Development Kit User Guide

AirPrime HL6 and HL8 Series

SIERRA WIRELESS®

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Document History

Version	Date	Updates
1.0	November 21, 2013	Creation
2.0	March 04, 2014	Added HL8548x support
2.1	March 10, 2014	Updated: • Board version number • Table 3 Available Connections • 3.7 UART0/SPI1
		Deleted obsolete connectors

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1. Overview

This document describes the AirPrime HL Series Development Kit (board version 1400897-D) and how it integrates with the AirPrime HL6528x and HL8548x series of embedded modules via a socket board (board version 1400922-A for the HL6528x, board version 1400923-A for the HL8548x). It also briefly describes the different interfaces and peripheral connections supported by the HL Series Development Kit and provide schematics to facilitate the user's understanding and configuration of the development kit board for their own application use.

The AirPrime HL Series Development Kit may be used to develop both software and hardware applications based on embedded modules from the AirPrime HL series.

The following table enumerates the different HL6 and HL8 variants that can be used with the development kit.

Table 1. Supported Module Variants

Variant Name	Part Number	Description
HL6528	1102044	1.8V, GSM/GPRS capable
HL6528-G	1102045	1.8V, GSM/GPRS capable with GLONASS support
HL6528-2.8V	1102047	2.8V, GSM/GPRS capable
HL6528-G2.8V	1102048	2.8V, GSM/GPRS capable with GLONASS support
HL8548	1102149	1.8V, EDGE/WCDMA/HSxPA capable
HL8548-G	1102150	1.8V, EDGE/WCDMA/HSxPA capable with GLONASS support

For more information about the HL series of embedded modules, refer to the product technical specifications listed in section 6 Reference Documents.

2. General Description

This section gives a brief overview of the AirPrime HL Series Development Kit and briefly describes the interfaces and special jumper pads available, and lists all available test points on the development kit board.

2.1. RoHS Compliance

The AirPrime HL Series Development Kit board is compliant with RoHS (Restriction of Hazardous Substances in Electrical and Electronic Equipment) Directive 2011/65/EU which sets limits for the use of certain restricted hazardous substances. This directive states that “from 1st July 2006, new electrical and electronic equipment put on the market does not contain lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) or polybrominated diphenyl ethers (PBDE)”.

The AirPrime HL6528x and HL8548x series of embedded modules are also compliant with this directive.

2.2. Development Kit

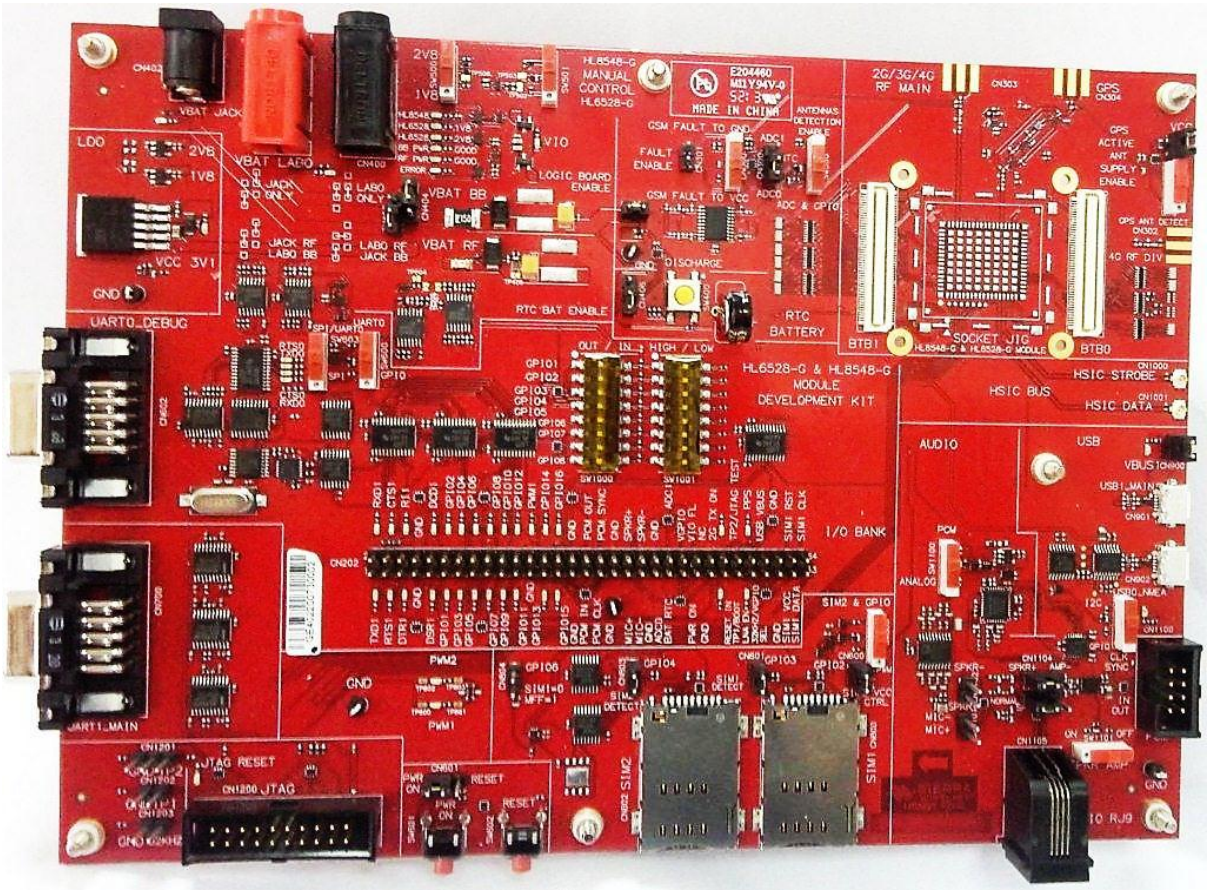


Figure 1. AirPrime HL Series Development Kit (board version 1400897-D)

2.2.1. Features

Interfaces available on the development kit board include:

- Power supply connectors
- ON/OFF switch
- Reset pushbutton
- External board-to-board connector and TP to access all signals of the embedded module
- Main serial link RS232, UART1 with full signals including a Ring Indicator signal
- Auxiliary serial link RS232, UART0 with 4 signals
- Full Speed USB Connectors (I^2C signals conversion from HL module)
- 2 SIMs (with SIM presence management)
  - SIM 1: selectable 1.8/3V or SON8 embedded SIM
  - SIM 2: 3V SIM for HL6528x only
- Audio connectors, selectable for PCM conversion output or analog output from the HL module
- GPIOs
- DIP switches for GPIO logic input/output control
- LEDs for several indications
- Automatic detection and adaptation to either 2.8V or 1.8V module variant

Refer to section 3 Interfaces for detailed information about these interfaces.

2.2.2. Connectors and Component Placement

Refer to the following figure for the location of connectors and other components on the AirPrime HL Series Development Kit.

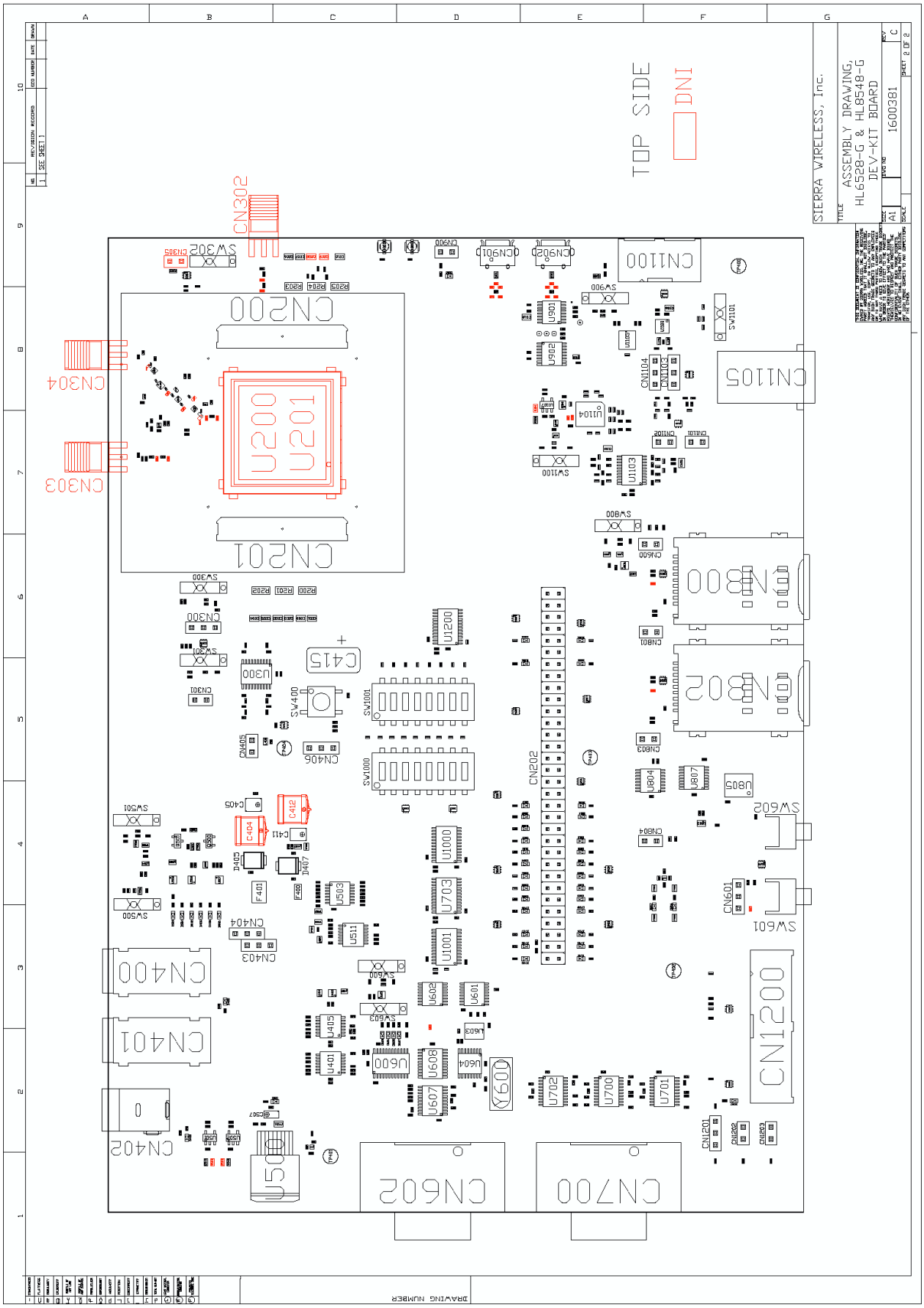


Figure 2. Available Connectors and Components on the AirPrime HL Series Development Kit

The following table describes the connectors and switches available on the development kit and the table after describe the different connections available.

Table 2. Connector and Switch Description

Connector/Switch	Description	HL6528x	HK8548x
CN402	4V, 3.75A power jack	✓	✓
CN401	3.7V, 4A positive lab power supply (+)	✓	
CN400	Negative lab power supply (-)	✓	
CN700	UART1 (main UART)	✓	✓
CN602	UART0 (SPI to UART); SW spytracer	✓	
CN202	GPIOs (1 to 8)	✓	✓
	GPIOs (9 to 16) Multiplexed with other features; not compliant with HL6528x		✓
CN902	USB (I^2C to USB, GPIO1 and GPIO5) GNSS NMEA for HL6528x, and as I^2C signals on USB for HL8548x	✓	✓
SW602	Reset	✓	✓
SW601	Power on (POK_IN); low level active 2 seconds debouncing	✓	✓
CN1105	Headset jack (RJ9) PCM Codec conversion output or analog audio output (for HL6528x only)	✓	✓
CN1100	Digital audio (PCM) for HL6528x, PCM signals probe for HL8548x	✓	✓
CN406	Real time clock backup battery	✓	✓
CN300 (Pin 1)	ADC0 input, 0-3V	✓	✓
CN300 (Pin 3)	ADC1 input, 0-3V	✓	✓
CN800	SIM1	✓	✓
CN802	SIM2	✓	
CN1200	JTAG	✓	
CN202(Pin 24)	PWM; multiplexed with GPIO12	✓	
CN202(Pin 46)	VGPIO – reference voltage output	✓	
CN202(Pin 52)	2G RF transmit signal	✓	
CN200 and CN201	Board to board connector (development kit to socket board connection)	✓	✓

Table 3. Available Connections

Connector/Switch	Connection
CN1103	Positive audio line • Connect Pin 1 and Pin 2 with a jumper to bypass audio amplifier when using a handset audio terminal • Connect Pin 2 and Pin 3 with a jumper to enable audio
CN1104	Negative audio line • Connect Pin 1 and Pin 2 with a jumper to bypass audio amplifier when using a handset audio terminal • Connect Pin 2 and Pin 3 with a jumper to enable audio amplifier

Connector/Switch	Connection
CN300	• Pin 1 is ADC0 input, 0-3V • Pin 2 connected to NTC on board • Pin 3 is ADC1 input,0-3V • Note that SW300 must be switched “ADC & GPIO” to disable antenna detection when ADC is connected to an external input • Both ADC0 and ADC1 are connected by default
CN305	Short with a jumper to enable power supply for GNSS active antenna with internal VCC reference voltage 3.1V, or connect a separate active antenna bias voltage can to Pin 2. This connector is shorted by default.
CN403	• Connect Pin 2 and Pin 3 with a jumper for applications using a 4V power supply unit (via CN402) • Connect Pin 1 and Pin 2 with a jumper when using a lab power supply (via CN401 and CN400)
CN404	• Connect Pin 1 and Pin 2 with a jumper for applications using a 4V power supply unit (via CN402) • Connect Pin 2 and Pin 3 with a jumper when using a lab power supply (via CN401 and CN400)
CN405	Short with a jumper to power ON the Development Kit. This connector is shorted by default.
CN406	• Connect Pin 1 and Pin 2 with a jumper to enable RTC backup battery for module • Connect Pin 2 and Pin 3 with a jumper to disable and discharge RTC backup battery • Disconnect the RTC backup battery with module by not connecting any jumpers
CN600	Short with a jumper to enable SIM2. This connector is shorted by default.
CN601	• Connect Pin 1 and Pin 2 with a jumper to bypass the POK_IN button (SW601). The Development Kit will automatically be powered on when VBAT is present. Pin 1 and Pin 2 are connected with a jumper by default. • Do not connect a jumper to enable Development Kit power on by pushing SW601 (2 seconds debouncing).
CN801	Short with a jumper to enable SIM1 insertion detection. This connector is shorted by default.
CN803	Short with a jumper to enable SIM2 insertion detection. This connector is shorted by default.
CN804	Short with a jumper to enable SIM switch control. This connector is open by default. If shorted with a jumper, the embedded SIM on the development kit (U805) will be connected to the SIM1 interface of the embedded module. Note that this feature is only available on the HL8548x.
CN900	Short with a jumper to enable USB1 port (this feature is not available for the HL6528x). This connector is shorted by default.
SW1000	• Switch to “OUT” to disable GPIO1 to GPIO8 (default setting) • Switch to “IN” to enable GPIO1 to GPIO8
SW1001	• Switch to “HIGH” to enable GPIO1 to GPIO8 pull up • Switch to “LOW” to enable GPIO1 to GPIO8 pull down
SW1100	• Switch to “ANALOG” for analog audio out • Switch to “PCM” for PCM audio out through the PCM analog audio converter
SW300	• Switch to “ANTENNAS DETECTION ENABLE” for antenna detection • Switch to “ADC & GPIO” for ADC application (default setting)

Connector/Switch	Connection
SW302	• Switch to “GPS ANT DETECT” for GNSS antenna detection (only active for GNSS port on the Development Kit) • Switch to “GPS ACTIVE ANT SUPPLY ENABLE” to enable GNSS active antenna supply (default setting)
SW400	Discharge button for RTC battery. For internal Sierra Wireless use only.
SW600	• Switch to “UART0” for UART applications (default setting) • Switch to “GPIO” for other GPIO applications (not available for the HL6528x)
SW603	*Note: This switch only has a bearing when using an HL8548x module. The UART0 interface will always function as an SPI to UART interface regardless of this switch’ setting when using an HL6528x.* • Switch to “SPI/UART0” to use the UART0 interface of the HL8548x • Switch to “SPI” to use the SPI interface of the HL8548x
SW800	• Switch to “SIM2 & GPIO” for SIM2 applications (default setting) • Switch to “PWM” for PWM applications
SW900	• Switch to “I2C” for I^2C applications (default setting) • Switch to “GPIO” for GPIO1 and GPIO5 applications

2.2.3. Test Ports

There are a total of 64 test ports available in the AirPrime HL Series Development Kit. The following table lists thee test port serigraphy and the corresponding signal names of the applicable HL series module.

