WISMO Quik Q26 series

Development Kit Q2686 and Q2687 User Guide

Revision: 003
Date: February 2006

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Quik Q26 Series

Development Kit Q2686 and Q2687 User Guide

Reference : **WM_BBD_Q26_UGD_001**
Revision : **003**
Date : **20th February 2006**

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Document Information

Revision	Date	History of the evolution	
001	24 June 2005	Creation	
002	08 Sept 2005	Update for the development kit Q26 version2	
003	20 February 2006	Update for the development kit Q26 version3 - Add new § for the parallel bus interface (for Wireless CPU Q2687 only) - New GPIO for CHARGER LED. - New values around the AUDIO1 filters - Measure of current simplified - New schematics	

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Cautions

This Development Kit Q26 series integers 2 kind of Wireless CPU transmitter. These device is to be used only for mobile and fixed applications.

There are the Q2686 and Q2687 Wireless CPU, and they are pin to pin compatible:

- Q2686 Wireless CPU is a hardware GSM/GPRS class 10 capable.
- Q2687 Wireless CPU is a hardware GSM/GPRS class 12 and EDGE/GPRS class 10 capable.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. The antenna(s) used for this transmitter must not exceed a gain of 3 dBi for mobile operation and 7 dBi for fixed operation.

Users and OEM integrators must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance. OEM must also be provided with labeling instructions.

These devices contain EGSM/GPRS and EDGE functions (EDGE functions, only for Q2687 Wireless CPU) that are not operational in U.S. territories. This filing is applicable for GSM850 MHz, E-GSM900 MHz, DCS1800 MHz and PCS1900 MHz operations.

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Overview

This document is a description of the Development Kit for Quik Q26 Series wireless CPU based on a mother board V3 Ref. WM0402301-111-30.

This Development Kit is an equipment which can be used to start software and hardware development based on Q2686 and Q2687 Wireless CPU.

Refer to the documentation of the Q2686 and Q2687 Wireless CPU for further information.

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Reference documents

[1] MOTHER BOARD Development Kit Schematics and PCB, Release 3.0
Ref.: WM0402301-110-30.

[2] WISMO Quik Q2686 Product Technical Specification
Ref.: WM_PRJ_Q2686_PTS_001

[3] WISMO Quik Q2686 Customer Design Guideline
Ref.: WM_PRJ_Q2686_PTS_003

[4] Title AT Commands Interface Guide for revision X60.
Reference: WM_DEV_OAT_UGD_003.

[5] WISMO Quik Q2687 Product Technical Specification
Ref.: WA_PRJ_Q2687_PTS_001

[6] WISMO Quik Q2687 Customer Design Guideline
Ref.: WA_PRJ_Q2687_PTS_003

[7] Title AT Commands Interface Guide for revision X61.
Reference: WM_DEV_OAT_UGD_014.

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List of abbreviations

ADC	Analog to Digital Converter
AUX	AUXiliary
CLK	CLocK
CPU	Central Process Unit
CTS	Clear To Send
DAI	Digital Audio Interface
DC	Direct Current
DCD	Data Carrier Detect
DCE	Data Communication Equipment
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTR	Data Terminal Ready
ESD	ElectroStatic Discharges
GND	GrouND
GPI	General Purpose Input
GPIO	General Purpose Input Output
GPO	General Purpose Output
I/O	Input / Output
MIC	MICrophone
PC	Personal Computer
PCB	Printed Circuit Board.
PCM	Pulse Code Modulation
PWM	Pulse Width Modulation
RF	Radio Frequency
RI	Ring Indicator
RTC	Real Time Clock
RTS	Request To Send
RXD	Receive Data
SCI	Smart Card Interface
SIM	Subscriber Identity Module
SPI	Serial Peripheral Interface
SPK	SPeaKer

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TP	**T**est **P**oint
TXD	**T**ransmit **D**ata
USB	**U**niversal **S**erial **B**us

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1 Development Kit Q26 description

Refer to implementation.pdf file for further information about the component designation.

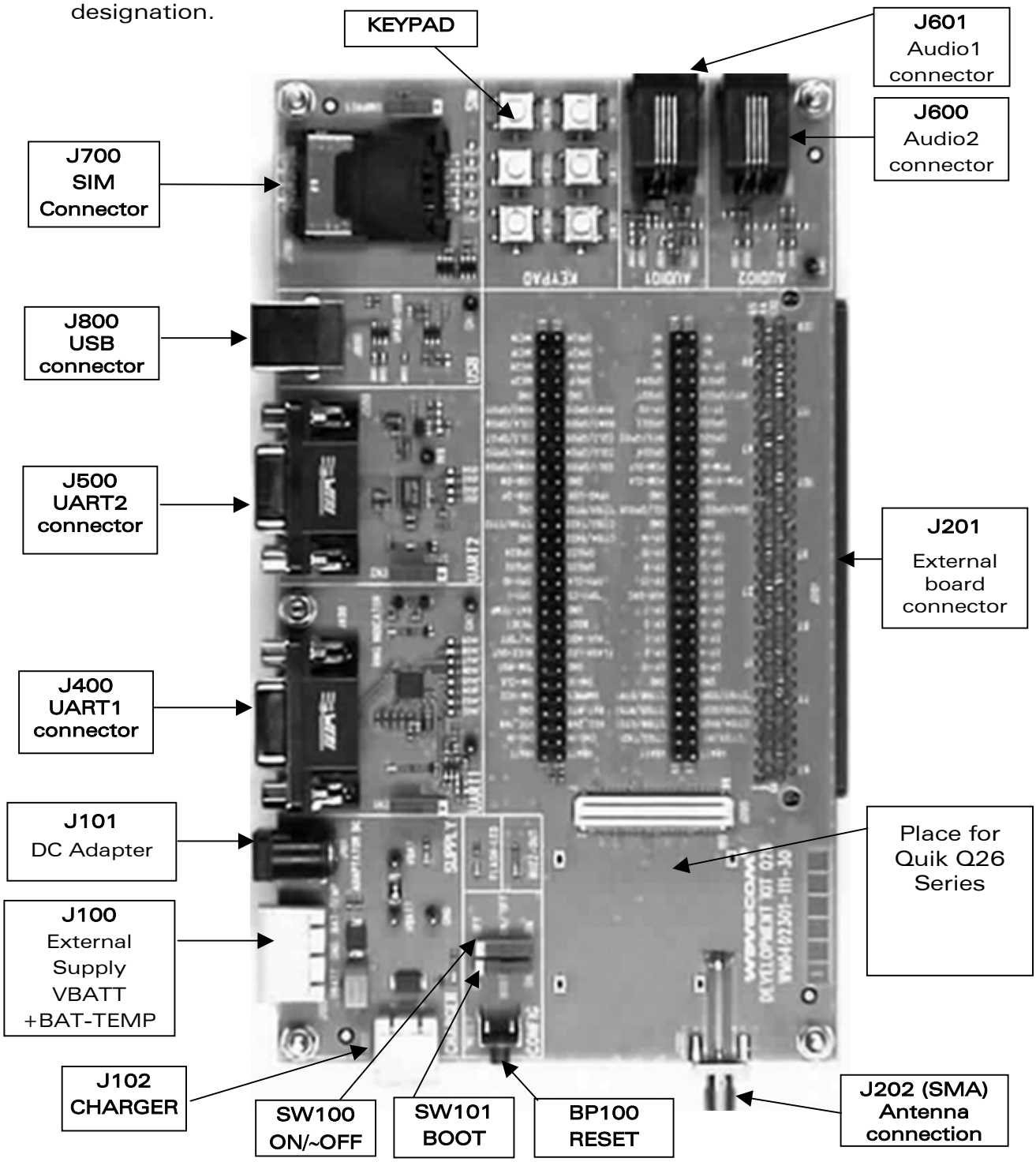

Figure 1: Development Kit Q26 - equipped board

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2 General description

2.1 Development Kit Q26

All functions of the Development Kit Q26 are provided by the Q2686 or Q2687 Wireless CPU.

