO +125 DEGC	PBC14SAAN	SULLINS ELECTRONICS CORP.
				CONNECTOR; MALE; THROUGH HOLE;		
J11, J13, J21, J22, J25, J30,				BREAKAWAY; STRAIGHT THROUGH; 2PINS; -		
J32, J35, J44-J46, J54, J55	-	13	PCC02SAAN	65 DEGC TO +125 DEGC	PCC02SAAN	SULLINS
				CONNECTOR; MALE; THROUGH HOLE;		
J23, J26-J29, J33, J39-J43, J47,				BREAKAWAY; STRAIGHT THROUGH; 3PINS; -		
J48, J53	-	14	PCC03SAAN	65 DEGC TO +125 DEGC	PCC03SAAN	SULLINS
				CONNECTOR; MALE; THROUGH HOLE;		
J38, J50-J52, JU2	-	5	PEC04SAAN	BREAKAWAY; STRAIGHT; 4PINS	PEC04SAAN	SULLINS ELECTRONICS CORP.
				CONNECTOR; MALE; THROUGH HOLE;		
J56-J60	-	5	PEC02SAAN	BREAKAWAY; STRAIGHT; 2PINS	PEC02SAAN	SULLINS
				CONNECTOR; MALE; THROUGH HOLE;		
				BREAKAWAY; STRAIGHT; 5PINS; -65 DEGC		
JU1	-	1	PBC05SAAN	TO +125 DEGC	PBC05SAAN	SULLINS ELECTRONICS CORP.
				CONNECTOR; MALE; THROUGH HOLE;		
JU3, JU4	-	2	PEC03SAAN	BREAKAWAY; STRAIGHT; 3PINS	PEC03SAAN	SULLINS
				INDUCTOR; SMT (0603); FERRITE CORE;		
L1, L8	-	2	330NH	330NH; TOL=+/-5%; 0.63A	LQW18CNR33J00	MURATA