For more information about these signals, refer to the product technical specifications listed in section 6 Reference Documents.

Table 4. AirPrime HL Series Development Kit Test Ports

Test Port #	Test Port Serigraphy	Board to Board Connector Pin #	HL6528x Signal Name	HL8548x Signal Name
1	TXD1	CN200.81	UART1_TX	UART1_TX
2	RXD1	CN200.85	UART1_RX	UART1_RX
3	RTS1	CN200.73	UART1_RTS	UART1_RTS
4	CTS1	CN200.79	UART1_CTS	UART1_CTS
5	DTR1	CN200.77	UART1_DTR	UART1_DTR
6	RI1	CN200.71	UART1_RI	UART1_RI
7	GND			
8	GND			
9	DSR1	CN200.83	UART1_DSR	UART1_DSR
10	DCD1	CN200.75	UART1_DCD	UART1_DCD
11	GPIO1	CN201.32	GPIO1/I2C1_CLK	GPIO1/I2C_CLK
12	GPIO2	CN201.30	GPIO2	GPIO2
13	GPIO3	CN201.51	UIM1_DET/GPIO3	GPIO3/UIM_DET
14	GPIO4	CN201.69	UIM2_DET/GPIO4	GPIO4
15	GPIO5	CN200.90	GPIO5/I2C1_DATA	GPIO5/I2C_SDA
16	GPIO6	CN201.60	GPIO6	GPIO6

Test Port #	Test Port Serigraphy	Board to Board Connector Pin #	HL6528x Signal Name	HL8548x Signal Name
17	GPIO7	CN201.40	GPIO7	GPIO7
18	GPIO8	CN201.42	GPIO8	GPIO8
19	GPIO9	CN200.8	UIM2_VCC	NC1
20	GPIO10	CN201.66	SPI1_MISO	GPIO10
21	GPIO11	CN201.38	SPI1_CLK	GPIO11
22	GPIO12	CN200.10	UIM2_CLK/PMW	PWM2/GPIO12
23	GND			
24	PWM1	CN200.4	UIM2_RESET/BUZZER	PWM1
25	GPIO13	CN201.70	SPI1_SRDY	DEBUG_TX / GPIO13
26	GPIO14	CN201.68	SPI1_MRDY	DEBUG_RX / GPIO14
27	GPIO15	CN201.64	SPI1_MOSI	GPIO15
28	GPIO16	CN200.6	UIM2_DATA	NC2
29	GND			
30	GND			
31	PCM IN	CN201.78	PCM_IN	PCM_IN
32	PCM OUT	CN201.76	PCM_OUT	PCM_OUT
33	PCM CLK	CN201.74	PCM_CLK	PCM_CLK
34	PCM SYNC	CN201.80	PCM_SYNC	PCM_SYNC
35	GND			
36	GND			
37	MIC+	CN201.93	MIC_P	NC
38	SPKR+	CN201.97	SPKR_P	NC
39	MIC-	CN201.95	MIC_N	NC
40	SPKR-	CN201.99	SPKR_N	NC
41	GND			
42	GND			
43	ADC0	CN201.53	ADC0	ADC0
44	ADC1	CN201.55	ADC1	ADC1
45	BAT RTC	CN201.35	BAT-RTC	BAT_RTC
46	VGPIO	CN201.20	VGPIO	VGPIO
47	PWR ON	CN201.33	PWR_ON	PWR_ON
48	VIO FL			
49	GND			
50	NC			
51	RESET IN	CN201.37	RESET_IN	RESET_IN
52	2G TX ON	CN201.29	2G_TX_ON	2G_TX_ON
53	TP1/BOOT	CN201.25	TP1	TP1
54	TP2/JTAG TEST	CN200.84	RESERVED	26M_CLKOUT
55	LNA EN	CN200.32	EXT_LNA_GPS_EN	EXT_LNA_GPS_EN
56	PPS	CN200.34	PPS	PPS
57	32KHZ/VGPIO SEL	CN200.76	NC	32K_CLKOUT
58	USB VBUS	CN201.92		NC
59	GND			

Test Port #	Test Port Serigraphy	Board to Board Connector Pin #	HL6528x Signal Name	HL8548x Signal Name
60	GND			
61	SIM1 VCC	CN201.43	UIM1_VCC	UIM1_VCC
62	SIM1 RST	CN201.47	UIM1_RESET	UIM1_RESET
63	SIM1 DATA	CN201.45	UIM1_DATA	UIM1_DATA
64	SIM1 CLK	CN201.49	UIM1_CLK	UIM1_CLK

2.3. Socket Board

The socket board is used to interface the HL Series embedded module with the AirPrime HL Series Development Kit. There are currently two socket boards available:

- HL6528x Socket Board
- HL8548x Socket Board

Each socket board is specific to an AirPrime series; that is, the HL6528x Socket Board supports HL6528x variants, and the HL8548x Socket Board supports HL8548x variants. Only compatible modules should be used on the socket boards.

2.3.1. HL6528x Socket Board

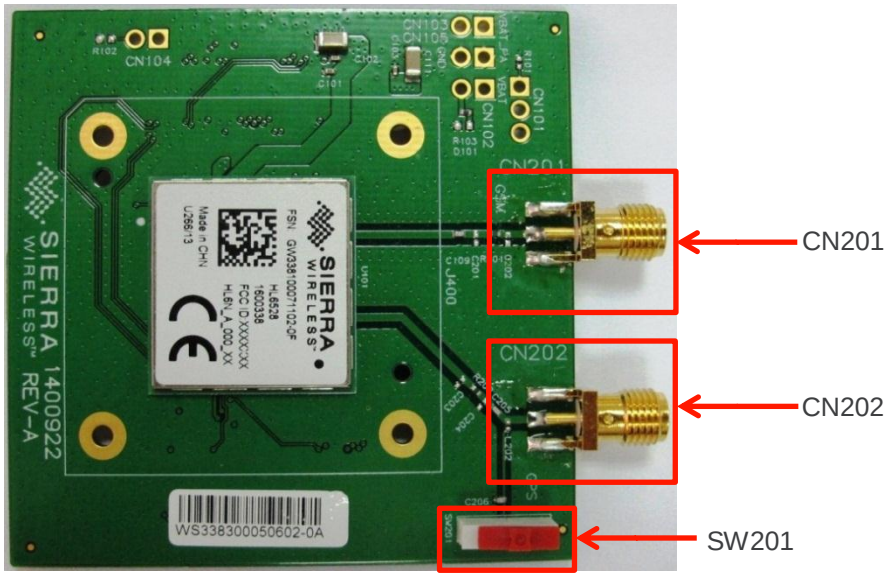


Figure 3. AirPrime HL6528x Socket Board (with an HL6528 embedded module)

Refer to the following table for more information about the connectors and switches available on the HL6528x socket board.

Table 5. AirPrime HL6528x Socket Board Connectors and Switches

Connector/Switch	Description
CN201	SMA connector for GSM antenna

Connector/Switch	Description
CN202	SMA connector for GNSS antenna
SW201	When switched to “GPS”, this enables the power supply for GNSS active antenna. Note that SW302 on the Development Kit must be switched to “GPS ACTIVE ANT SUPPLY ENABLE” and that CN305 is shorted with a jumper. Switch to “SW201” for passive antenna applications. (Note that SW201 is only relevant for HL6528-G and HL6528G-2.8V embedded module variants.)

2.3.2. HL8548x Socket Board

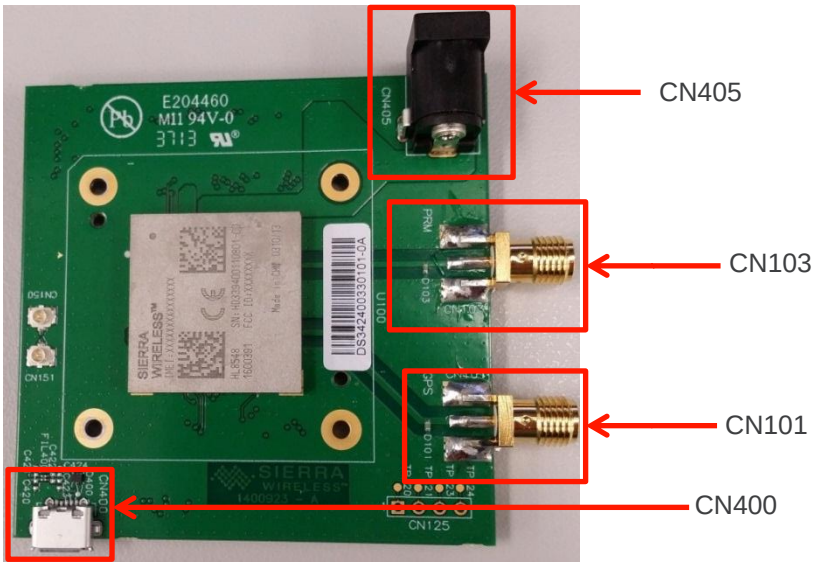


Figure 4. AirPrime HL8548x Socket Board (with an HL8548 embedded module)

Refer to the following table for more information about the connectors and switches available on the HL8548x socket board.

Table 6. AirPrime HL8548x Socket Board Connectors and Switches

Connector/Switch	Description
CN405	DC jack for VBATT input; provides a 3V2 to 4V5 DC input to the Socket Board (and embedded module), with peak current up to 2A
CN103	SMA connector for primary (GSM) antenna
CN101	SMA connector for GPS antenna
CN400	Micro AB USB connector

For more information about the HL8548x Socket Board, refer to document [4] AirPrime HL8548x Socket Board User Guide

2.4. Special Solder for Jumper Solder Pads

Jumper solder pads are used for interfaces and peripherals that can be disconnected electrically.

To connect signals between the embedded module and the dedicated connector on the HL Series Development Kit, solder these jumper pads.

Figure 5. Jumper Solder Pad

Interfaces and peripherals that may be electrically disconnected via jumper solder pads include:

- Module Detection Circuit (from TP500 to TP503)
- PWM1 (from TP800 to TP801)
- PWM2 (from TP802 to TP803)

3. Interfaces

3.1. Power Supply

Two power supply sources are available on the HL Series Development Kit:

- DC jack (via CN402)
- LABO connector (via CN401/CN400)

Figure 6. Power Supply Connector (CN402, CN401 and CN400)

Either power supplies can be used to supply the development kit, or they can be used to supply power to VBAT_BB and VBAT_RF separately depending on CN403 and CN404's jumper configuration. Refer to the following diagram for possible configuration settings.

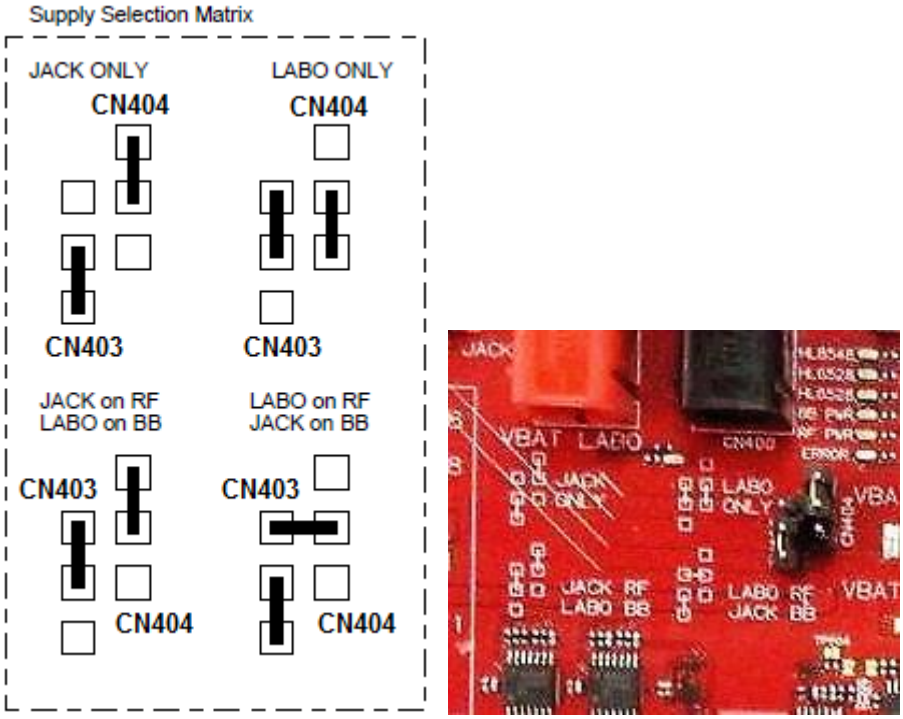


Figure 7. Power Source Selection (schematic diagram and actual development kit picture)

Other interfaces on the development kit are powered by VBAT, which is connected to VBAT_BB through CN405 (refer to Figure 15 Jumper for Supplying the Development Kit Interfaces Separately for the location of CN405).