Interfaces on board:

- 1 external board to board connector and TP to access all signals of the Wireless CPU.
- Parallel bus (only for the Q2687 Wireless CPU)
- Main serial link RS232, UART1(*) with full signals
- Ring Indicator
- Auxiliary serial link RS232, UART2* with 4 signals
- Slave USB*, compliant USB 2.0.
- SIM* 1.8/3v with gestion of Sim presence
- 6-button Keypad
- 2 AUDIO* connectors (AUDIO 1, AUDIO 2)
- LEDs for several indications
- RESET Pushbutton
- Power supply connectors
- ON/OFF switch
- BOOT switch
- Buzzer LED
- Flash LED
- Charger LED

(*) The particularity of the Development Kit Q26 it is that each signals peripheral can be electrically removed independently via special solder. (refer to § 2.2).

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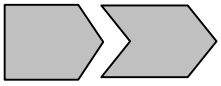
2.2 Special solder

The PCB print is used for the peripherals that are electrically removable.

To connect signals between the Quik Q26 series and the dedicated connector on the Development Kit Q26, solder these PCB print.

To connect signals between the Quik Q26 series and the external board connector (J201) it is recommended not to solder these PCB print. (i.e. prototyped a daughter board)



These interfaces are electrically removable via the "special solder":

- UART1 (from J402 to J409)
- UART2 (from J501 to J504)
- AUDIO1 (from J602 to J605)
- AUDIO2 (from J606 to J609)
- SIM (from J701 to J705)
- USB (from J801 to J803,signals plus power)
- Power supply of Development Kit (from J103, all components except the Wireless CPU).

2.3 RoHS compliance

The Quik Q26 Series and the Development Kit Q26 board are now compliant with RoHS (Restriction of Hazardous Substances in Electrical and Electronic Equipment) Directive 2002/95/EC 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)".

Wireless CPUs which are compliant with this directive are identified by the RoHS logo on their label.

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3 External board connector (J201) description

3.1 Q2686 and Q2687 Wireless CPU signals

All signals of the Q2686 and Q2687 Wireless CPU are connected to the external board connector (J201). and are available via TP on the center of Development Kit Q26. The pinout of J201 connector are listing below.

For further information about the Quik Q2686 Wireless CPU signals and multiplexing, refer to [2].

For further information about the Quik Q2687 Wireless CPU signals and multiplexing, refer to [5].

3.2 External board connector (J201)

Pin #	Name	I/O(*)	I/O type	Description
1	VBATT	I	Supply	Battery Input
2	VBATT	I	Supply	Battery Input
3	CHG-IN	I	Supply	Current source input
4	CHG-IN	I	Supply	Current source input
5	VCC_1V8	O	Supply	1.8V digital supply output
6	VCC_2V8	O	Supply	2.8V digital supply output
7	GND			
8	BAT-RTC	I/O	Supply	RTC back-up supply
9	SIM-VCC	O	Supply	SIM card supply
10	SIMPRES/ GPIO18	I	1V8	SIM card detect
11	SIM-CLK	O	1V8 / 2V9	SIM clock
12	SIM-IO	I/O	1V8 / 2V9	SIM data
13	~SIM-RST	O	1V8 / 2V9	SIM reset
14	GND			
15	BUZZ-OUT	O	Open drain	PWM / Buzzer output
16	FLASH-LED	O	Open Drain	Charging indicator
17	ON/ ~OFF	I	VBATT	Wireless CPU Power ON
18	AUX-ADC	I	Analog	Auxiliary ADC
19	~RESET	I/O	1V8	Wireless CPU Reset
20	BOOT	I	1V8	SW download (with a Wavecom software "DWLwin")

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Pin #	Name	I/O(*)	I/O type	Description
21	BAT-TEMP	I	Analog	ADC input for battery temperature measurement
22	GND			
23	SPI1-I / GPIO30	I	2V8	SPI1 Serial input (Multiplexed)
24	~SPI1-CS / GPIO31	O	2V8	SPI1 Enable (Multiplexed)
25	SPI1-IO / GPIO29	I/O	2V8	SPI1 Serial input/output (Multiplexed)
26	SPI1-CLK / GPIO28	O	2V8	SPI1 Serial Clock (Multiplexed)
27	SPI2-CLK / GPIO32	O	2V8	SPI2 Serial Clock (Multiplexed)
28	SPI2-CS / GPIO35	O	2V8	SPI2 Enable (Multiplexed)
29	SPI2-I / GPIO34	I	2V8	SPI2 Serial input (Multiplexed)
30	SPI2-IO / GPIO33	I/O	2V8	SPI2 Serial input/output (Multiplexed)
31	GND			
32	CT104-RXD2 / GPIO15	O	1V8	Auxiliary RS232 Receive Serial Data (According to PC view and Multiplexed)
33	~CT106-CTS2 / GPIO16	O	1V8	Auxiliary RS232 Clear To Send (According to PC view and Multiplexed)
34	CT103-TXD2 / GPIO14	I	1V8	Auxiliary RS232 Transmit Serial Data (According to PC view and Multiplexed)
35	GND			
36	~CT105-RTS2 / GPIO17	I	1V8	Auxiliary RS232 Request To Send (According to PC view and Multiplexed)
37	USB-DP	I/O	3V3	Differential data interface positive
38	VPAD-USB	I	3V3	USB power supply
39	USB-DM	I/O	3V3	Differential data interface negative
40	GND			

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Pin #	Name	I/O(*)	I/O type	Description
41	ROW0 / GPIO9	I/O	1V8	Row scan (Multiplexed)
42	COL1 / GPIO5	I/O	1V8	Column scan (Multiplexed)
43	ROW4 / GPIO13	I/O	1V8	Row scan (Multiplexed)
44	COL0 / GPIO4	I/O	1V8	Column scan (Multiplexed)
45	COL3 / GPIO7	I/O	1V8	Column scan (Multiplexed)
46	COL2 / GPIO6	I/O	1V8	Column scan (Multiplexed)
47	COL4 / GPIO8	I/O	1V8	Column scan (Multiplexed)
48	ROW3 / GPIO12	I/O	1V8	Row scan (Multiplexed)
49	ROW2 / GPIO11	I/O	1V8	Row scan (Multiplexed)
50	ROW1 / GPIO10	I/O	1V8	Row scan (Multiplexed)
51	GND			
52	GND			
53	MIC2P	I	Analog	Microphone 2 positive input
54	SPK1P	O	Analog	Speaker 1 positive output
55	MIC2N	I	Analog	Microphone 2 negative input
56	SPK1N	O	Analog	Speaker 1 negative output
57	MIC1P	I	Analog	Microphone 1 positive input
58	SPK2P	O	Analog	Speaker 2 positive output
59	MIC1N	I	Analog	Microphone 1 negative input
60	SPK2N	O	Analog	Speaker 2 negative output
61	NC			Not connected
62	NC			Not connected
63	NC			Not connected
64	NC			Not connected
65	NC			Not connected
66	VBATT	I	Supply	Battery Input
67	VBATT	I	Supply	Battery Input
68	CT103-TXD1 / GPIO36	I	2V8	Main RS232 Transmit Serial Data (According to PC view and Multiplexed)
69	~CT125-RI1 / GPIO42	O	2V8	Main RS232 Ring indicator (According to PC view and Multiplexed)
70	~CT106-CTS1 / GPIO39	O	2V8	Main RS232 Clear To Send (According to PC view and Multiplexed)