				INDUCTOR; SMT (1210); WIREWOUND CHIP;		
L2, L7	-	2	6.8UH	6.8UH; TOL=20%; 0.62A	LBC3225T6R8MR	TAIYO YUDEN
				INDUCTOR; SMT (2424); WIREWOUND CHIP;		
L3, L6	-	2	100UH	100UH; TOL=20%; 0.92A	LQH6PPN101M43L	MURATA
				INDUCTOR; SMT; FERRITE-BEAD; 1.5UH;		
L25	-	1	1.5UH	TOL=+/-20%; 27A	7443330150	WURTH ELECTRONICS INC.
				STANDOFF; FEMALE-THREADED; HEX; 4-		
MECH1-MECH4	-	4	1902B	40IN; 3/8IN; NYLON	1902B	GENERIC PART

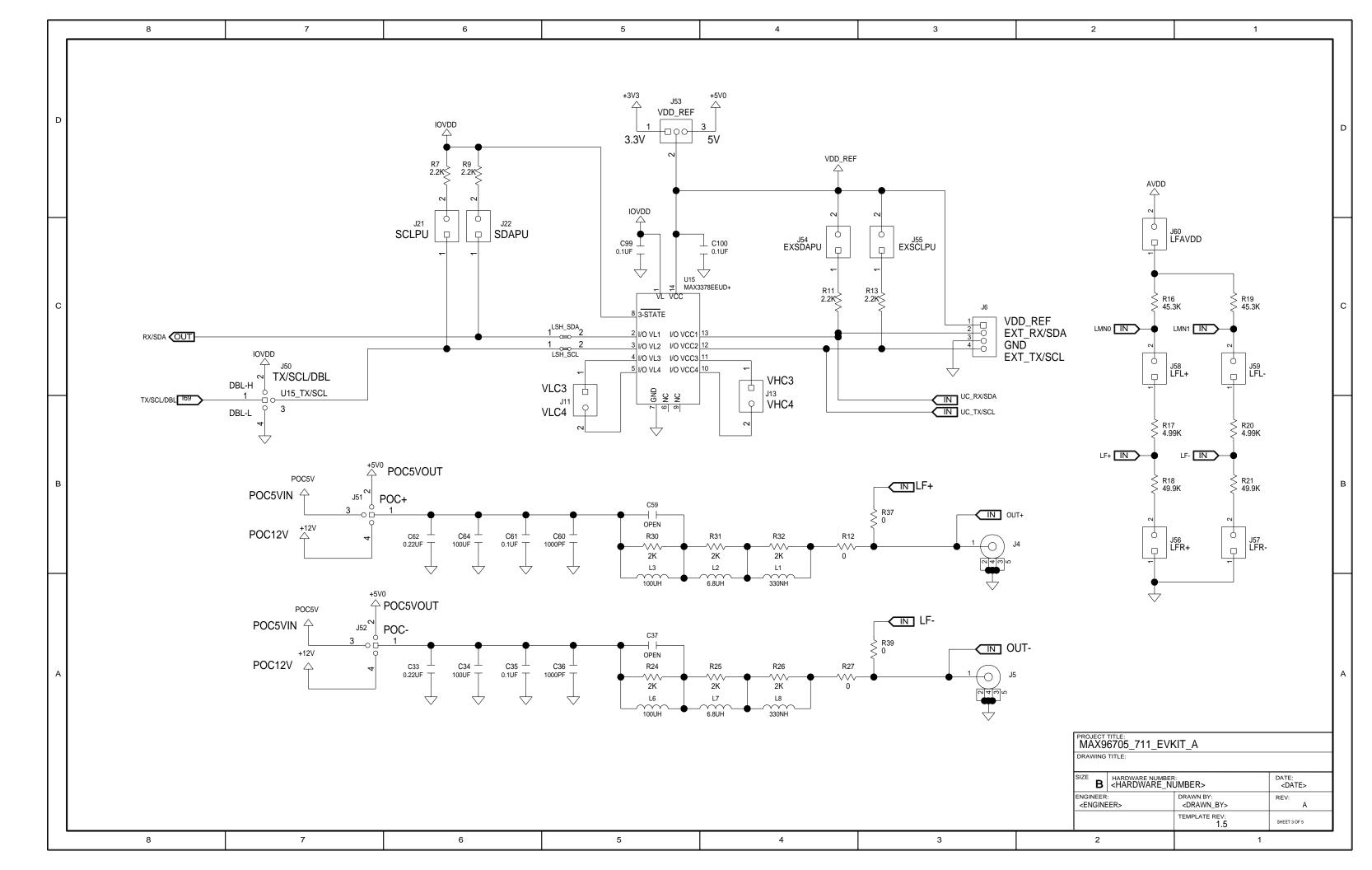
REF_DES	DNI/DNP	QTY	VALUE	DESCRIPTION	MFG PART #	MANUFACTURER
MISC2	-	1	MAXEVCNTR-NUV#	EVKIT PART-NUVOTON MICRO CONTROLLER	MAXEVCNTR-NUV#	MAXIM
				TRAN; N-CHANNEL POWER TRENCH		
				MOSFET; NCH; NSOIC8 ; PD-(2.5W); I-(7.6A);		
N1, N2	-	2	FDS8449	V-(40V)	FDS8449	FAIRCHILD SEMICONDUCTOR
				CONNECTOR; FEMALE; THROUGH HOLE;		
				CONN SOCKET SMA STR DIE CAST PCB;		
PCLK_SMA	-	1	5-1814832-1	STRAIGHT; 5PINS	5-1814832-1	тусо
				RESISTOR; 1206; 0.015 OHM; 5%; 200PPM;		
R1	-	1	0.015	1W; THICK FILM	ERJ-8BWJR015V	PANASONIC