3.2. Control Functions

3.2.1. Power ON/OFF

Once the HL Series Development Kit is connected to an external source, the HL module will start monitoring the ON/OFF pin for a power on event. A power on event can be triggered by either:

- Pressing pushbutton SW601 once for approximately 2 seconds, or by
- Shorting CN601.1 and CN601.2

Note that shorting CN601.1 and CN601.2 bypasses the POK_IN signal which means that the development kit will be powered on as soon as it is connected to an external source (without needing to press pushbutton SW601).

The module can be powered off by disconnecting the development kit from the power source or by issuing the appropriate AT command. For more information about AT commands, refer to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide.

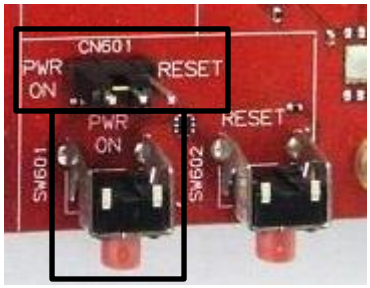


Figure 8. PWR ON Pushbutton and CN601 Jumper

Note: Do not put a jumper between CN601.2 and CN601.3. Doing this will cause the module to always reset. Refer to the following section for information about properly resetting the module.

3.2.2. ~RESET

The ~RESET pushbutton starts a general reset when it is pushed. Reset can only be executed after the module has been switched ON.

Note: An operating system reset is preferred to a hardware reset.

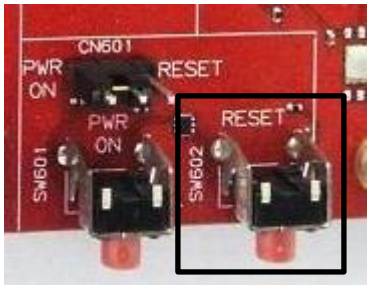


Figure 9. ~RESET Pushbutton

3.3. USB0

The HL Series modules provide an I^2C interface for NMEA package delivery, and an I^2C to USB transceiver is embedded on the HL Series Development Kit. The transceiver can be detected by the PC while the HL Series module is connected to the development kit.

For detailed information about the transceiver embedded on the development kit, refer to http://www.ftdichip.com/Products/ICs/FT201X.html.

3.4. Audio

A headset jack is available on the development kit which allows the HL series module to connect to an audio interface. For HL6528x embedded modules, switch SW1100 also allows audio selection from direct analog audio connection or PCM codec conversion output.

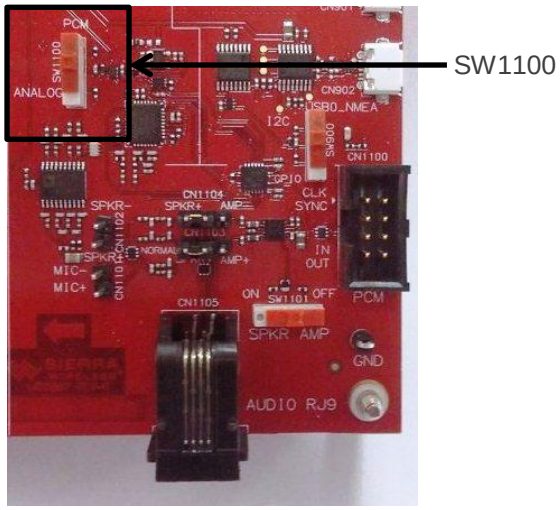


Figure 10. Audio Interface

Note: HL8548x does not support analog audio.

3.5. SIM

The HL Series Development Kit has two SIM connectors:

- SIM1 (CN800)
- SIM2 (CN802)

Figure 11. SIM Connectors

Note: Sierra Wireless recommends that SIM1 be used for single SIM applications.

To enable SIM1 insertion detection, short CN801 with a jumper.

To enable CN802 (SIM2) connector, short CN600 with a jumper. To enable SIM2 insertion detection, short CN803 with a jumper.

When using the HL8548x, the embedded SIM on the development kit board (U805) can be connected to the SIM1 interface of the embedded module by shorting CN804 with a jumper.

3.6. UART1

UART1 connection on the development kit is available from CN700, which is a SUB-D 9-pin female connector. This interface is used to communicate between an AirPrime HL series module and a PC or host processor.

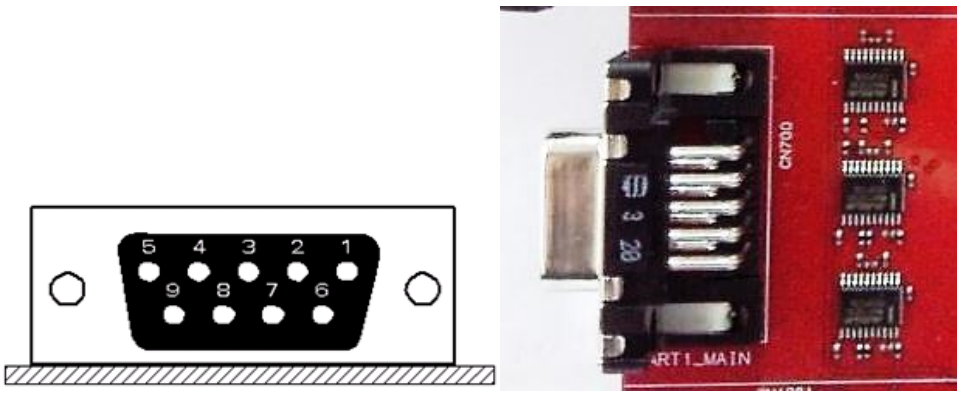


Figure 12. UART1 Connector

Refer to the following table for the UART1 connector pin description.

Table 7. Pin Description of the UART1 Connector

Pin #	Signal Name	I/O	I/O Type	Description
1	CT109 DCD	O	RS232 (V24/V28)	Data carrier detect
2	CT104 RXD	O	RS232 (V24/V28)	Receive serial data
3	CT103 TXD	I	RS232 (V24/V28)	Transmit serial data
4	CT108-2 DTR	I	RS232 (V24/V28)	Data terminal ready
5	GND			Ground
6	CT107 DSR	O	RS232 (V24/V28)	Data set ready
7	CT105 RTS	I	RS232 (V24/V28)	Request to send
8	CT106 CTS	O	RS232 (V24/V28)	Clear to send
9	CT125 RI	O	RS232 (V24/V28)	Ring indicator

3.7. UART0/SPI1

The UART0/SPI1 connector, CN602, is a SUB-D 9-pin female connector and is used for connecting the HL Series embedded module's debug port interface.

This interface is used for HL6528x "SpyTracer" debugging. For more information about SpyTracer debugging, refer to section 5.1 Getting SpyTracer Debugging Data.

When using the HL8548x, the operating mode of this connector can be set using SW603. When using an HL6528x module, the UART0 connector functions as an SPI to UART interface regardless of SW603's setting.

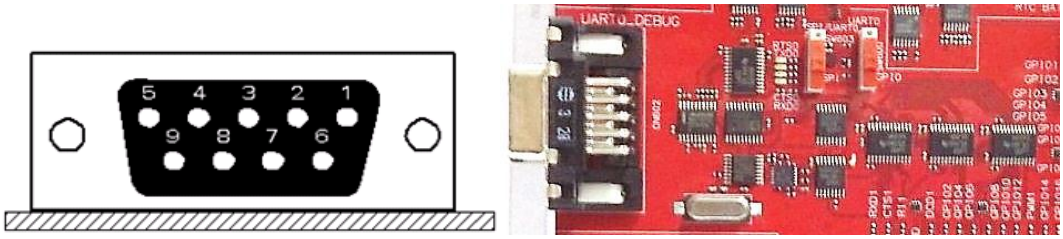


Figure 13. UART0 Connector

Refer to the following table for the UART1 connector pin description.

Table 8. UART0 Connector Pin Description

Pin #	Signal Name	I/O	I/O Type	Description
1	Not used*	-	-	-
2	CT104 RXD	O	RS232 (V24/V28)	Receive serial data
3	CT103 TXD	I	RS232 (V24/V28)	Transmit serial data
4	Not used*	-	-	-
5	GND			Ground
6	Not used*	-	-	-
7	CT105 RTS	I	RS232 (V24/V28)	Request to send
8	CT106 CTS	O	RS232 (V24/V28)	Clear to send
9	Not used*	-	-	-

* Only 4 signals are used.

3.8. GPIO Control

Two switch sets, SW1000 and SW1001, are available on the Development Kit for GPIO test purposes.

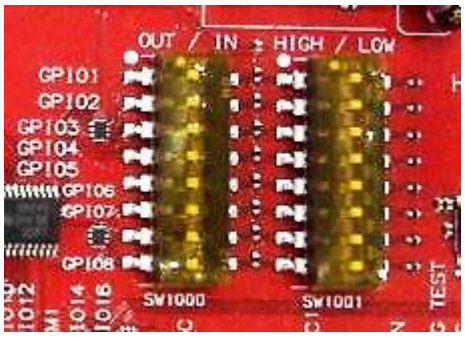


Figure 14. GPIOs Control Switches

SW1000 enables GPIO1 to GPIO8; while SW1001 enables these GPIOs to be connected to VIO either as 1kΩ pull ups or 100Ω pull lows.

GPIO settings can be set or reset using AT commands. For more information about AT commands, refer to document [1] AirPrime HL6 and HL8 Series AT Commands Interface Guide.

3.9. Current Measurement

To measure the current consumed by the HL series embedded module, disconnect CN405 and supply the Development Kit interfaces separately. Refer to the following figure for the jumper location.

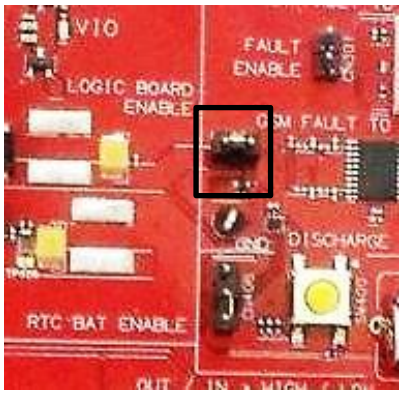


Figure 15. Jumper for Supplying the Development Kit Interfaces Separately

VBAT_BB and VBAT_RF can be measured separately or as a total current drain depending on the configurations of CN403 and CN404.

3.10. JTAG

Warning: *This interface is not available for customer use. Default configurations should not be tampered with.*

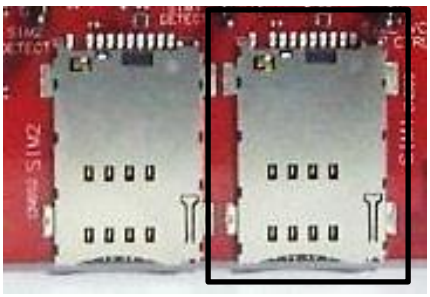
4. Getting Started with the HL Series Development Kit

This section describes how the AirPrime HL Series Development Kit is set up as well as describes communications testing, making calls and debugging with an embedded module.

4.1. Setting Up the Development Kit

Perform the following steps before powering the Development Kit on.

1. Ensure that switches and connectors are configured accordingly. By default, the development kit board is configured from the factory before shipment. Refer to Table 3 Available Connections for some of the board's default settings.
2. Connect an HL Series embedded module on to a compatible HL Socket Board.
3. Connect the HL Socket Board to the Development Kit.
4. Insert a SIM or USIM card in the SIM1 slot, CN800, if communications are required.



Note: SIM2 is optional in the HL6528x, and not applicable for the HL8548x.

5. Connect the HL module to the PC.

   For HL6528x, connect the RS232 cable between the PC port and CN700 of the Development Kit for UART1 connection.

   By default, baud rate = 115.2Kbps, data bits = 8, parity = N, and stop bits = 1.

Note: Although the HL8548x supports UART connections, it is highly recommended that a USB connection be used instead as UART may not be enabled by default in the firmware.

   For HL8548x, connect the USB cable between the PC port and CN400 on the HL8548x Socket Board.

   Refer to document [4] AirPrime HL8548x Socket Board User Guide for more information about the HL8548x Socket Board.

6. For HL6528x, connect a GSM antenna to CN201 of the socket board (as shown in the figure to the right).

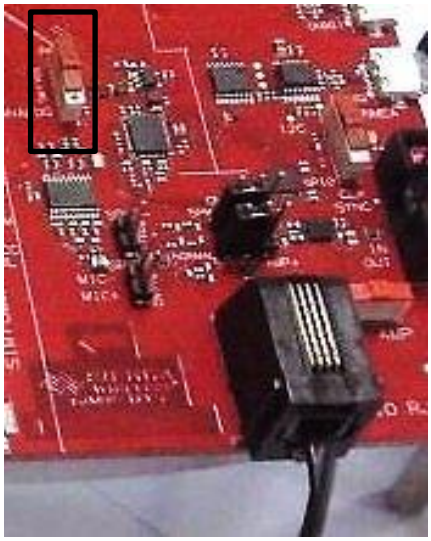
   For HL8548x, connect a GSM antenna to CN103 of the socket board.

7. For HL6528x, connect a GNSS antenna to CN202 of the socket board (as shown in the figure to the right).

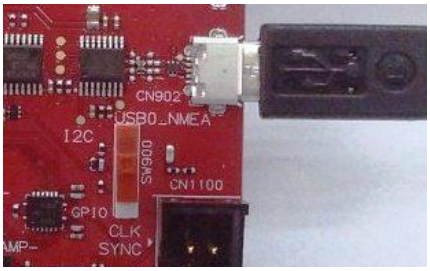
   For HL8548x, connect a GPS antenna to CN101 of the socket board.

8. Connect a handset to CN1105 for audio communications.

   For HL6528x, select either digital or analog audio via SW1100.

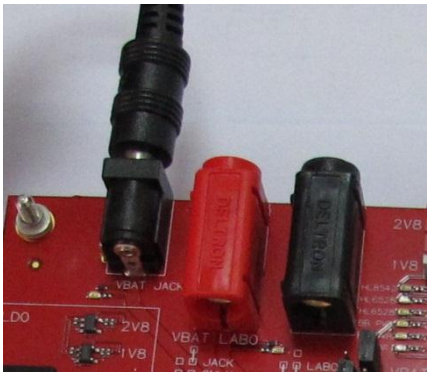


9. To get NMEA output, connect a USB cable to USB0.



10. Connect a 4V power supply unit to CN402.

Note: *Make sure that Pin 2 and Pin 3 of CN403, as well as Pin 1 and Pin 2 of CN402 are connected with a jumper when using a 4V power supply unit.*



Alternatively, a lab power supply can be connected to CN401 and CN400. (If using a lab power supply, it is recommended to set it to 3.7V with 4A output to prevent failure at power on.)