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Pin #	Name	I/O(*)	I/O type	Description
71	CT104-RXD1 / GPIO37	O	2V8	Main RS232 Receive Serial Data (According to PC view and Multiplexed)
72	~CT105-RTS1 / GPIO38	I	2V8	Main RS232 Request To Send (According to PC view and Multiplexed)
73	~CT109-DCD1 / GPIO43	O	2V8	Main RS232 Data Carrier Detect (According to PC view and Multiplexed)
74	~CT108-2-DTR1 / GPIO41	I	2V8	Main RS232 Data Terminal Ready (According to PC view and Multiplexed)
75	~CT107-DSR1 / GPIO40	O	2V8	Main RS232 Data Set Ready (According to PC view and Multiplexed)
76	GND			
77	GND			
78	EP17			(**)Depend of the Quik Q26 series
79	EP0			(**)Depend of the Quik Q26 series
80	EP2			(**)Depend of the Quik Q26 series
81	EP4			(**)Depend of the Quik Q26 series
82	EP1			(**)Depend of the Quik Q26 series
83	EP6			(**)Depend of the Quik Q26 series
84	EP3			(**)Depend of the Quik Q26 series
85	EP5			(**)Depend of the Quik Q26 series
86	EP7			(**)Depend of the Quik Q26 series
87	EP18			(**)Depend of the Quik Q26 series
88	AUX-DAC	O	2V2	DAC
89	EP15			(**)Depend of the Quik Q26 series
90	EP13			(**)Depend of the Quik Q26 series
91	EP11			(**)Depend of the Quik Q26 series
92	EP9			(**)Depend of the Quik Q26 series
93	EP12			(**)Depend of the Quik Q26 series
94	EP10			(**)Depend of the Quik Q26 series
95	EP8			(**)Depend of the Quik Q26 series
96	EP14			(**)Depend of the Quik Q26 series
97	EP16			(**)Depend of the Quik Q26 series
98	GND			
99	GND			

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Pin #	Name	I/O(*)	I/O type	Description
100	SCL / GPIO26	I/O	Open drain	Serial Clock / General purpose input-output
101	SDA / GPIO27	I/O	Open drain	Serial Data / General purpose input-output
102	GND			
103	GND			
104	PCM-CLK	O	1V8	Data clock
105	PCM-SYNC	O	1V8	Frame synchronization 8Khz
106	PCM-OUT	O	1V8	Data output
107	PCM-IN	I	1V8	Data input
108	GPIO24	I/O	2V8	General purpose input / output
109	GND			
110	INT0/ GPIO3	I/O	1V8	Interruption 0 / General purpose input-output
111	GPIO20	I/O	2V8	General purpose input / output
112	GPIO23	I/O	2V8	General purpose input / output
113	GPIO22	I/O	2V8	General purpose input / output
114	EP20	I/O	1V8	(**)Depend of the Quik Q26 series
115	EP21	I/O	1V8	(**)Depend of the Quik Q26 series
116	GPIO21	I/O	2V8	General purpose input / output
117	INT1/ GPIO25	I/O	2V8	Interruption 1 / General purpose input-output
118	GPIO44	I/O	2V8	General purpose input / output
119	GPIO19	I/O	2V8	General purpose input / output
120	NC			Not connected
121	EP19	I/O	1V8	(**)Depend of the Quik Q26 series
122	NC			Not connected
123	NC			Not connected
124	NC			Not connected
125	NC			Not connected
126	NC			Not connected
127	NC			Not connected

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Pin #	Name	I/O(*)	I/O type	Description
128	NC			Not connected
129	NC			Not connected
130	NC			Not connected

Table 1: Pin out of the external board connector (J201)

(*)According to Quik Q26 view.

(**) Refer to Figure 1 and Table 19. .

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4 Power supply

There are at choice two power supply for starting the Development Kit Q26:

- DC external supply (via J100).
- AC/DC adapter (via J101).

These power supplies are protected by a transient voltage suppressor.

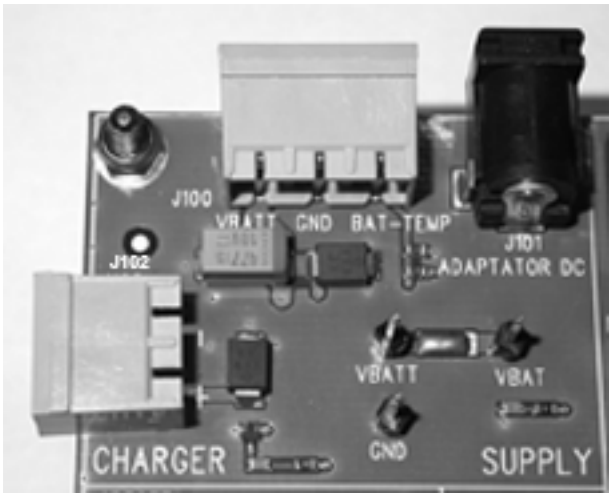

Figure 2: Power supply voltage (J101 and J102)

Each of these power supply is used for BOTH the Wireless CPU and the peripherals on the Development Kit Q26.

It is possible to dissociate the power supply for the Wireless CPU (“VBATT”, measurable via the TP153) and for the peripherals (“VBAT”, measurable via the TP157).

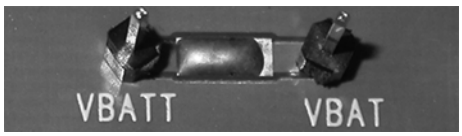

Figure 3: Zoom on “J103”

A measure of current is possible between the VBATT and VBAT via J103 (refer to § 18).

4.1 LED signalization (“VBAT”)

“VBAT” indicator is a green LED. It signalizes the external power supply presence. In other words, peripherals and Quik Q26 Series are respectively powered via VBAT and VBATT.

So the Development Kit Q26 is operational.

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LED	VBATT	VBAT
Light ON	ON	ON
Light OFF	Can be ON*	OFF

Table 2: LED of "VBAT"

* If the special solder, J103, is not soldered and external power supply is plugged in.

4.2 External supply

The J100 connector has three contacts:

- **J100:1-2:** for the power supply.
- J100:2-3: refer to § 4.2.1.

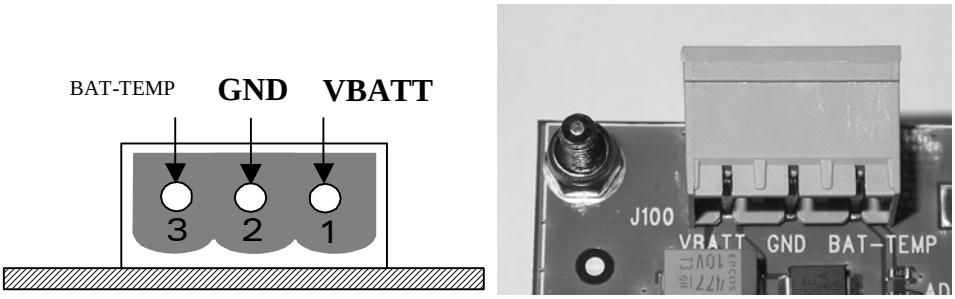

Figure 4: Power supply voltage

	V_{MIN}	V_{NOM}	V_{MAX}
VBATT[1,2]	3.2v	3.6v	(*)

(*) Refer to doc[2] or doc [5]

Table 3: Electrical Characteristics

(1) : This value has to be guarantied during the burst (with 2.0A Peak in GSM, GPRS mode)

(2) : Maximum operating Voltage Stationary Wave Ratio (VSWR) is 2:1.

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4.2.1 BAT-TEMP

This signal is an input (ADC) in the Wireless CPU.

J100:2-3 also allows simulation of the temperature level from a sensor inside the battery.

	V_{MIN}	V_{NOM}	V_{MAX}
BAT-TEMP	0	-	2v

Table 4: Electrical Characteristics

The divisor bridge with R100, R101 is not finalized (refer to [3] or [6]).

4.3 Main supply adapter

The J101 connector powers the Development Kit Q26 using the AC power supply cable.

Figure 5: Main supply adapter

The only supported reference is:

Manufacturer	Reference	Characteristics
SINPRO	SPU12C-101	4v DC / 2.5 A.

Table 5: Main supply adapter reference

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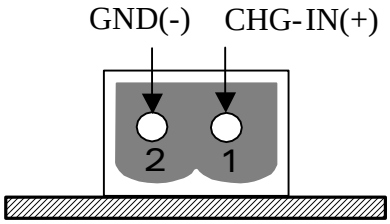
5 Charger supply & LED

5.1 Charger supply

The J102 is used to simulate a charger.