				RESISTOR, 0402, 14.3K OHM, 1%, 100PPM,		
R2	-	1	14.3K	0.0625W, THICK FILM	CRCW040214K3FK	VISHAY DALE
				RESISTOR; 0603; 24.9K OHM; 1%; 100PPM;		
R3, R5, R38	-	3	24.9K	0.10W; THICK FILM	CRCW060324K9FK	VISHAY DALE
				RESISTOR; 0603; 41.2K OHM; 1%; 100PPM;		
R4	-	1	41.2K	0.10W; METAL FILM	CRCW060341K2FK	VISHAY DALE
				RESISTOR; 0603; 11K OHM; 1%; 100PPM;		
R6, R58	-	2	11K	0.10W; THICK FILM	CR0603-FX-1102ELF	BOURNS
R7, R9, R11, R13-R15, R28,				RESISTOR, 0603, 2.2K OHM, 1%, 100PPM,		
R29, R34	-	9	2.2K	0.10W, THICK FILM	CRCW06032K20FK	VISHAY DALE
				RESISTOR; 0402; 0 OHM; 0%; JUMPER;		
R12, R27, R37, R39	-	4	0	0.063W; THICK FILM	CRCW04020000ZS	VISHAY DALE
				RESISTOR; 0603; 45.3KOHM; 1%; 100PPM;		
R16, R19	-	2	45.3K	0.10W; THICK FILM	CRCW060345K3FK; ERJ-3EKF4532V	VISHAY DALE/PANASONIC
				RESISTOR; 0201; 4.99K OHM; 1%; 100PPM;		
R17, R20	-	2	4.99K	0.05W ; THICK FILM	CRCW02014K99FK	VISHAY DALE
				RESISTOR; 0201; 49.9K OHM; 1%; 100PPM;		
R18, R21	-	2	49.9K	0.05W ; THICK FILM	CRCW020149K9FK	VISHAY DALE