Note: *Make sure that Pin 1 and Pin 2 of CN403, as well as Pin 2 and Pin 3 of CN402 are connected with a jumper when using a lab power supply.*

The AirPrime HL Series Development Kit should look like the following figure after it has been properly set up.

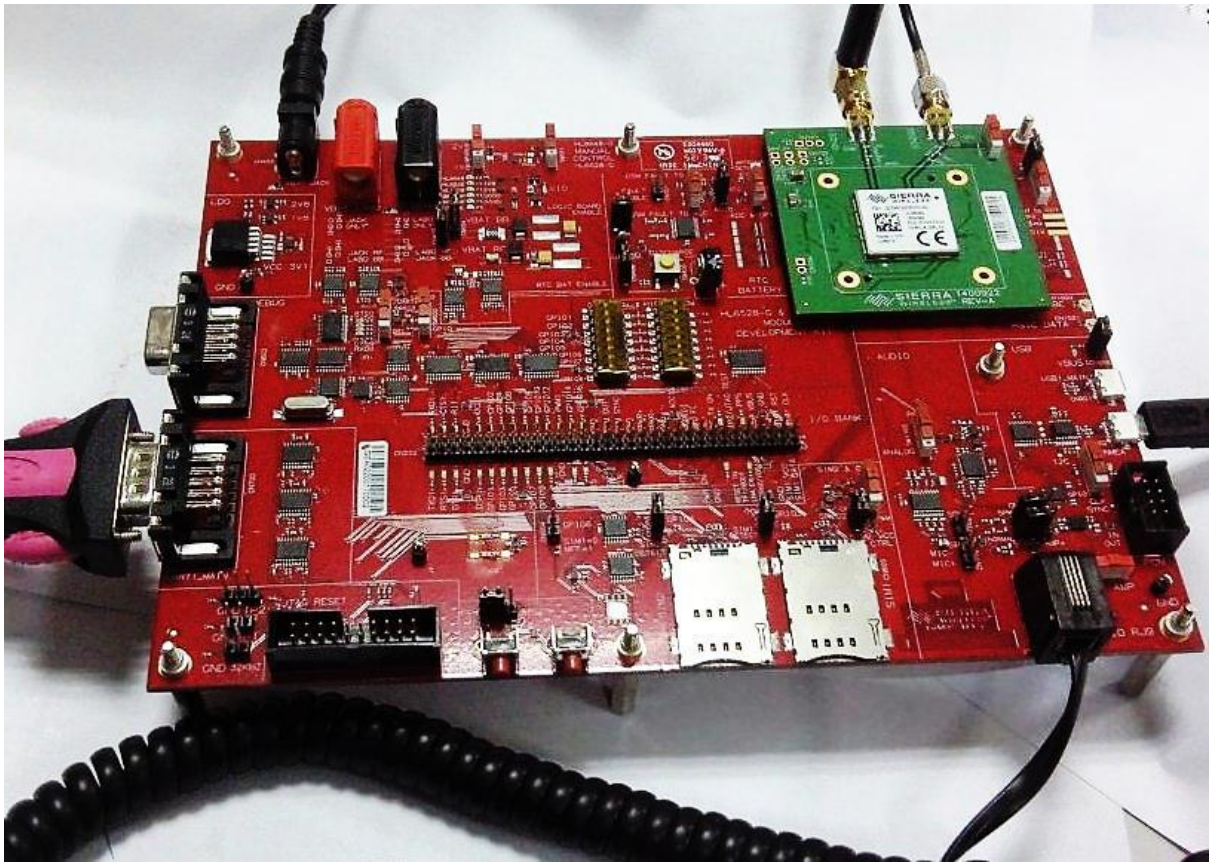


Figure 16. AirPrime HL Series Development Kit (with an HL6528x Socket Board and HL6528 Embedded Module)

4.2. Switching the Development Kit On

The Development Kit will automatically be powered on if Pin 1 and Pin 2 of CN601 are connected with a jumper. Otherwise, push SW601 for approximately 2 seconds to power on the Development Kit.

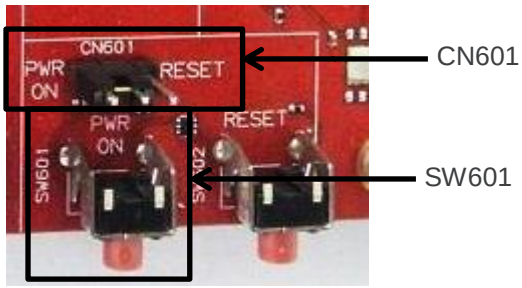


Figure 17. CN601 and SW601

Two green LEDs, D403 and D501, are lit when the Development Kit has been properly powered on and is ready for use.

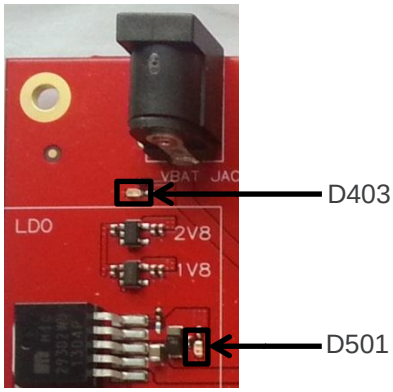


Figure 18. D403 and D501

4.3. Communicating with the Embedded Module

4.3.1. Configure the COM Port

Configure the COM port settings by selecting the port which is connected to the Development Kit and specifying the following port settings.

- Bits per second 115200
- Data bits 8
- Parity None
- Stop bits 1
- Flow control Hardware

Test communications using a PC terminal emulator (for example, HyperTerminal) by entering **AT**↵.
The module should answer with **OK**.

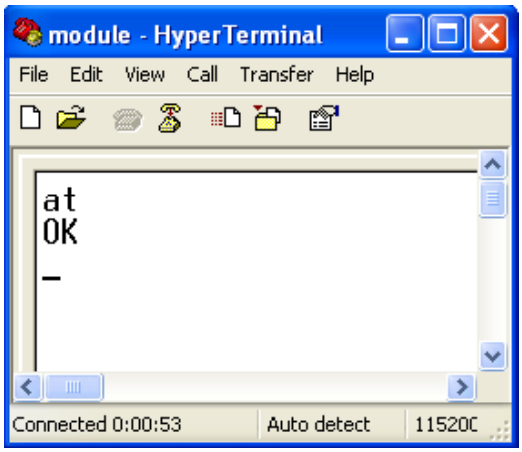
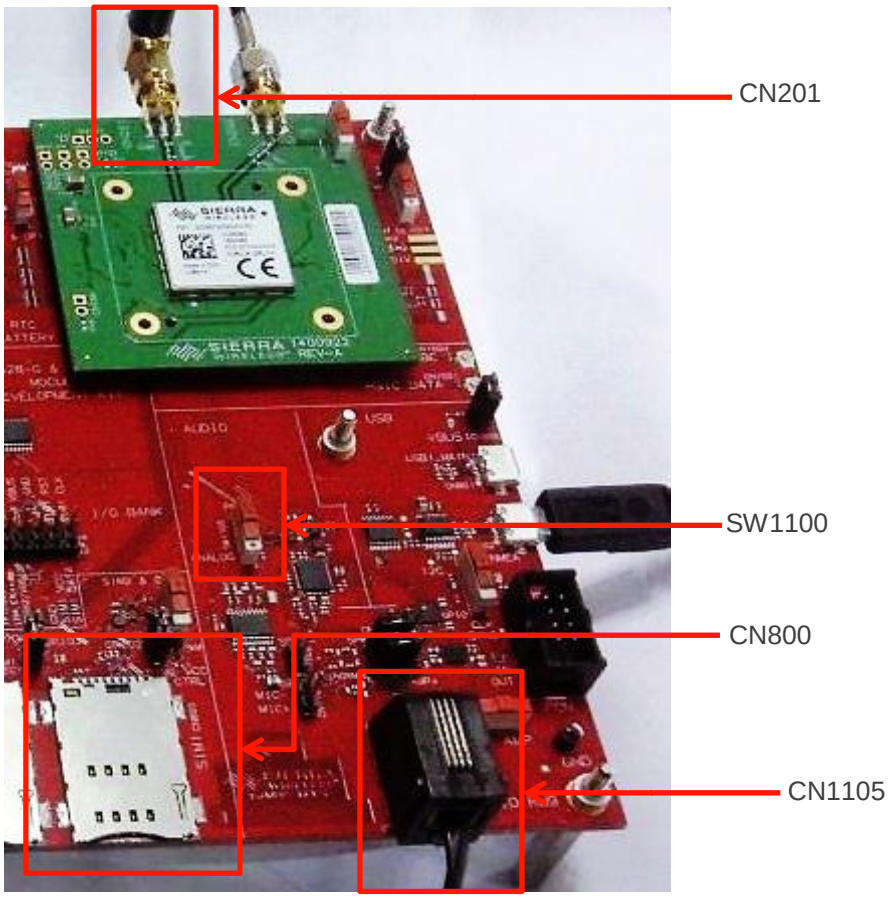


Figure 19. Communicating with the AirPrime HL6528x

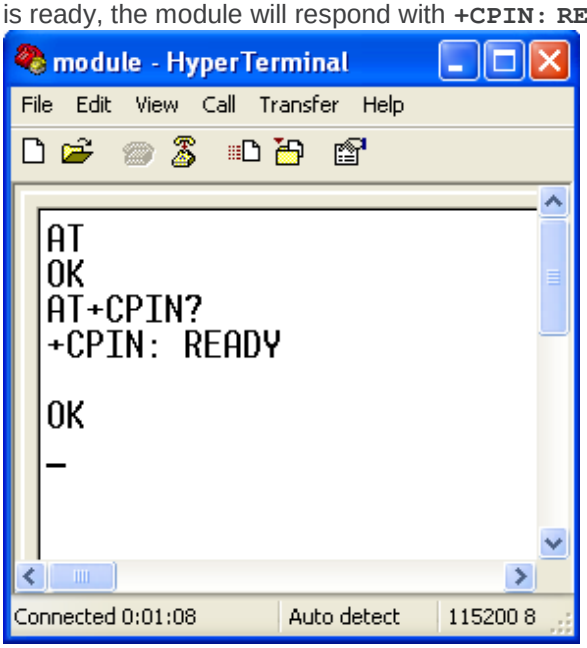
4.3.2. Make a Voice Call (for HL6528x only)

To make a voice call with the Development Kit, follow these steps.

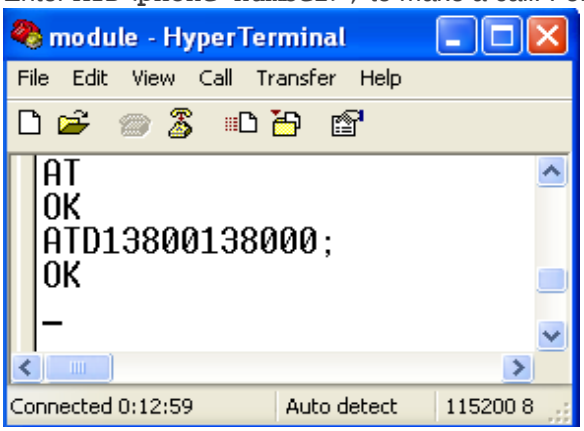
1. Ensure that:
   - a SIM card is inserted in SIM1 (CN800),
   - a GSM antenna is connected to CN201 on the socket board,
   - a handset is connected to CN1105, and
   - SW1100 is switched to “ANALOG”



2. From a PC terminal emulator (for example, HyperTerminal), input **AT+CPIN?**. If the SIM card is ready, the module will respond with **+CPIN: READY**, otherwise it will return **ERROR**.



3. Enter **ATD<phone number>;** to make a call. For example, enter **ATD13800138000;**.

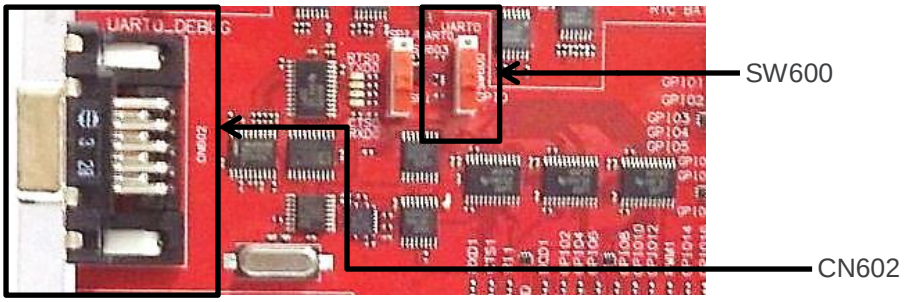


5. Other Hardware Settings (for HL6528x only)

5.1. Getting SpyTracer Debugging Data

To get SpyTracer debug data, ensure that:

- an RS232 cable is connected to UART0 (CN602), and
- SW600 is switched to “UART0”

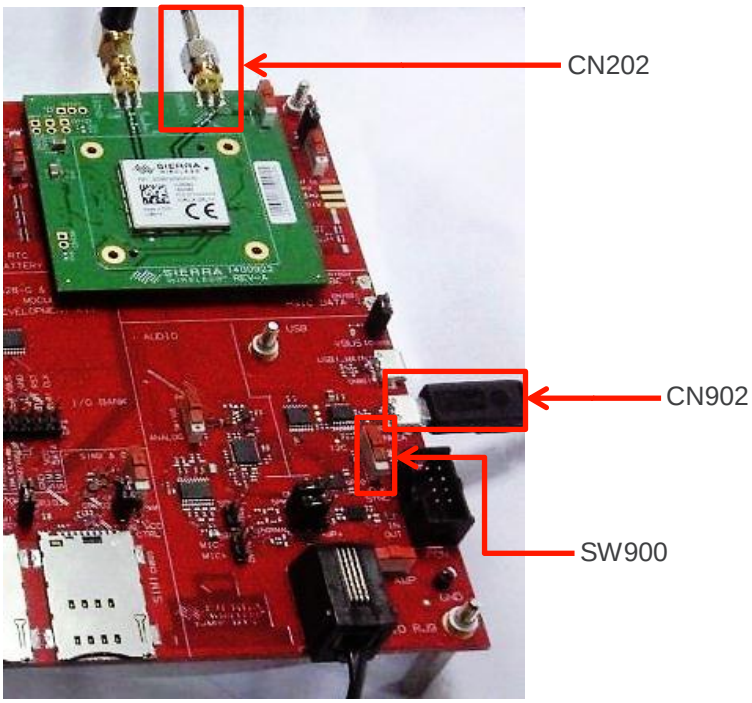


Refer to the SpyTracer guideline for more information to get debug logs.