This power supply is protected by a transient voltage suppressor.

When the charger is used, the battery must be connected.



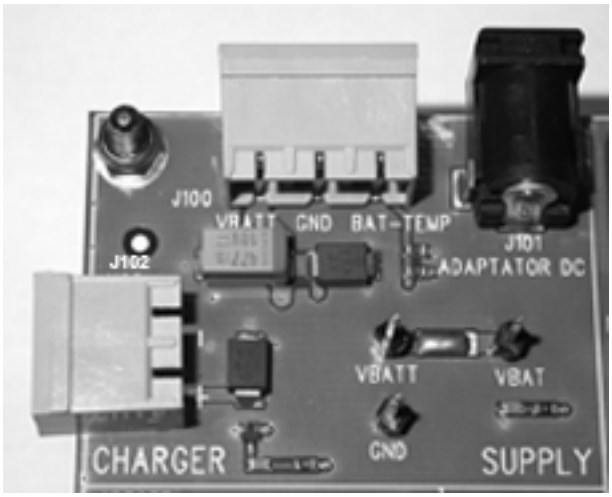


Figure 6: Charger supply

	V_{MIN}	V_{NOM}	V_{MAX}
CHG-IN Voltage (for I=Imax)	4.6(*)v		6v

(*) To be parameterized as per battery manufacturer.

Table 6: Power supply voltage

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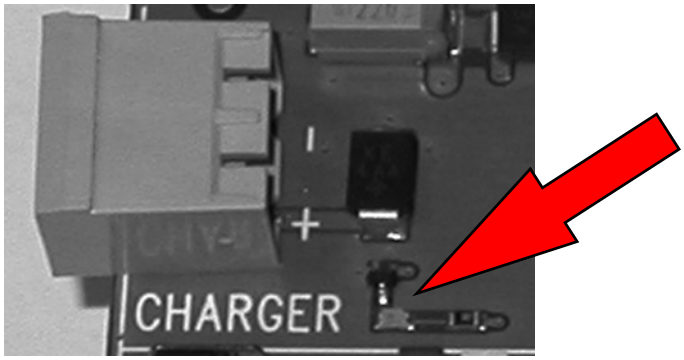
5.2 LED signalization (“CHARGER”)

The “CHARGER“ LED location is shown in the following figure:



“CHARGER” indicator is a red LED controlled by the GPIO21 provided by the Wireless CPU. This LED represents only the logic level of GPIO21.

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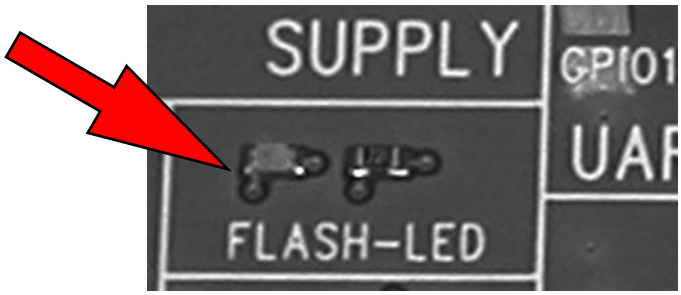
6 Flash LED (“FLASH-LED”)

The “FLASH-LED “ location is shown in the following figure:



This LED works in two modes:

- Wireless CPU is in OFF state:

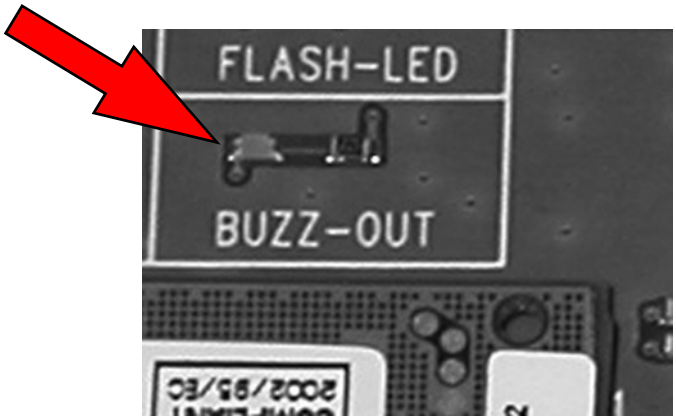
  “FLASH-LED” blinks in pre-charging mode (via J102 connector).
- Wireless CPU is in ON state:

  “FLASH-LED” indicates the network status.

For more information (refer to [2] or [5]).

7 Buzzer LED (“BUZZ-OUT”)

The “BUZZ-OUT” LED location is shown in the following figure:



“BUZZ-OUT” indicator is a yellow LED controlled by the signal with the same name provided by the Wireless CPU. It is drove by the PWM signal (open drain).

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8 Control functions

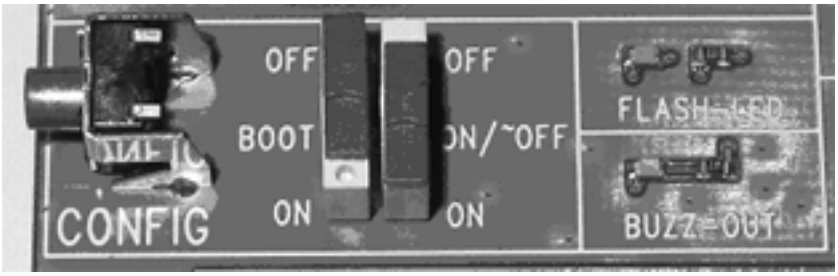

Figure 7: Switches configuration

8.1 ON/~OFF

Once the Development Kit Q26 is supplied by the external source (via J100 or J101), the ON/~OFF switch provides the VBATT to the Wireless CPU when it is "ON".

After 1 second it can be switch off. (refer to [2] or [5] and[3] or [6]).

8.2 ~RESET

The pushbutton ~RESET starts a general reset when it is pushed.

An Operating System reset is preferred to a HW reset.

8.3 BOOT

The BOOT switch is only used for download new software to the Wireless CPU via UART1 with the Wavecom software "DWLWin".

It must be on "OFF" position.

Mode	BOOT	ON/~OFF
Normal	OFF	ON
Backup download With „DWLWin"	ON	ON

Table 7 : BOOT configuration

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9 Keypad function

Only 6 keypads are connected on the Development Kit Q26.

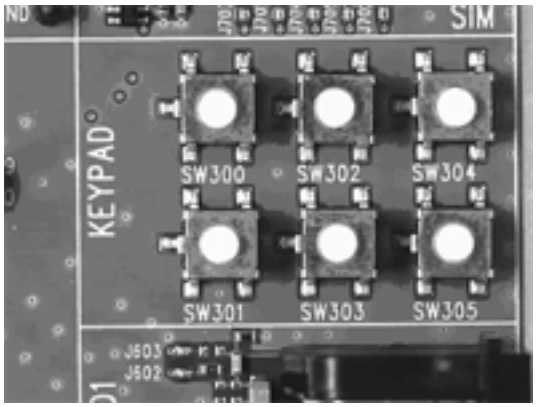

Figure 8: Keypad configuration

The following table shows the matrix of the keyboard:

	COL0	COL1	COL2	COL3	COL4
ROW0	SW300	-	-	-	-
ROW1	-	SW301	-	-	-
ROW2	-	-	SW302	-	-
ROW3	-	-	-	SW303	SW304
ROW4	-	-	-	-	SW305

Table 8: Matrix of the keyboard

Example: If the key SW300 is pressed, an electric detection will be made on ROW0 and COL0.

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10 UART1 function

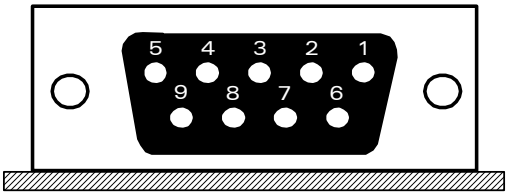
The UART1 function is the main RS232 serial link of Wireless CPU in 3.0V on the Development Kit Q26.

This function can be electrically detached with special solder not soldered (from J402 to J409).