				RESISTOR; 0603; 1K; 1%; 100PPM; 0.10W;		
R22, R36	-	2	1K	THICK FILM	CRCW06031001FK; ERJ-3EKF1001V	VISHAY DALE; PANASONIC
				RESISTOR, 0603, 2 OHM, 1%, 100PPM,		
R23	-	1	2	0.10W, THICK FILM	CRCW06032R00FN	VISHAY DALE
				RESISTOR, 0603, 2K OHM, 1%, 100PPM,		
R24, R25, R30, R31	-	4	2К	0.10W, THICK FILM	CRCW06032K0FK; ERJ-3EKF2001V	VISHAY DALE/PANASONIC
				RESISTOR; 0201; 2K OHM; 1%; 200PPM;		
R26, R32	-	2	2К	0.05W; THICK FILM	ERJ-1GEF2001C	PANASONIC
				RESISTOR; 0603; 30K OHM; 1%; 100PPM;		
R33	-	1	30К	0.10W; THICK FILM	CRCW060330K0FK	VISHAY DALE

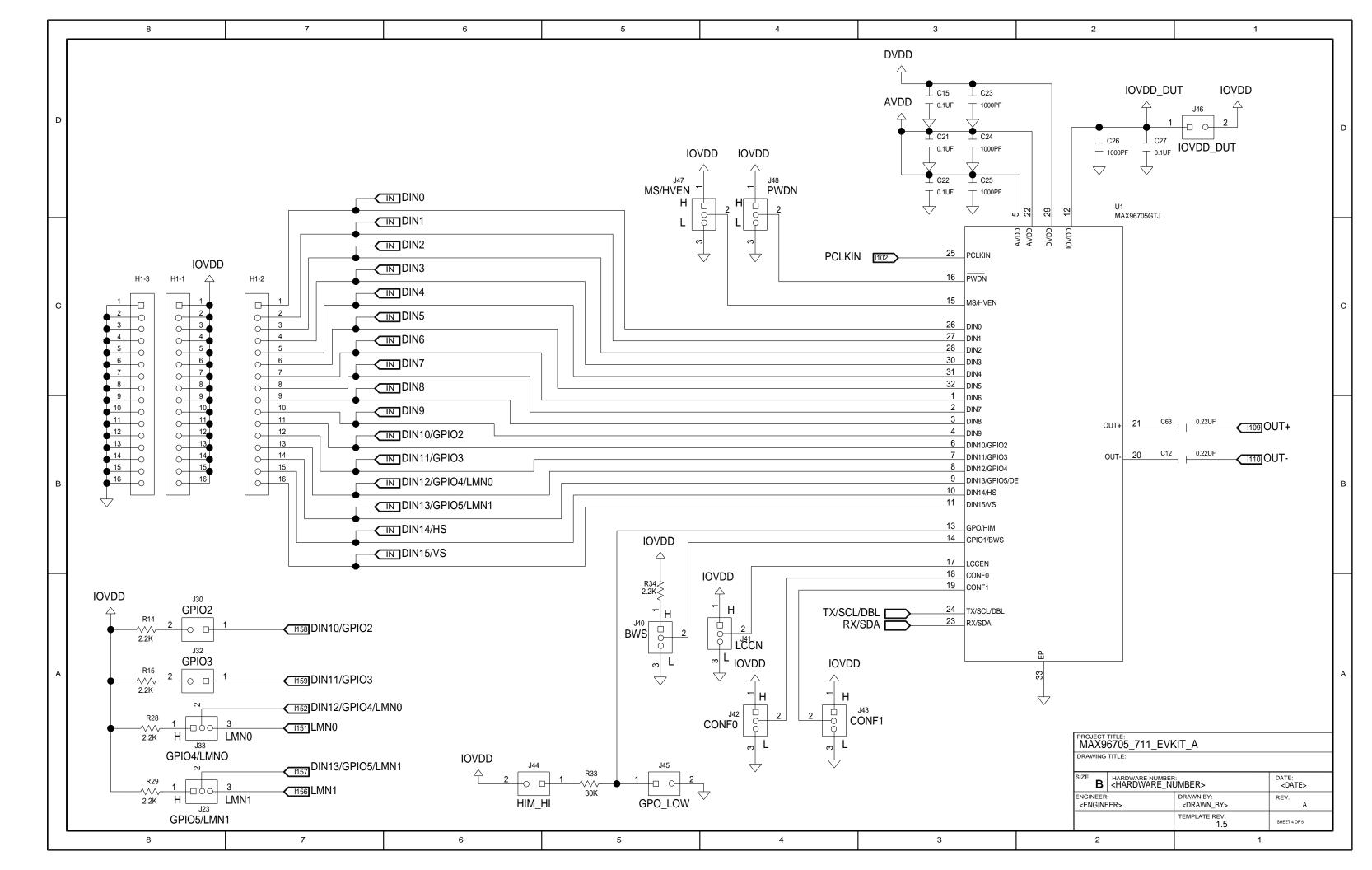
REF_DES	DNI/DNP	QTY	VALUE	DESCRIPTION	MFG PART #	MANUFACTURER
				RESISTOR; 0402; 30K OHM; 1%; 100PPM;		
R74	-	1	30K	0.063W; THICK FILM	RC0402FR-0730KL	YAGEO PHICOMP
				RESISTOR; 0603; 0 OHM; 5%; JUMPER;	RC1608J000CS; CR0603-J/-	SAMSUNG
R75, R76	-	2	0	0.10W; THICK FILM	000ELF;RC0603JR-070RL	ELECTRONICS/BOURNS/YAGEO PH
				RESISTOR; 0603; 1K OHM; 1%; 100PPM;		
R100	-	1	1K	0.10W; THICK FILM	CR0603-FX-1001ELF	BOURNS