5.2. Getting GNSS NMEA Output

To get GNSS NMEA output, ensure that:

- a GNSS antenna is connected to CN202 on the socket board,
- a micro USB cable is connected to USB0 (CN902), and
- SW900 is switched to “I2C”



6. Reference Documents

[1] AirPrime HL6 and HL8 Series AT Commands Interface Guide
Reference Number: 4114680

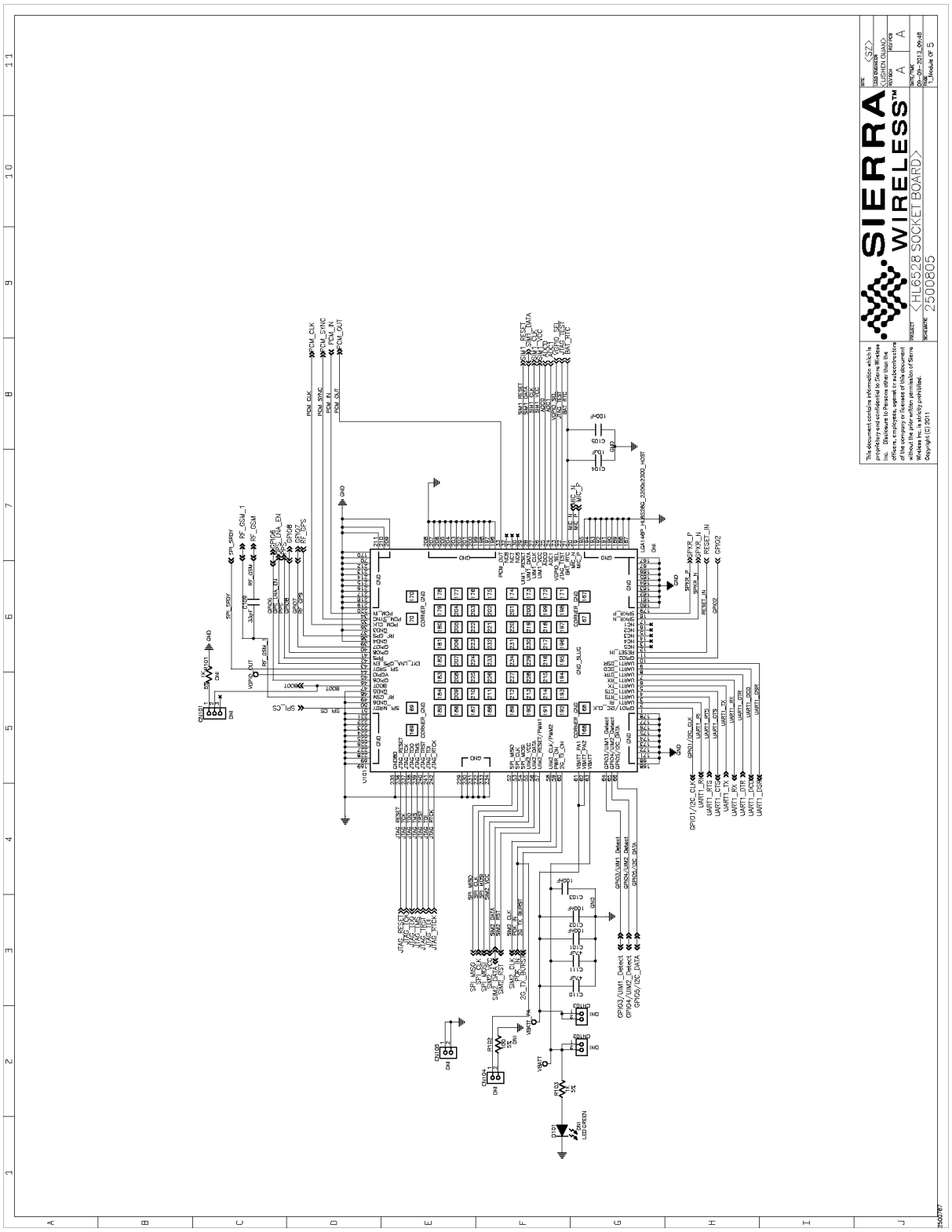
[2] AirPrime HL6528x Product Technical Specification
Reference Number: 4114016

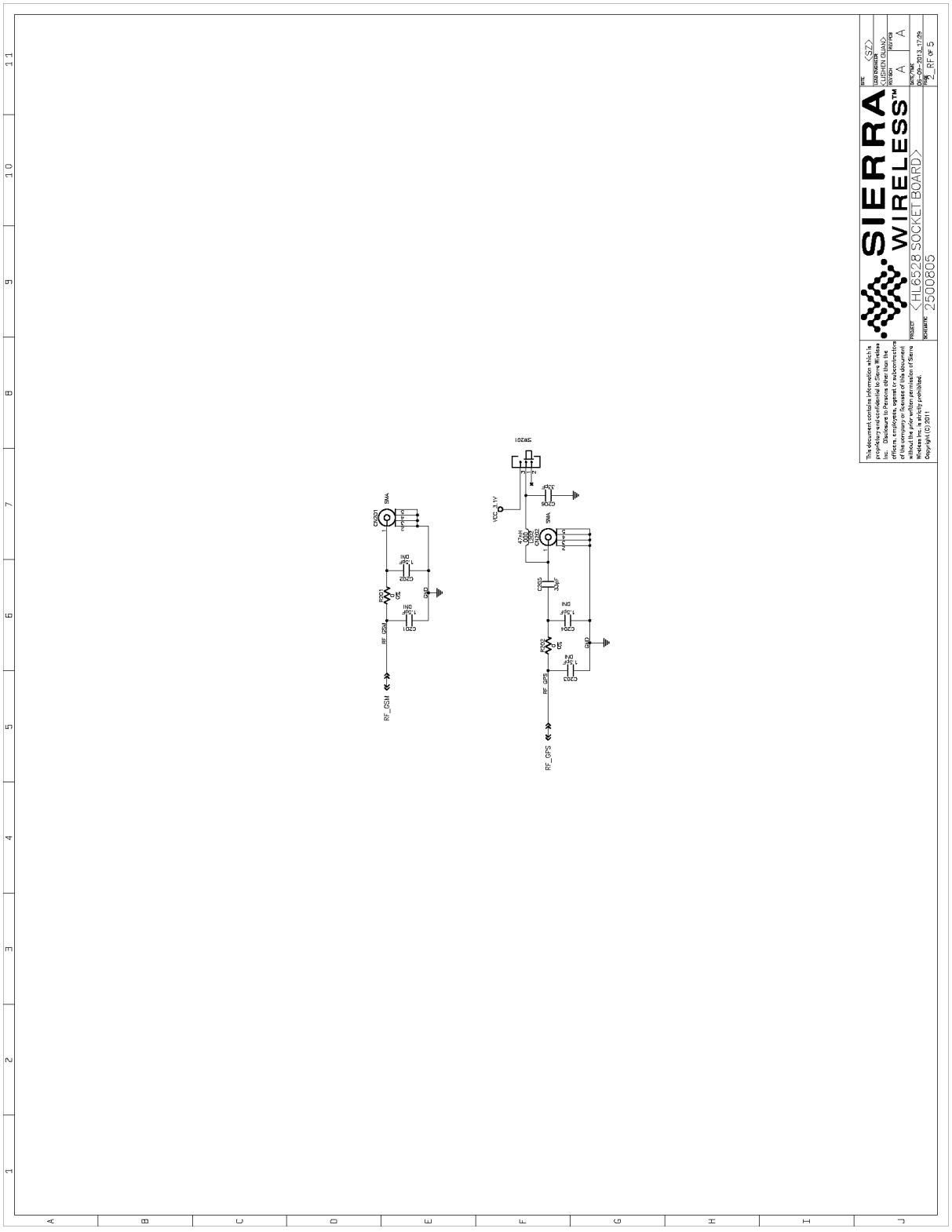
[3] AirPrime HL8548 and HL8548-G Product Technical Specification
Reference Number: 4114663

[4] AirPrime HL8548x Socket Board User Guide
Reference Number: 4114852

7. Schematic Diagrams

7.1. AirPrime HL6528x Socket Board

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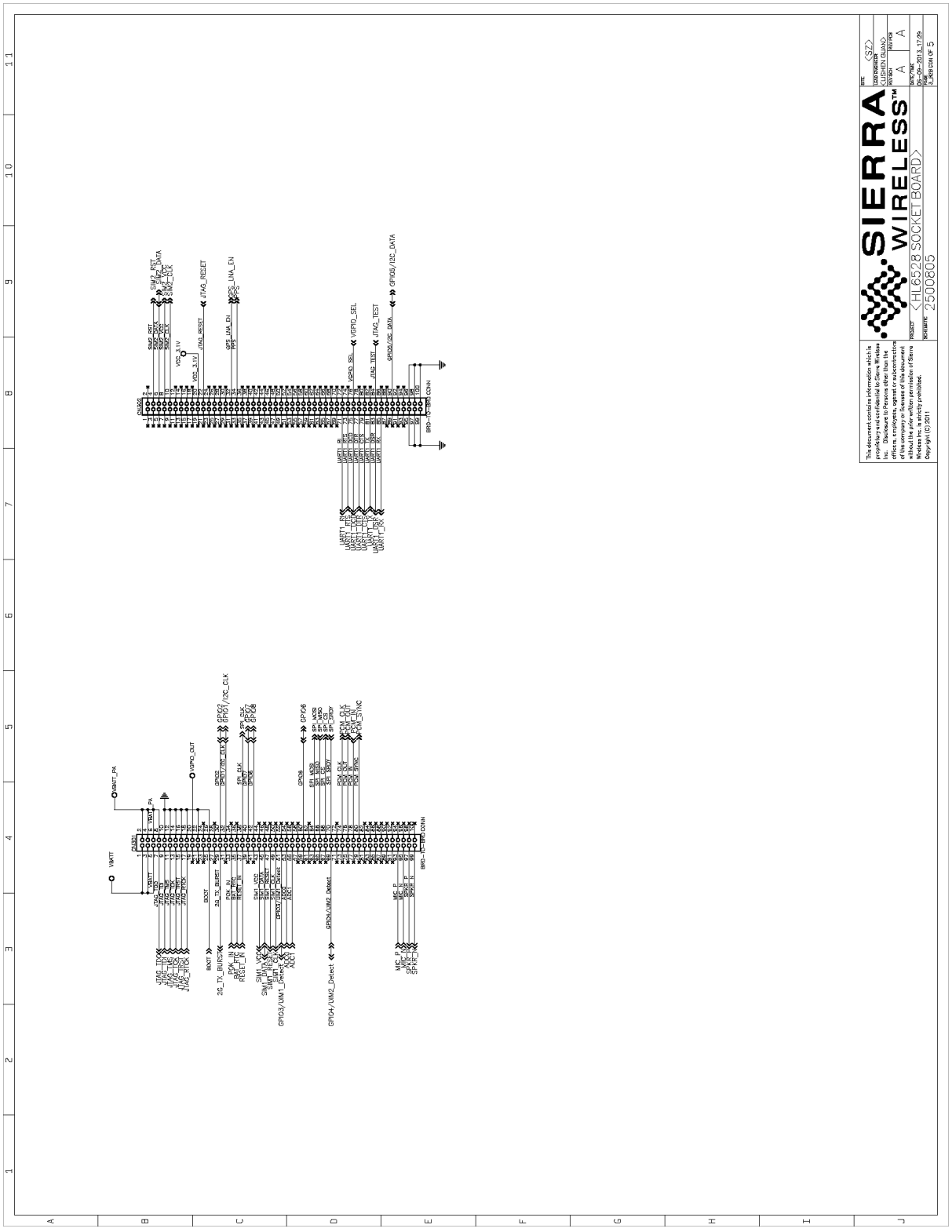
2500805
2_RF of 5
RF_GSM
RF_GPS
SW201
VCC_1V
GND


SIERRA WIRELESS
<HL6528 SOCKET BOARD>
2500805
<S2>
A
A
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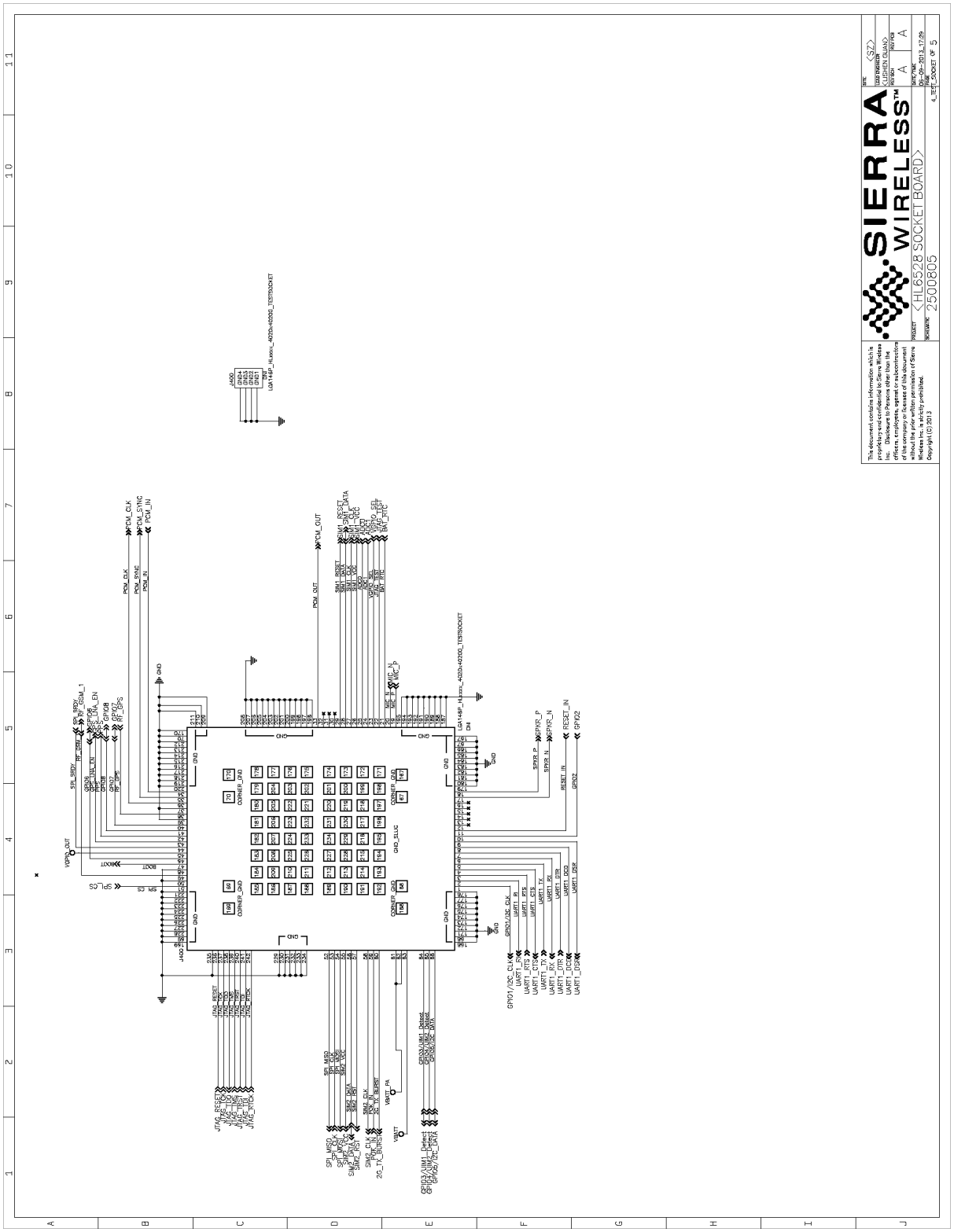
VBATT
VGPIO_OUT
GPIO6
GPIO7/I2C_CLK
GPIO5/I2C_DATA
VGPIO_SEL
JTAG_RESET
JTAG_TEST
SWD_RST
SWD_DATA
SWD_CLK
UART1_RX
UART1_TX
UART1_CTS
UART1_RTS
UART1_DCD
UART1_DTR
UART1_DSR
UART1_RI
SPI_MOSI
SPI_MISO
SPI_SCLK
SPI_SSRdy
PCM_CLK
PCM_OUT
PCM_IN
PCM_SYNC
MIC_P
MIC_N
SPKR_P
SPKR_N
GPIO4/UIM2_Detect
GPIO3/UIM1_Detect
BRD_TO_BRD_CONN