For example, that allows to transmit undisturbed signals via the external connector (J201).

By default, the UART1 is available on its dedicated connector J400 (J402 to J409 soldered).

10.1 UART1 connector (J400)



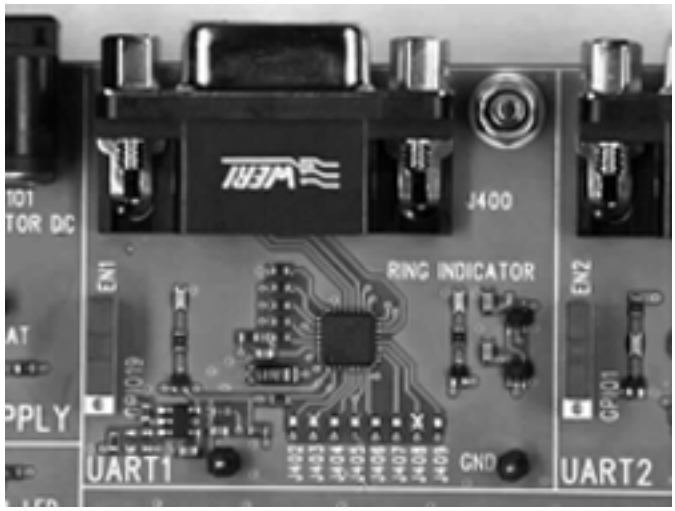


Figure 9: UART1 connector

J400 is a SUB-D 9-pin female connector. The Table bellow gives the description of the signals of this connector.

Pin Number	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

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Pin Number	Signal Name	I/O	I/O Type	Description
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

Table 9: Pin out of the UART1 connector

10.2 Configuration of the UART1

The Development Kit Q26 acts as a DCE and is connected to a DTE (PC or terminal) with a "straight cable".

This is a full UART.

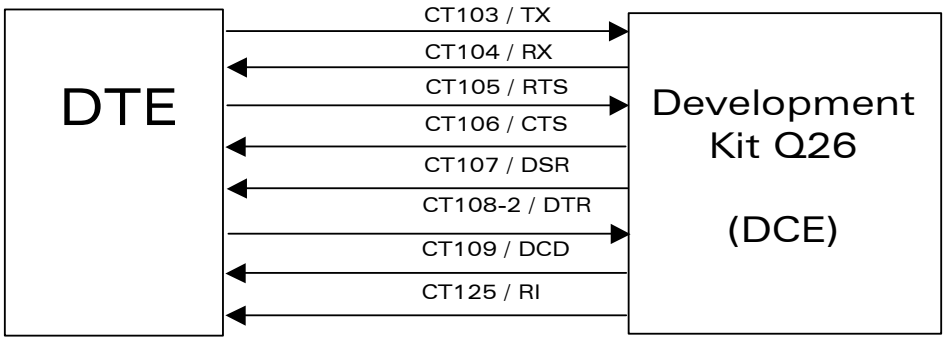

Figure 10: RS232 main serial link

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10.3 Enable UART1 (“EN1/GPIO19”)

A switch “EN1/GPIO19” can drive the shutdown mode of the RS232 transceiver.

By default the RS232 transceiver is in active mode. (switch to “EN1”). In the other case (switch to “GPIO19”) the GPIO drives the shutdown mode.

Switch “EN1/GPIO19”		UART1	LED “EN1”
EN1		ON (in hardware)	LIGHTS
GPIO19	0L	ON	LIGHTS
	1L	OFF	EXTINCT

Table 10: Enable UART1 configuration

10.4 LED signalization

10.4.1 LED “RING INDICATOR”

“RING INDICATOR” indicator is a yellow LED controlled by the ~CT125-RI1/GPIO42 signal provided by the Wireless CPU.

It is possible to activate a « visual » mode with Command AT (AT+WRIM=0, refer to. [4] or [7]). And when there is an incoming call, this signal is low and high all 0.5sec.

So the “RING INDICATOR” LED is blinking.

10.4.2 LED “EN1”

“EN1” indicator is a green LED controlled by the EN1 or GPIO19 signals provided by the Wireless CPU.

LED “EN1” lights when the RS232 transceiver is operational (see configuration in Table 10).

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11 UART2 function

The UART2 function is the auxiliary RS232 serial link of the Wireless CPU in 1.8V.

This function can be electrically detached with special solder not soldered (from J501 to J504).

For example, that allows to transmit undisturbed signals via the external connector (J201).

By default, the UART2 is available on its dedicated connector J500 (J501 to J504 soldered).

11.1 UART2 connector (J500)

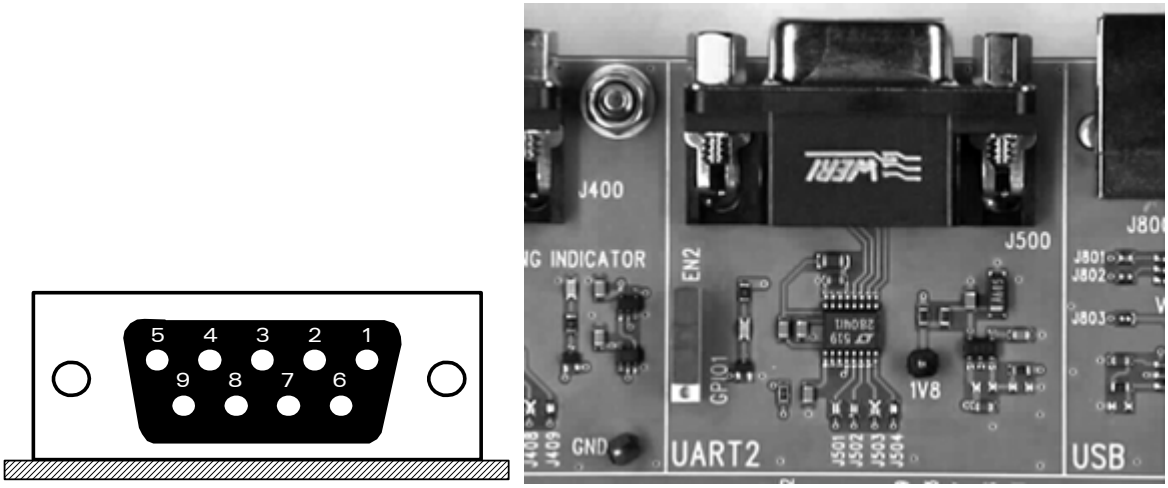

Figure 11: Enable UART2 configuration

J500 is a SUB-D 9-pin female connector. The Table bellow gives the description of the signals of this connector.

Pin Number	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(*)	-	-	-

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Pin Number	Signal Name	I/O	I/O Type	Description
7	CT105 RTS	I	RS232 (V24/V28)	Request To Send
8	CT106CTS	O	RS232 (V24/V28)	Clear To Send
9	Not used(*)	-	-	-

(*)Only 4 signals are used.

Table 11: Pin out of the UART2 connector

11.2 Configuration of the UART2

The Development Kit Q26 acts as a DCE and is connected to a DTE (PC or terminal) with a "straight cable".

There are only 4 signals on the UART2.

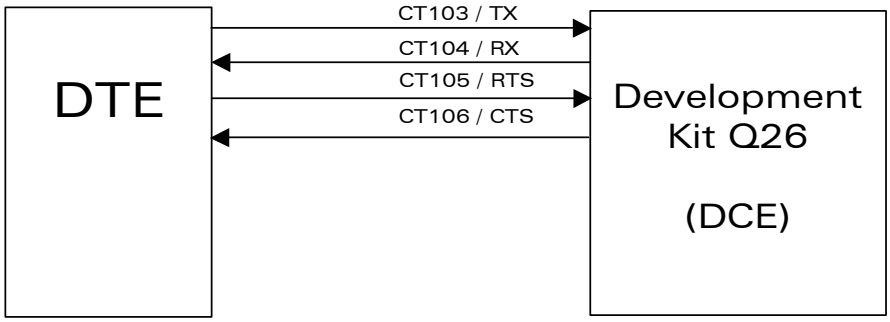

Figure 12: RS232 auxiliary serial link

11.3 Enable UART2 ("EN2/GPIO1")

A switch "EN2/GPIO1" can drive the shutdown mode of the RS232 transceiver.