				MACHINE SCREW; SLOTTED; PAN; 4-40IN;		
SCREW1-SCREW4	-	4	P440.375	3/8IN; NYLON	P440.375	GENERIC PART
				TEST POINT; JUMPER; STR; TOTAL LENGTH=0.256IN; BLACK; INSULATION=PBT CONTACT=PHOSPHOR BRONZE; COPPER		
SU1-SU25	_	25	STC02SYAN	PLATED TIN OVERALL	STC02SYAN	SULLINS ELECTRONICS CORP.
561 5625		23	5100251741	IC; HS81 PRELIMINARY; PACKAGE OUTLINE	5100251744	
				32 TQFN; 0.50MM PITCH; 21-0140/T3255-8;		
U1	-	1	MAX96705GTJ	MAX96705	MAX96705GTJ	MAXIM
				IC; VREG; LOW-DROPOUT LINEAR		
U2,U3,U12	-	3	MAX1792EUA33	REGULATOR; UMAX8	MAX1792EUA33	MAXIM
				EVKIT PART; IC; IDT8N0Q001; CD10		
				PACKAGE OUTLINE 7X5 BODY; 2.54MM		
U4	-	1	IDT8N0Q001	PITCH; CUSTOM PART ONLY	IDT8N0Q001	IDT
				IC; TRANS; +/-15KV ESD-PROTECTED, 1UA, 16MBPS, QUAD LOW-VOLTAGE LEVEL		
U15	-	1	MAX3378EEUD+	TRANSLATOR; TSSOP14	MAX3378EEUD+	MAXIM
U23	-	1	MAX16952AUE/V+	IC; CTRL; STEP-DOWN CONTROLLER WITH LOW OPERATING CURRENT; TSSOP16-EP	MAX16952AUE/V+	ΜΑΧΙΜ
				CONNECTOR; MALE; USB; USB2.0 MICRO CONNECTION CABLE; USB B MICRO MALE		