SIERRA WIRELESS™
<HL6528 SOCKET BOARD>
2500805
<S2>
A
A
4_TEST_SOCKET
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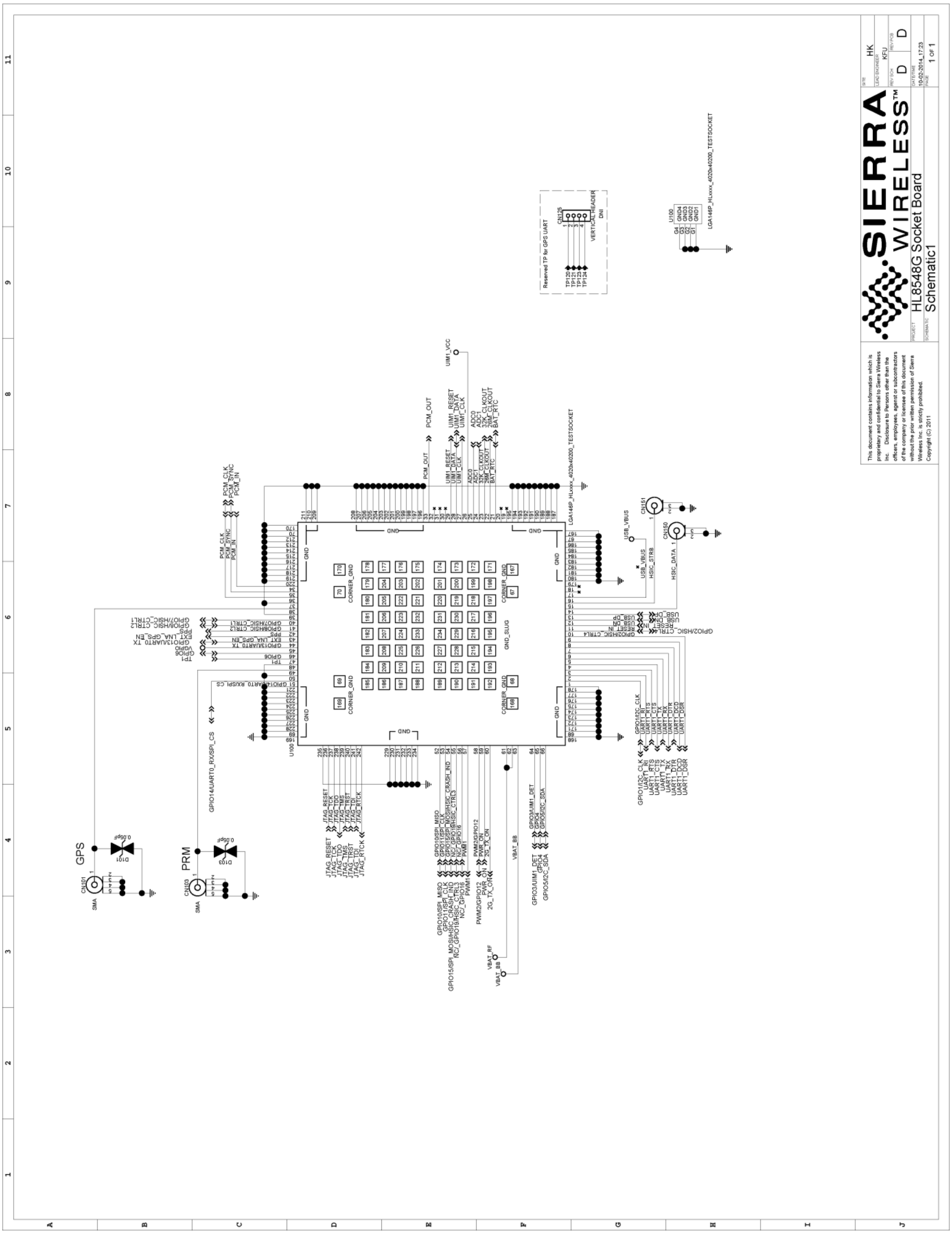
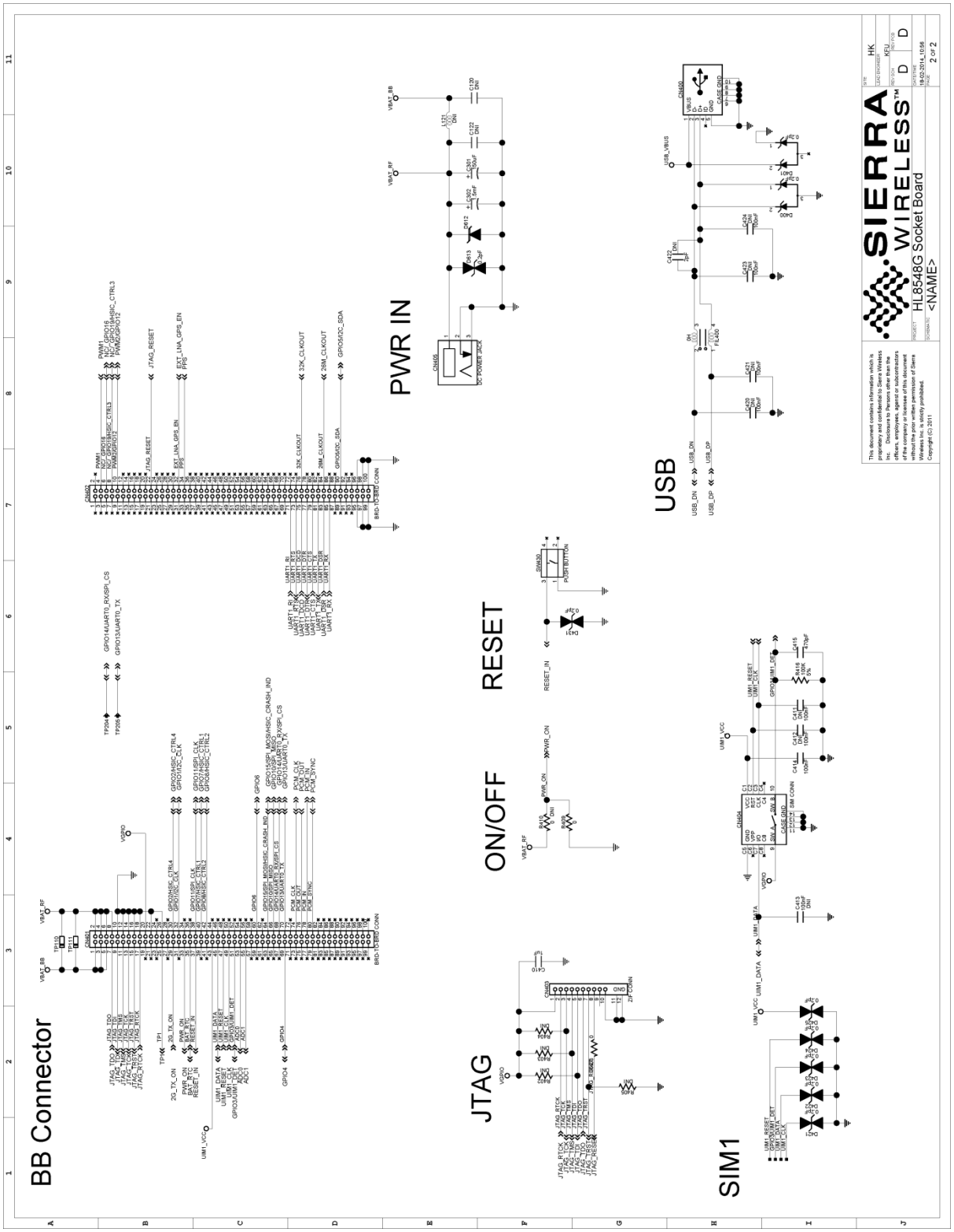
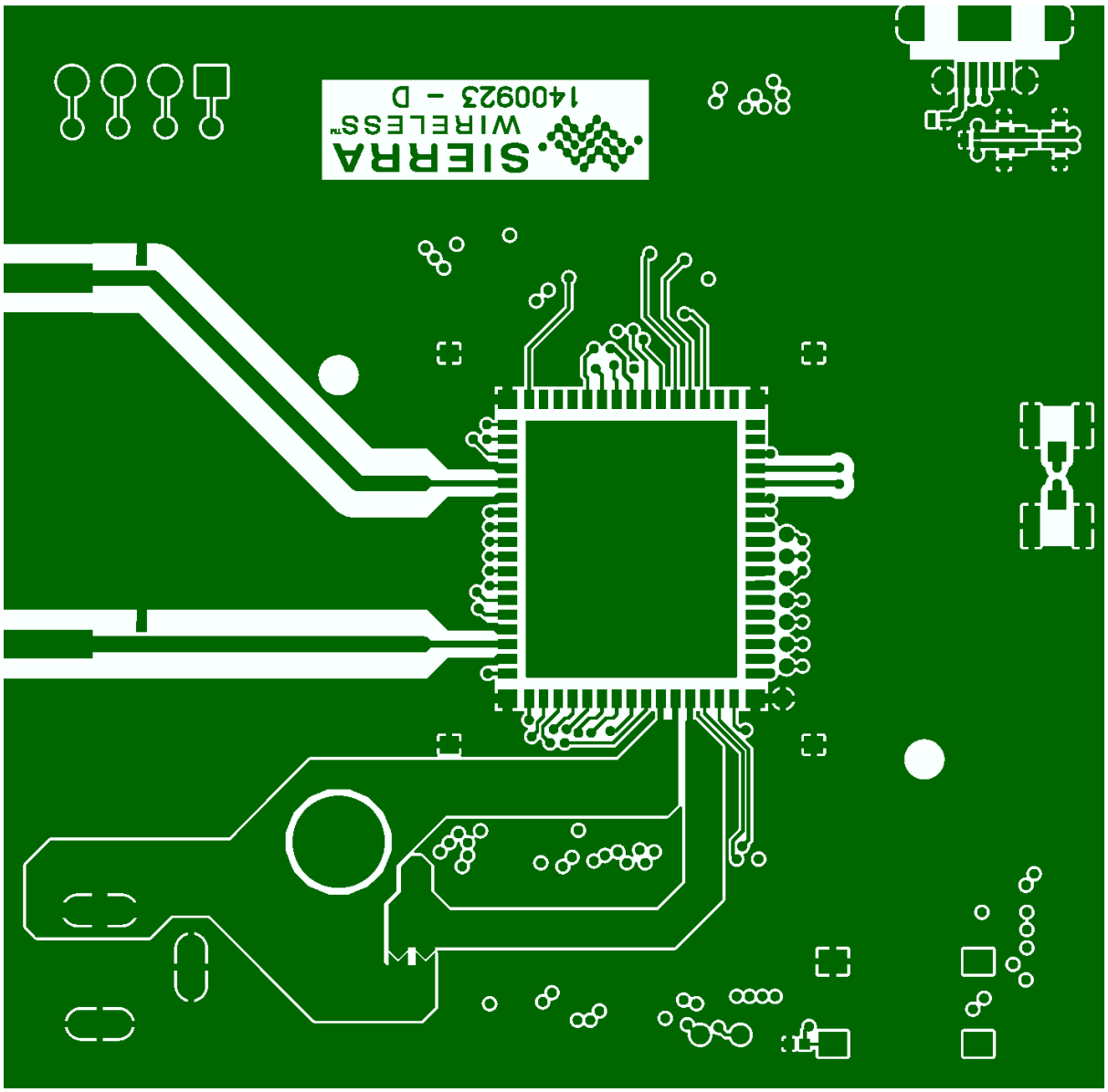
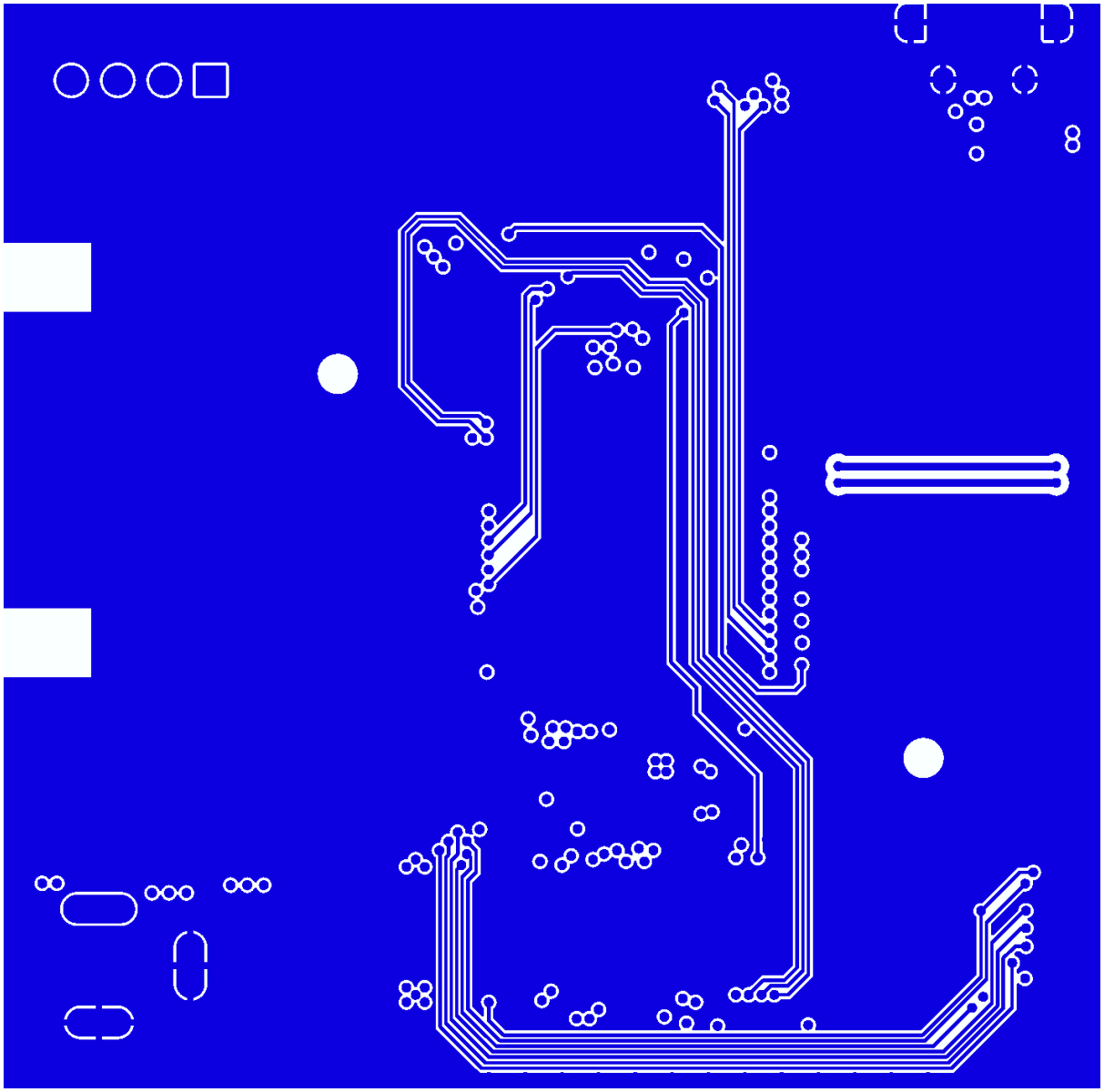
7.2. AirPrime HL8548x Socket Board