By default the RS232 transceiver is in active mode. (switch to "EN2"). In the other case (switch to "GPIO1") the GPIO drives the shutdown mode.

Switch "EN2/GPIO1"		UART2	LED "EN2"
EN2		ON (in hardware)	LIGHTS
GPIO1	1L	ON	LIGHTS
	0L	OFF	EXTINCT

Table 12: Enable UART2 configuration

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11.4 LED signalization (“EN2”)

“EN2” indicator is a green LED controlled by the EN2 or GPIO1 signals provided by the Wireless CPU.

LED “EN2” lights when the RS232 transceiver is operational (see configuration in Table 12).

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12 SIM function

12.1 SIM connector (J700)

J700 is a standard 1V8 or 3V SIM socket.

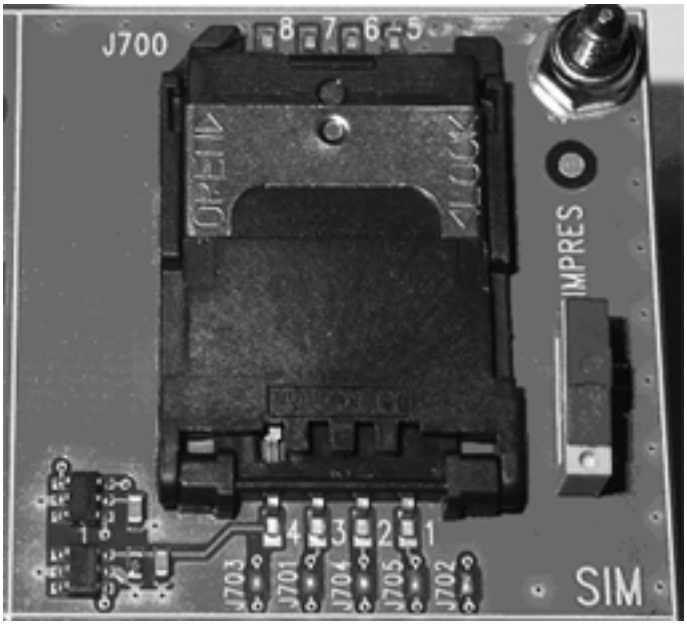

Figure 13: SIM connector

The Table bellow gives the description of the signals of this connector.

Pin Number	Signal Name	I/O	I/O Type	Description	Comment
1	SIM-VCC	O	1V8 or 2V9	SIM Power Supply	
2	SIM-RST	O	1V8 or 2V9	SIM Reset	
3	SIM-CLK	O	1V8 or 2V9	SIM Clock	
4	SIMPRES	I	1V8 max.(*)	SIM Card Detect	Multiplexed with GPIO18
5	GND			Ground	
6	VPP	Not connected			
7	SIM_DATA	I/O	1V8 or 2V9	SIM Data	
8	CC8		1V8	SIMPRES signal supply	

(*) For either 1V8 or 3V SIM cards.

Table 13: Pin out of the SIM connector

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The SIM interface controls both the 2.9V and 1.8V SIM cards.

ESD protections are used on the 5 SIM signals

This function can be electrically detached with special solder not soldered (from J701 to J705).

For example, that allows to transmit undisturbed signals via the external connector (J201).

By default, the SIM signals are available on its dedicated connector J700 (J701 to J705 soldered).

SIMPRES presents the following options:

- If the SIMPRES signal is used by the application (detection of SIM card presence by the SIM socket), the "SIMPRES" switch must move to "SIMPRES" (contact 1-2 used).
- Else to simulate all the time the SIM card presence (without the SIM socket) the "SIMPRES" switch must move to other side (contact 2-3 used).

Switch "SIMPRES"	SIM card presence
SIMPRES	Depend of the real SIM presence
Other side	Simulate a SIM presence

Table 14: SIMPRES configuration

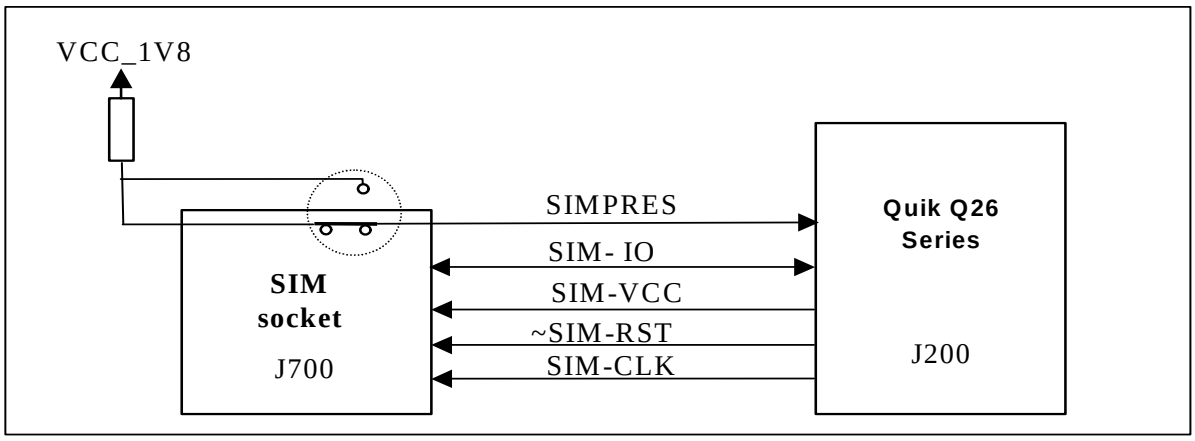

Figure 14: Schematic of switch "SIMPRES"

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13 USB function

ESD protections are used on the 2 USB signals.

This function can be electrically removed with special solder not soldered (from J801 to J803).

For example, that allows to transmit undisturbed signals via the external connector (J201).

By default, the USB signals are available on its dedicated connector J800 (J801 to J803 soldered).

13.1 USB connector (J800)

J800 is a USB Series type B receptacle.

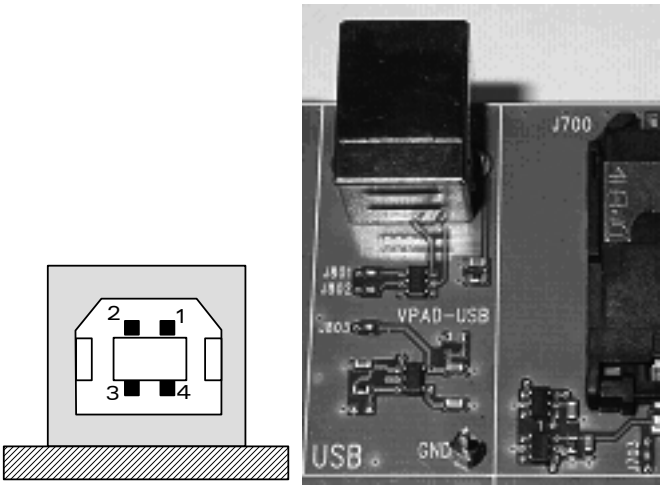

Figure 15: USB connector

Pin Number	Signal Name	I/O	I/O Type	Description
1	VBUS	I	Power supply	+ 5 VDC
2	DM	I/O	Digital	USB negative line
3	DP	I/O	Digital	USB positive line
4	GND		Power supply	Ground
Shell	Shielding			

Table 15: Pin out of the USB connector

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13.2 LED signalization ("VPAD-USB")

"VPAD-USB" indicator is a green LED controlled by the presence of VBUS (when the plug is in the USB connector).

The power supply for the USB interface in the Wireless CPU is providing from the USB connector.

If a USB cable is plugged the LED light and VPAD-USB (the output of a regulator (LDO)) is to 3.3v.

But the special solder (J803) must be soldered for to power the USB interface in the Wireless CPU. So by default J803 is soldered.