MISC1	DNI	1	AK67421-1-R	TO USB A MALE; STRAIGHT; 5PINS-4PINS	AK67421-1-R	ASSMANN
C37, C59, C128	DNP	3	OPEN	PACKAGE OUTLINE 0603 NON-POLAR CAPACITOR	N/A	N/A
				EVKIT PART; MODULE; CTRL; TEENSY USB DEVELOPMENT BOARD; TH-37; CUSTOM		
DB1	DNP	1	TEENSY 3.1	PART ONLY	TEENSY 3.1	PJRC

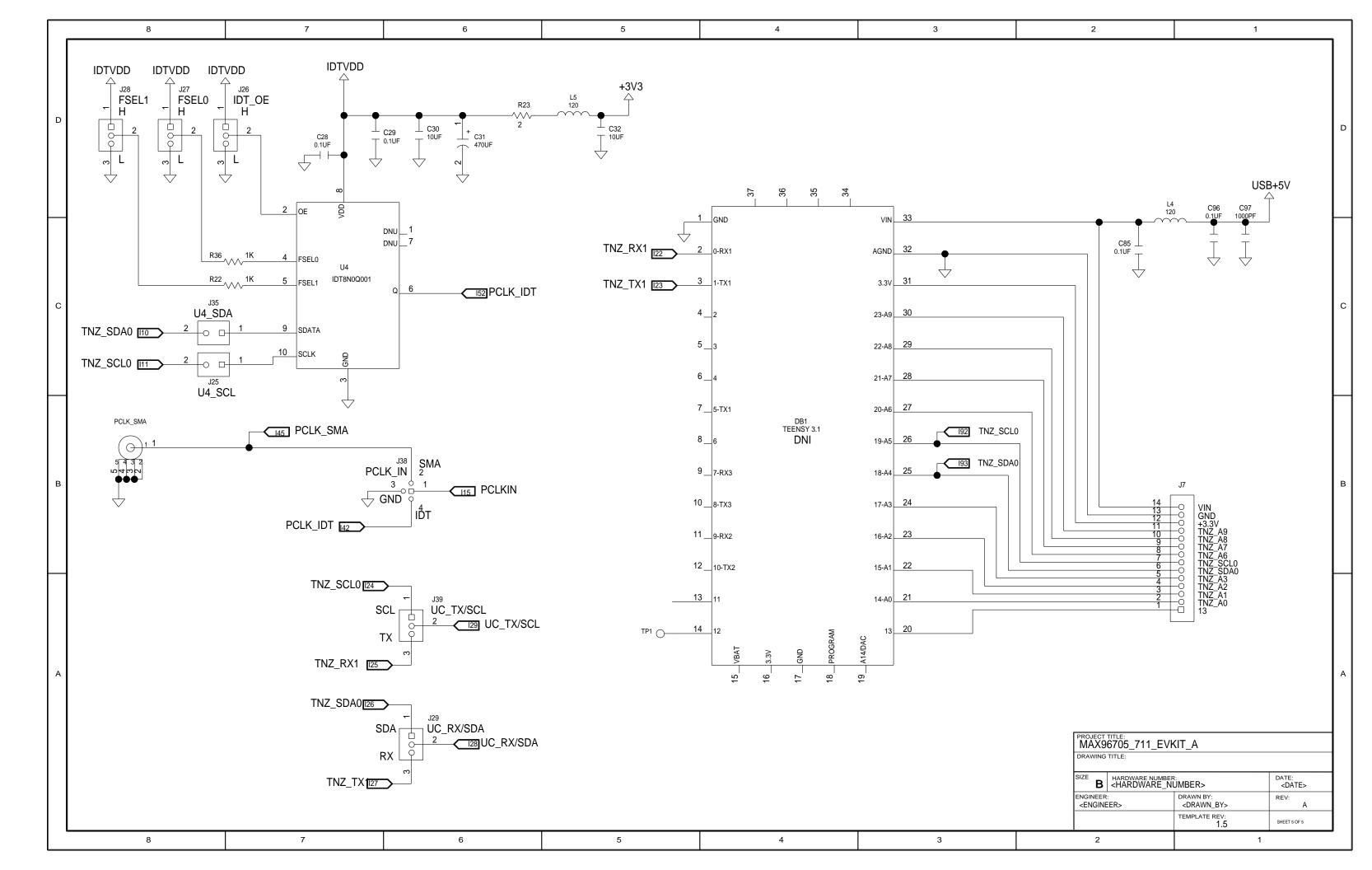
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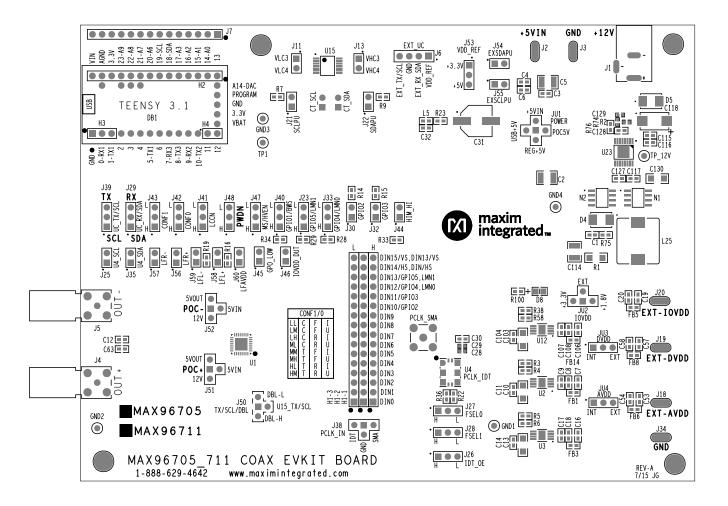
	2	1		
				D
) J2 +5VIN) J3 GND				С
) J20 EXT-IC) J34 GND	VDD GND1 GND2 GND3 GND4			В
) J19 EXT-D) J18 EXT-A	$\begin{array}{cccccccccccccccccccccccccccccccccccc$			А
	PROJECT TITLE: MAX DRAWING TITLE: SIZE B HARDWARE NUMBER <	X96705_711_EVKIT_ WMBER> DRAWN BY: <drawn_by> TEMPLATE REV: 1.5 1</drawn_by>	A DATE: <date> REV: A SHEET 2 OF 5</date>	



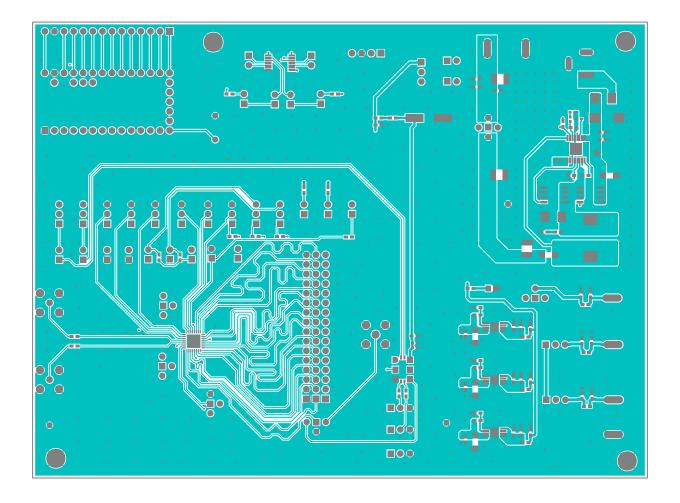




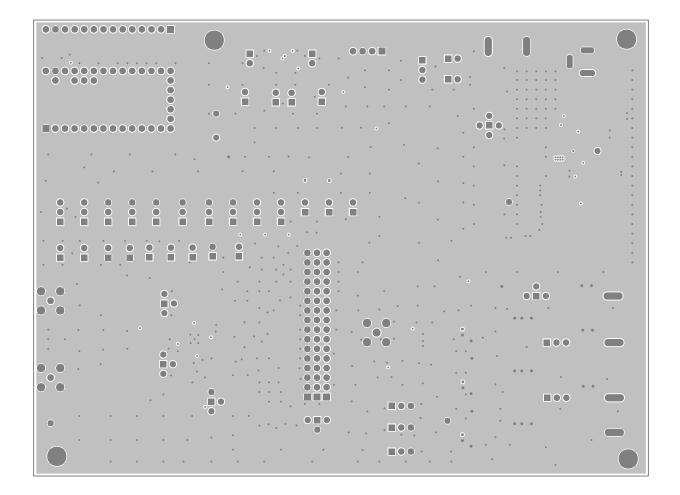
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HARDWARE NAME:MAX96705_711_EVKIT_A	
HARDWARE NUMBER:	
ENGINEER:	DESIGNER:
DATE: 07/29/2015	ODB++/GERBER: SILK_TOP



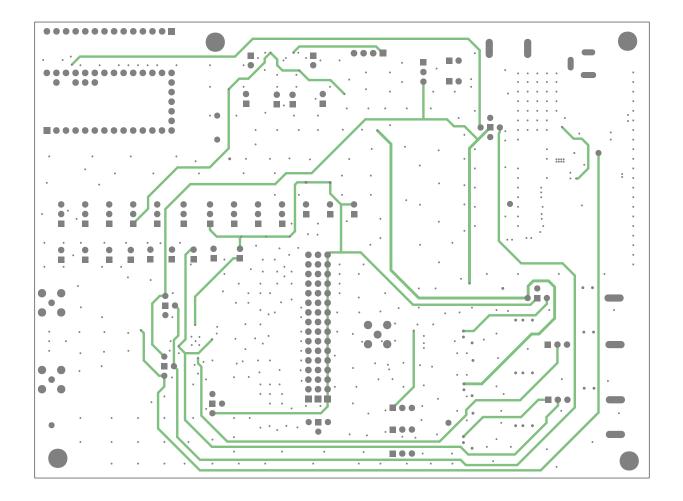
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HARDWARE NUMBER:	
ENGINEER:	DESIGNER:
DATE: 07/29/2015	ODB++/GERBER: TOP



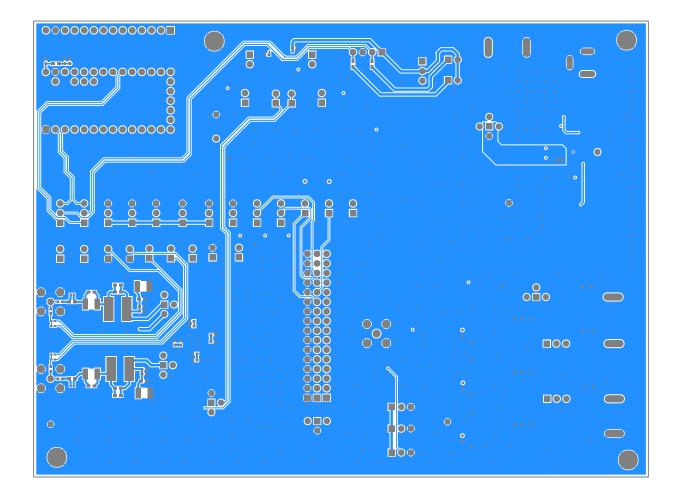
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HARDWARE NAME: MAX96705_711_EVKIT_A	
HARDWARE NUMBER:	
ENGINEER:	DESIGNER:
DATE: 07/29/2015	ODB++/GERBER: INNER_LAYER2



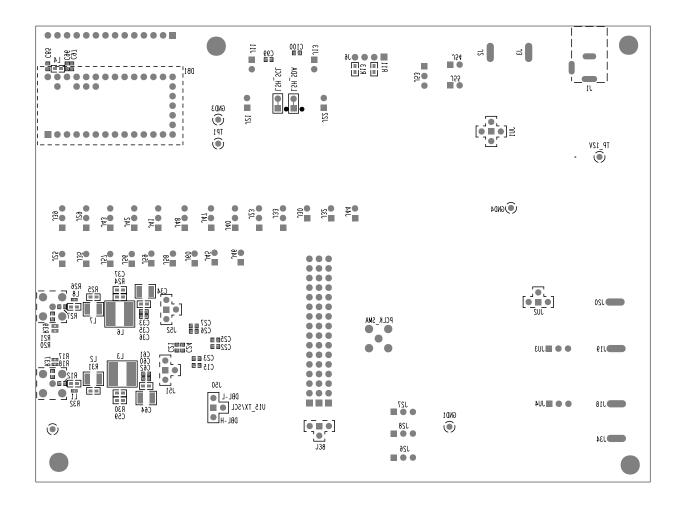
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HARDWARE NUMBER:	
ENGINEER:	DESIGNER:
DATE: 07/29/2015	ODB++/GERBER: INNER_LAYER3



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HARDWARE NAME:MAX96705_711_EVKIT_A	
HARDWARE NUMBER:	
ENGINEER:	DESIGNER:
DATE: 07/29/2015	ODB++/GERBER: BOTTOM



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HARDWARE NAME:MAX96705_711_EVKIT_A	
HARDWARE NUMBER:	
ENGINEER:	DESIGNER:
DATE: 07/29/2015	ODB++/GERBER: SILK_BOT



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