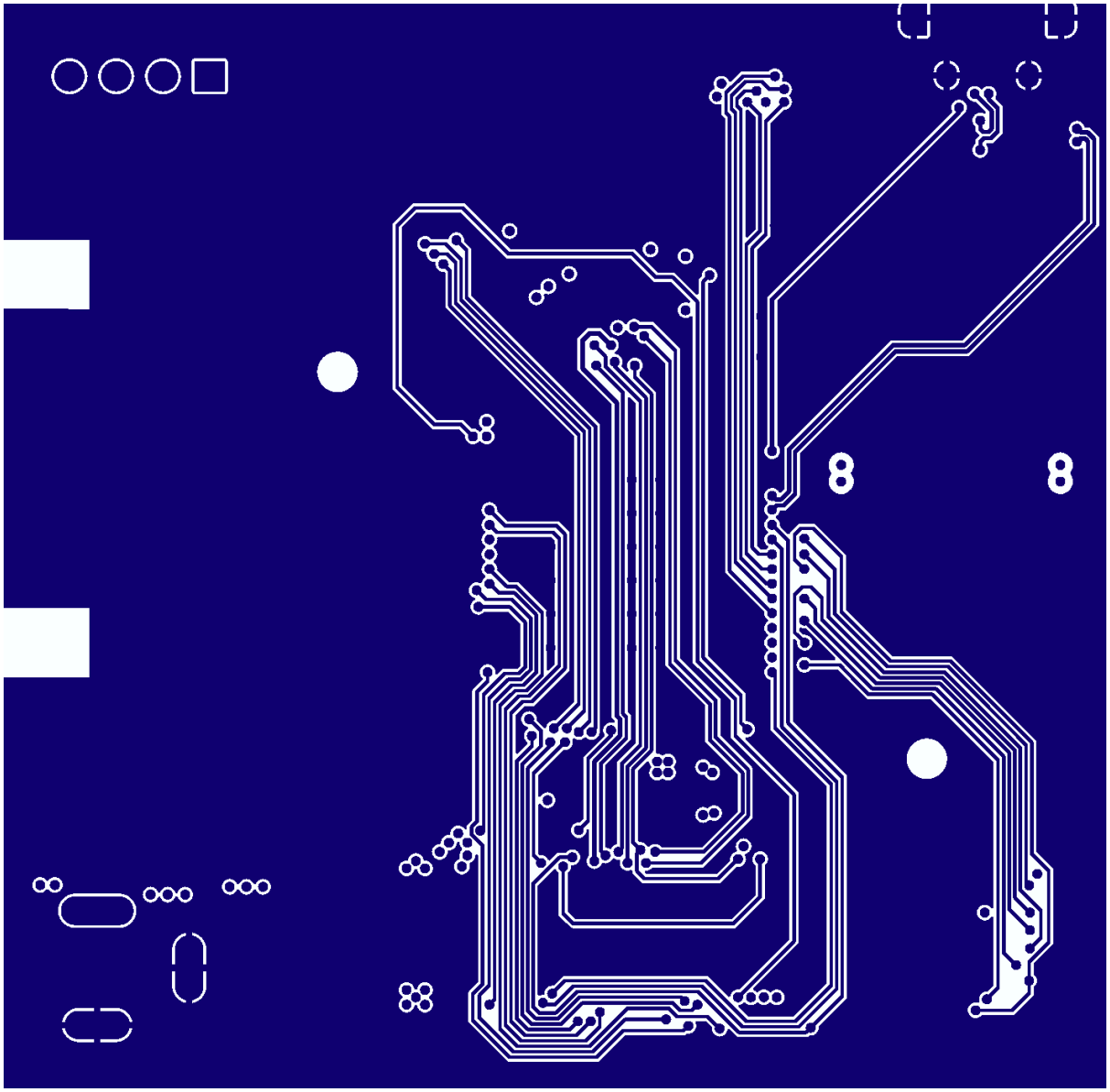


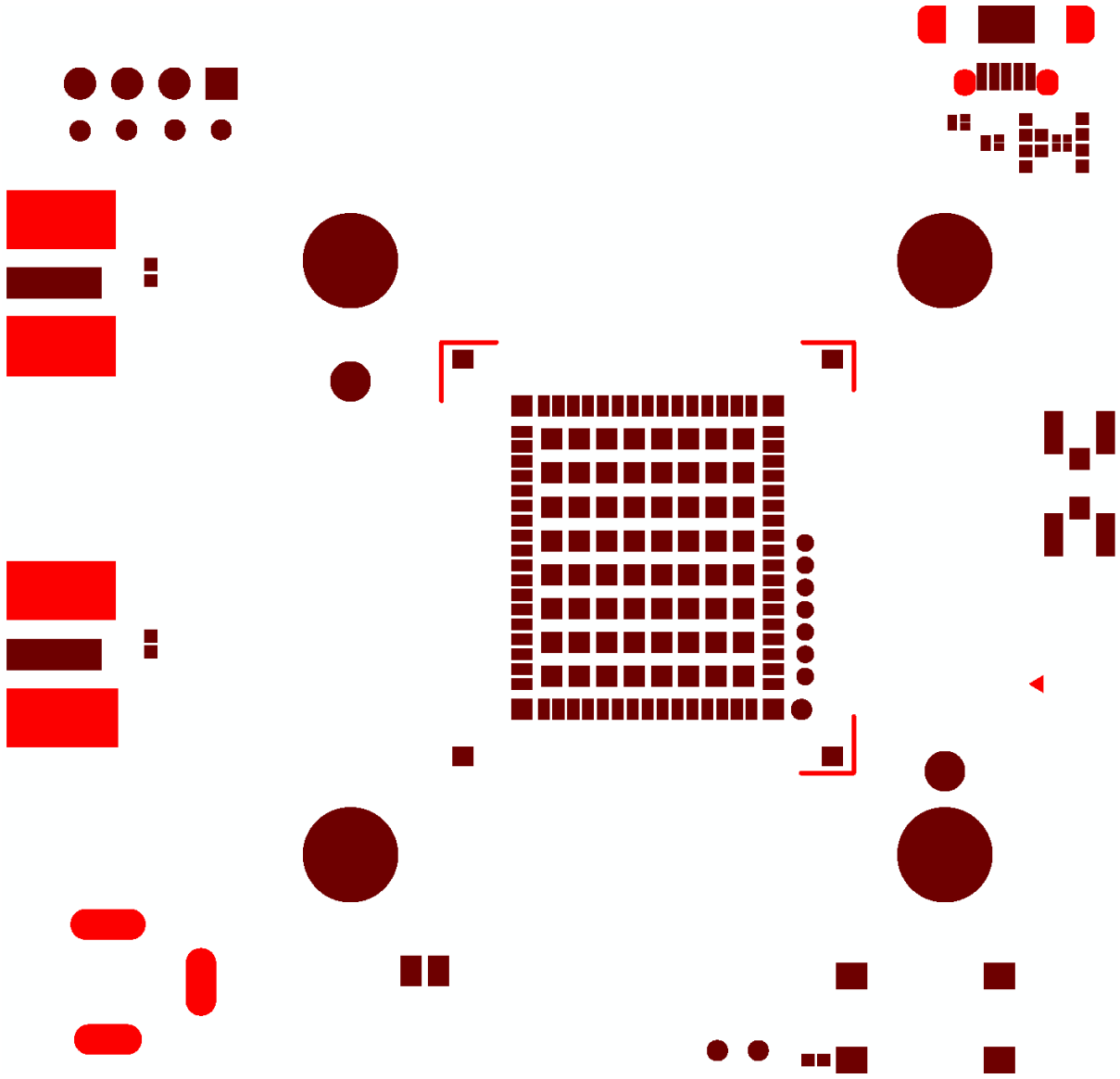

BB Connector
PWR IN
USB
RESET
ON/OFF
JTAG
SIM1
SIERRA WIRELESS™
HL8548G Socket Board
<NAME>
2 OF 2