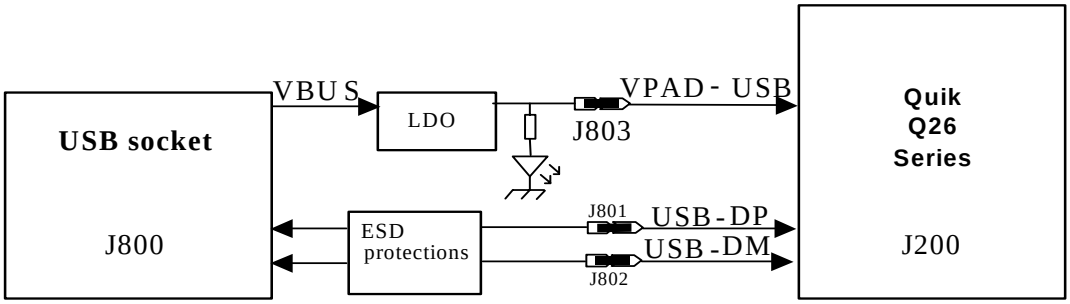

Figure 16: USB electrical diagram

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14 AUDIO functions

There are 2 AUDIO interfaces in the Wireless CPU.

14.1 AUDIO1 connector (J601)

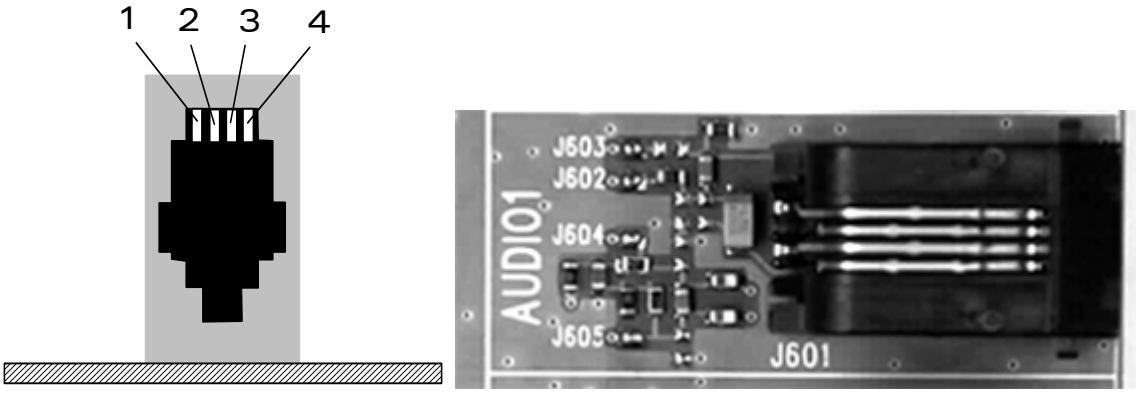

Figure 17: AUDIO1 connectorJ601 is a RJ9 4-pin connector.

The Table bellow gives the description of the signals of this connector.

Pin Number	Signal Name	I/O	I/O Type	Description
1	MIC1N	I	Analog	Auxiliary microphone negative input
2	SPK1N	O	Analog	Auxiliary speaker negative output
3	SPK1P	O	Analog	Auxiliary speaker positive output
4	MIC1P	I	Analog	Auxiliary microphone positive input

Table 16: Pin out of the AUDIO1 connector

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14.2 AUDIO2 connector (J600)

J600 is a RJ9 4-pin connector.

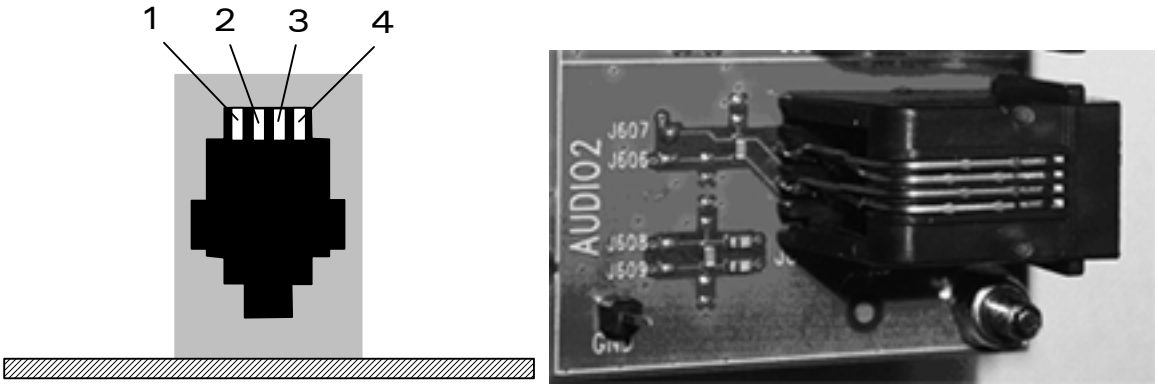

Figure 18: AUDIO2 connector

The Table bellow gives the description of the signals of this connector.

Pin Number	Signal Name	I/O	I/O Type	Description
1	MIC2N	I	Analog	Main microphone negative input
2	SPK2N	O	Analog	Main speaker negative output
3	SPK2P	O	Analog	Main speaker positive output
4	MIC2P	I	Analog	Main microphone positive input

Table 17: Pin out of the AUDIO2 connector

14.3 Audio functions description

These functions can be electrically removed with special solder not soldered (from J602 to J609).

For example, that allows to transmit undisturbed signals via the external connector (J201).

By default, AUDIO signals are available on its dedicated connector J601 (for AUDIO1), and J600 (for AUDIO2) (J602 to J609 soldered).

The microphone inputs of AUDIO2 already include the biasing for an electret microphone allowing an easy connection.

The microphone inputs of AUDIO1 need to have an external biasing if an electret micro is used.

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The Main Audio is named “AUDIO2”.

The Auxiliary Audio is named “AUDIO1”.

Mode	Single ended	Differential
AUDIO2	NO	YES
AUDIO1	YES	NO

Table 18: AUDIO configuration

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15 Parallel bus interface (with the Q2687 Wireless CPU only)

With the Q2687 Wireless CPU (but not with the Q2686 Wireless CPU), it is possible to interface applications with a 16 bits parallel bus with few addresses and chip select signals (LCD, NAND FLASH, µP...). All signals are in 1.9V.

These signals are available on the TP (with their names) and the external board connector (J201).

J201 pins	Names on signals	If Wireless CPU Q2686	If Wireless CPU Q2687
J201-78	EP-17	NC	READ(*)
J201-79	EP-0	NC	DATA_0
J201-80	EP-2	NC	DATA_2
J201-81	EP-4	NC	DATA_4
J201-82	EP-1	NC	DATA_1
J201-83	EP-6	NC	DATA_6
J201-84	EP-3	NC	DATA_3
J201-85	EP-5	NC	DATA_5
J201-86	EP-7	NC	DATA_7
J201-87	EP-18	NC	CS3(*)
J201-89	EP-15	NC	DATA_15
J201-90	EP-13	NC	DATA_13
J201-91	EP-11	NC	DATA_11
J201-92	EP-9	NC	DATA_9
J201-93	EP-12	NC	DATA_12
J201-94	EP-10	NC	DATA_10
J201-95	EP-8	NC	DATA_8
J201-96	EP-14	NC	DATA_14
J201-97	EP-16	NC	WRITE(*)
J201-114	EP-20	GPIO1	Configurable signal GPIO1/CS2(*)/A25
J201-115	EP-21	GPIO2	Configurable signal GPIO2/A24
J201-121	EP-19	RESERVED	A1

(*): Signal is active at the low level.

Table 19: Signals names according to the Wireless CPU.

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15.1 Parallel bus configurations (with the Q2687 Wireless CPU only)

The possible configurations with signals multiplexed are:

- CS3*, A1, GPIO1, GPIO2
- CS3*, A1, A24, GPIO1
- CS3*, CS2*, A1, GPIO2
- CS2*, CS3*, A1, A24
- CS3*, A1, A25, GPIO2
- CS3*, A1, A24, A25

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16 Antenna function

The antenna is connected to the board via the SMA connector.