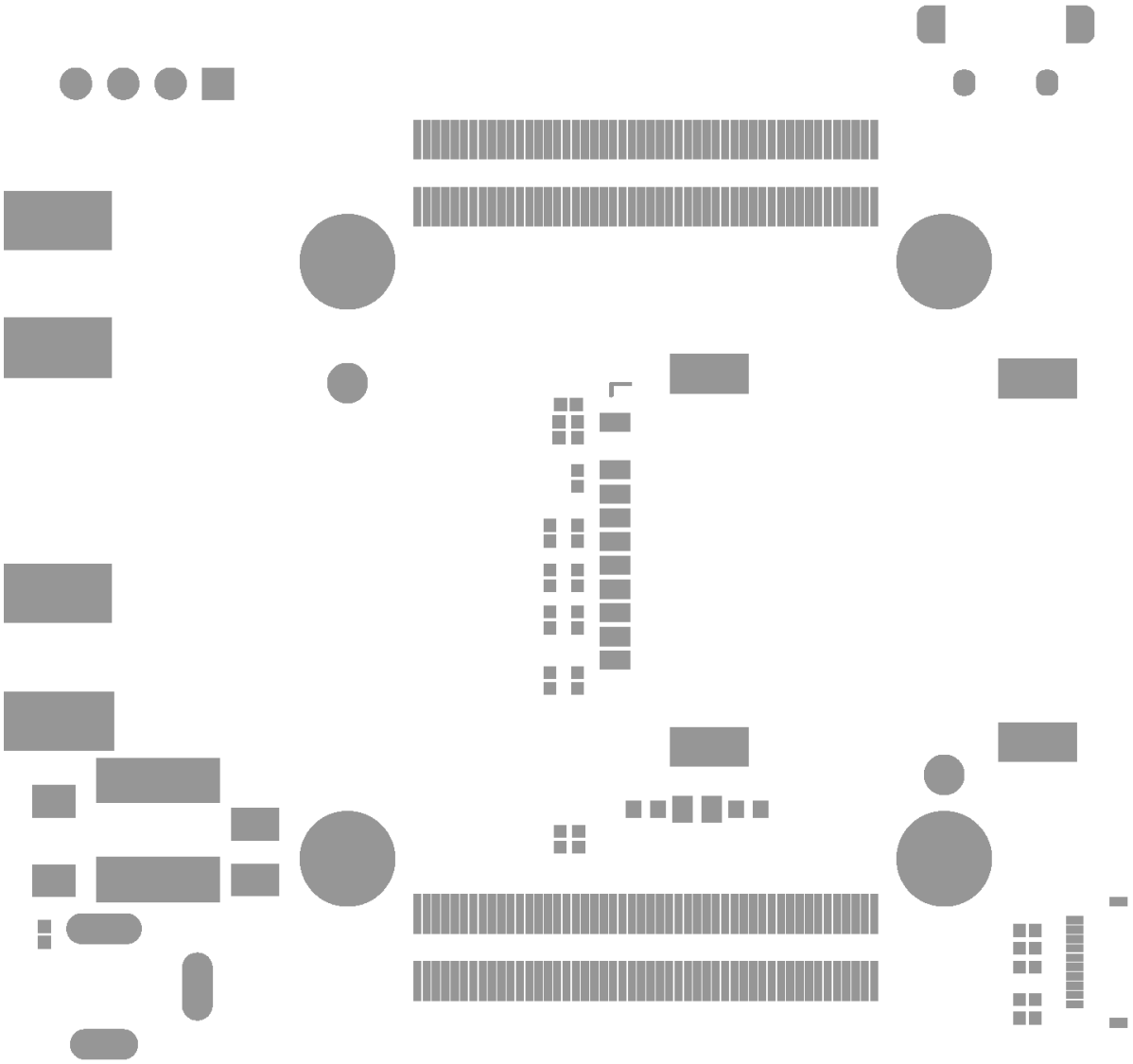
7.3. Socket Board Layout

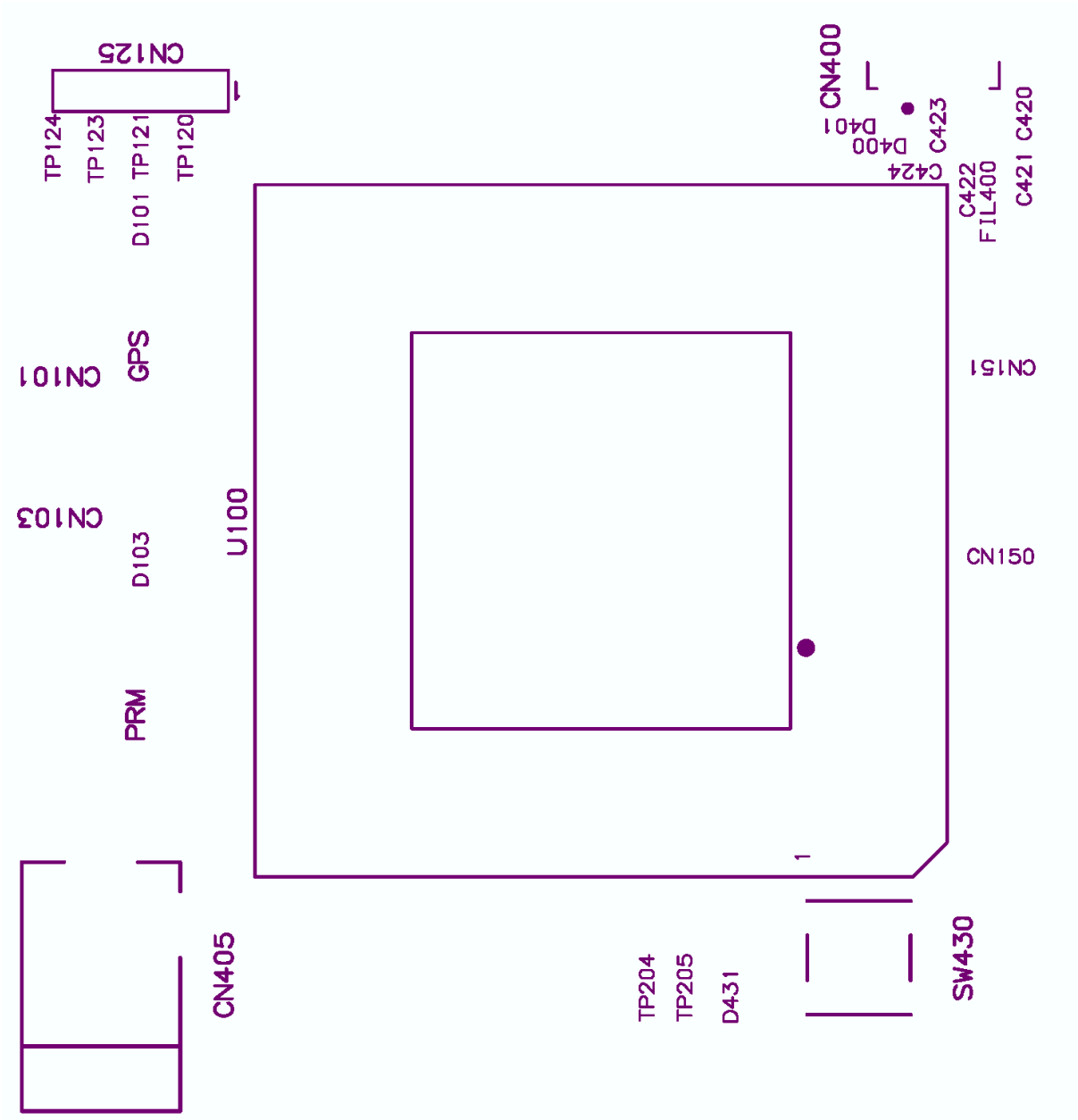


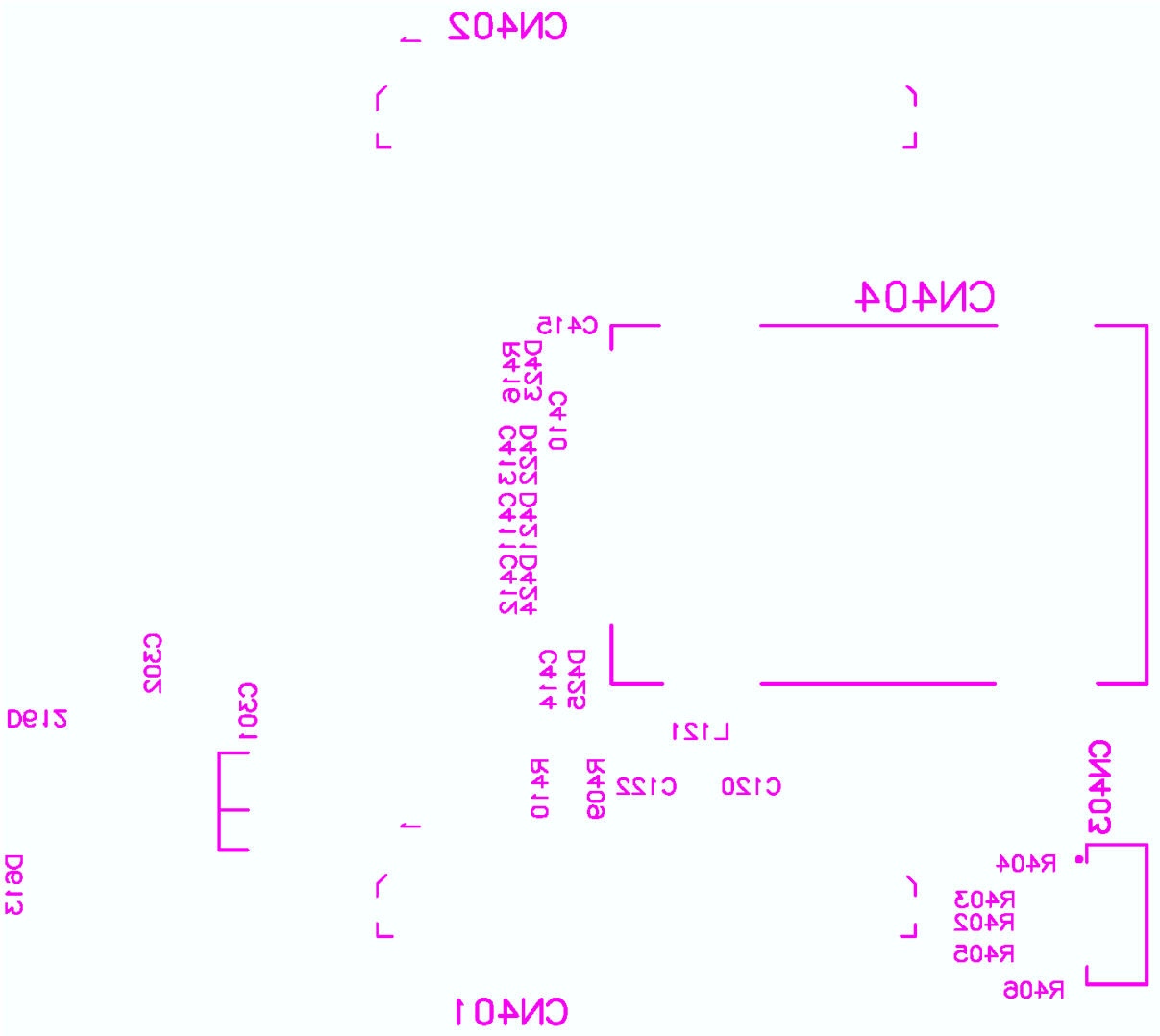









CN125
TP124
TP123
TP121
TP120
D101
CN400
D401
D400
C423
C424
C422
FIL400
C421
C420
GPS
CN101
CN151
CN103
D103
U100
CN150
PRM
CN405
TP204
TP205
D431
SW430


CN402
CN404
C415
R419
D432
C410
D422
C413
C411
D421
D424
D425
C414
L121
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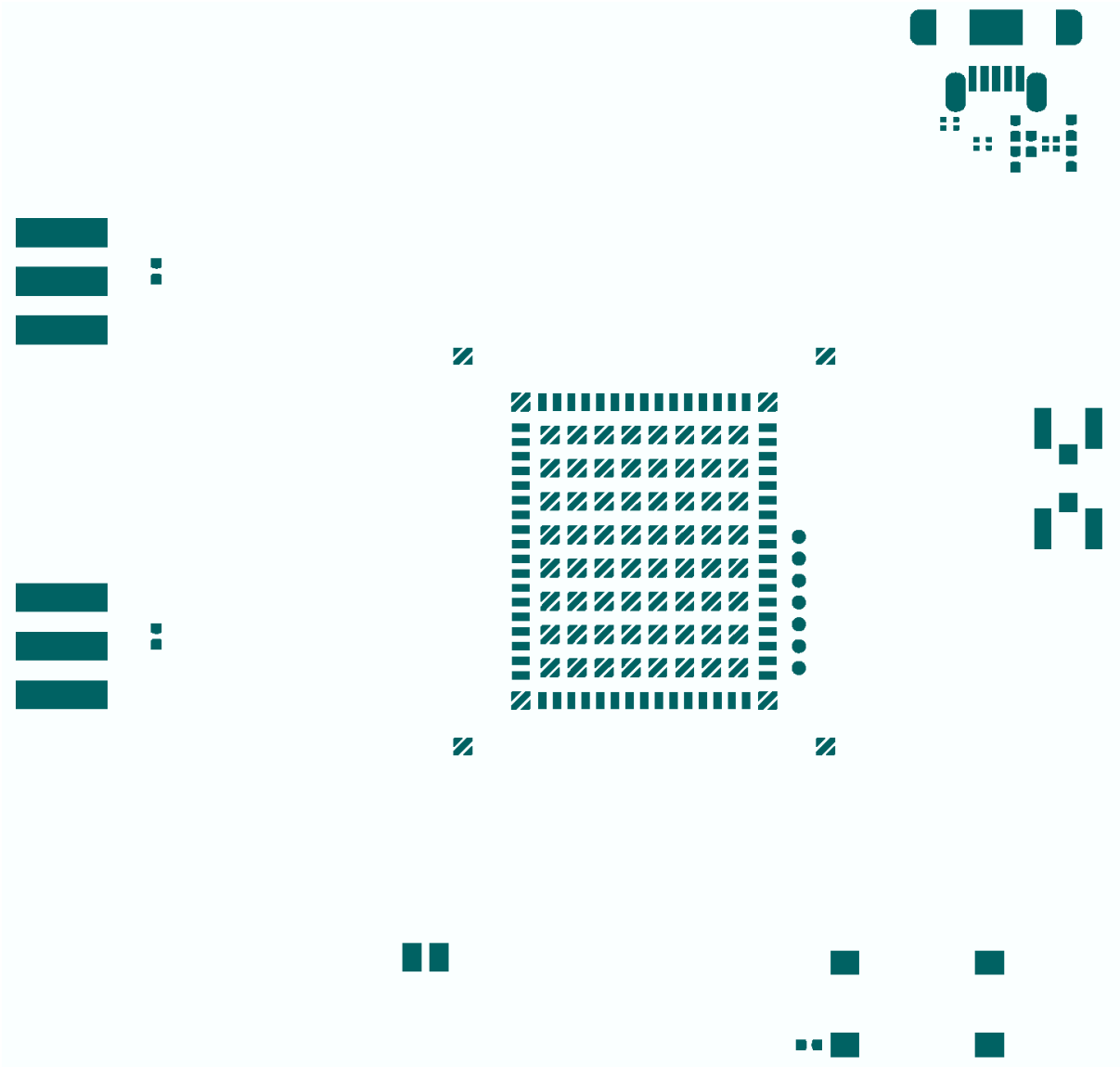
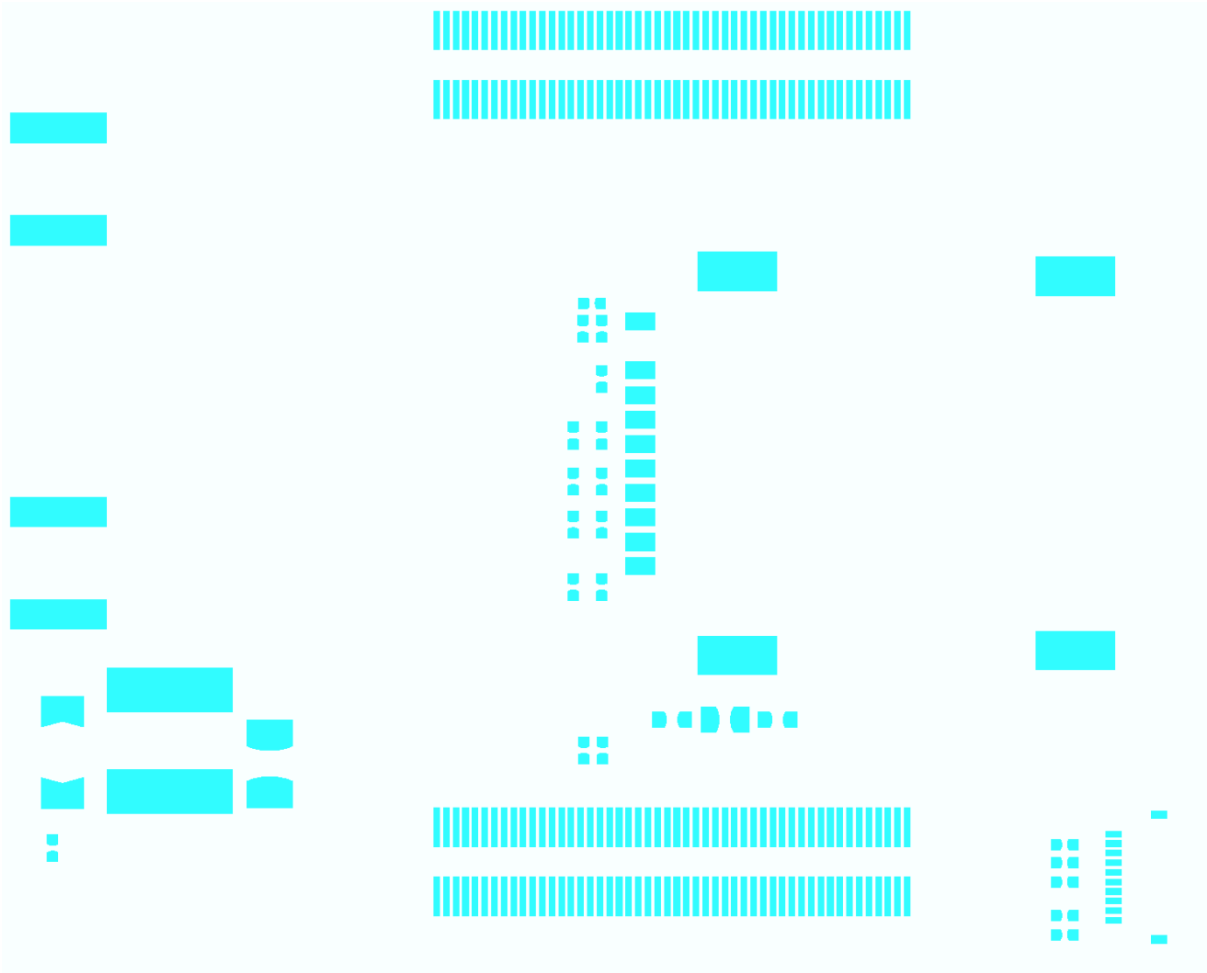
CN403
R404
R403
R402
R405
R406
CN401





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