The antenna cable is fitted with a FME connector. An SMA/FME adapter is supplied to allow the connection to the board.

16.1 RF connectors (P200+J202)

Figure 19: RF connectors

Pin Number	Signal Name	I/O	I/O Type	Description
1	ANT		RF 50 Ω	RF signal
2, 3	GND			Ground

Table 20: Pin out of the RF connector

WARNING

Be careful with the IMP connector. It is only made for 20 mating and unmating.

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17 ESD functions

External ESD protections are added on the Development Kit Q26 for the following signals:

- SIM interface signals: SIMPRES, SIM-VCC, SIM-IO, SIM-CLK, SIM-RST (±15kV, air discharge).
- USB interface signals: USB-DP, USB-DM (±15kV, air discharge).

The others interfaces signals are protected on chip:

- UART1 signals with the ADM3307 transceiver (±15kV, air discharge).
- UART2 signals with the LTC2804 transceiver (±10kV, air discharge).
- AUDIO1 and AUDIO2 (±15kV, air discharge).

WARNING: The user must be protected against the ESD discharges when he uses the TP (on the center of Development Kit Q26).

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18 Measures of current

To measure the current consumed by the Wireless CPU, use the procedure shown in Figure 20:

Around UART1:

- Remove R408.

- Place R406=0Ω (like R408).

Around UART2:

- Remove R502.

- Place R506=0Ω (like R502).

Around BAT-TEMP:

- Remove R100.

- Do not solder the "special solder", J103.

- Plug an external power supply like **VCC-EXT (=VBATT)** on "VBAT"(+), and (GND) on "GND"(-).

The current consumed by VBATT is ONLY current consumed by the Wireless CPU plugged in.

(All peripherals can be used).

Attention: If the default configuration is conserved, the consumption of this part is around 35 µA.

NOTE: Ensure that the Development Kit is disconnected from the power supply during the work. Use pewter and a soldering iron (ref.WS80 from Weller or similar) to solder.

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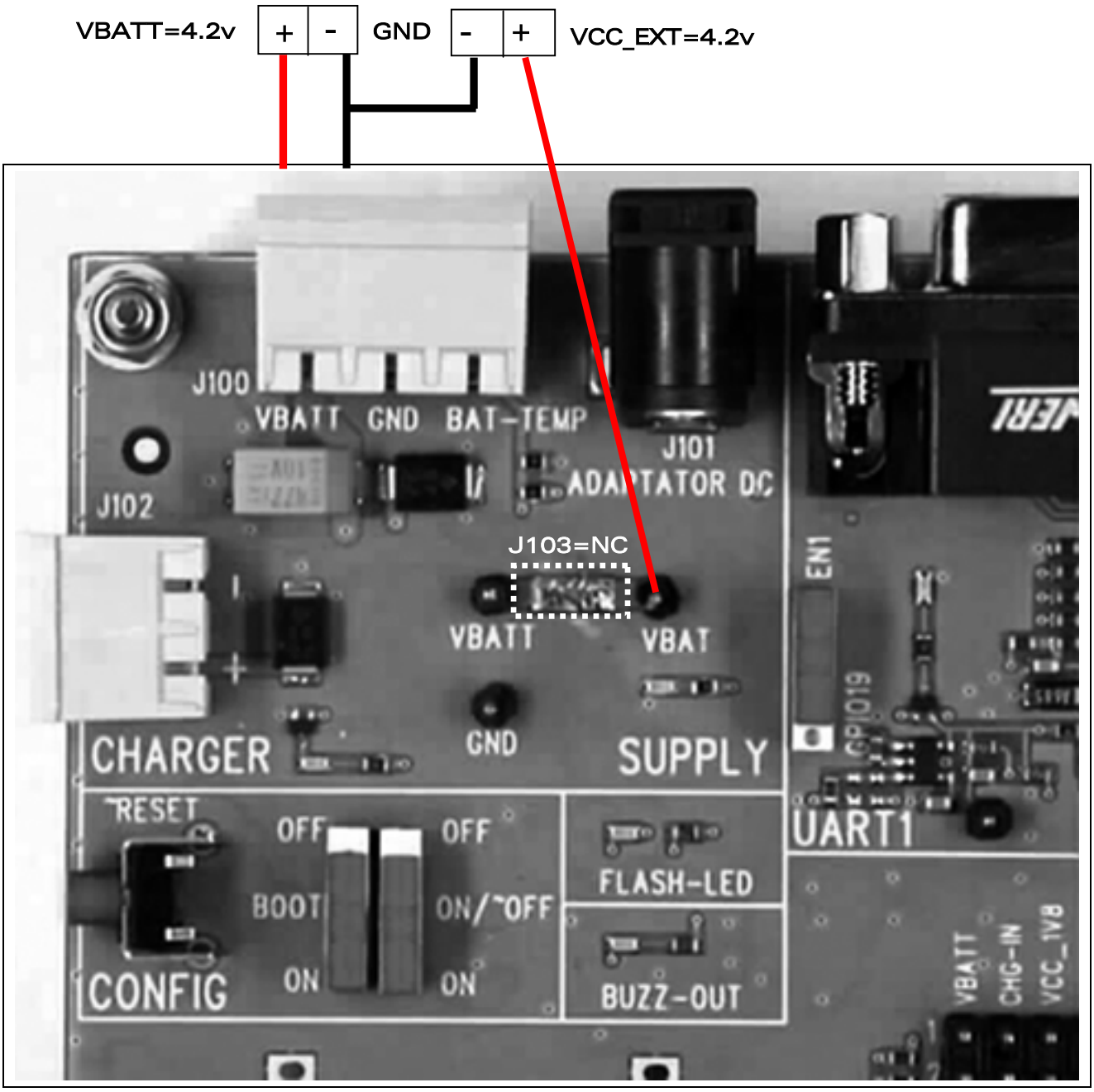

Figure 20: Configuration for the measure of current

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19 Starting procedure

19.1 Unpacking the Development Kit Q2686 or Q2687 components

There is in the Quik Q26 series box:

- 1 Development Kit Q26 board.
- 1 Wireless CPU soldered, and 1 free. (Q2686 or Q2687 Series)
- 1 SMA/FME antenna connector.
- 1 Power supply connector (3 pins).
- 1 AC/DC adapter .
- 1 RS232 cable.
- 1 USB cable.
- 1 handset.
- 1 RJ9 cable (for handset).
- 1 CDROM with all specifications inside.

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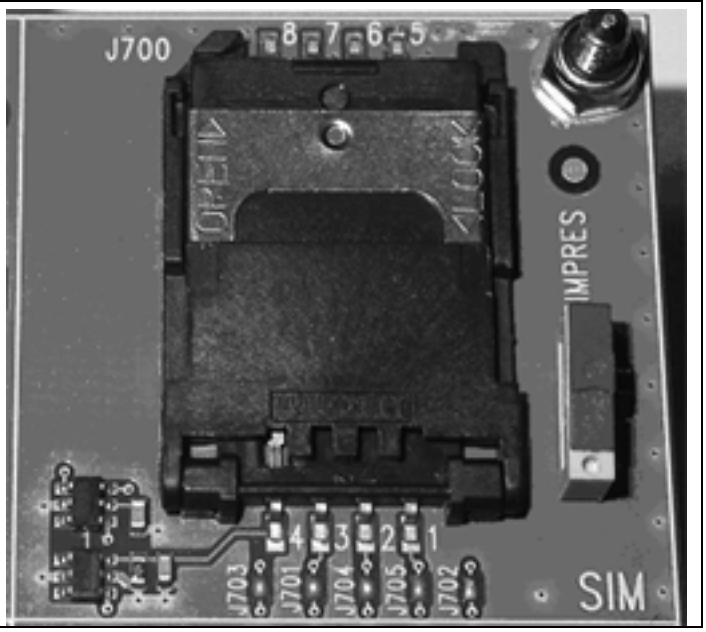
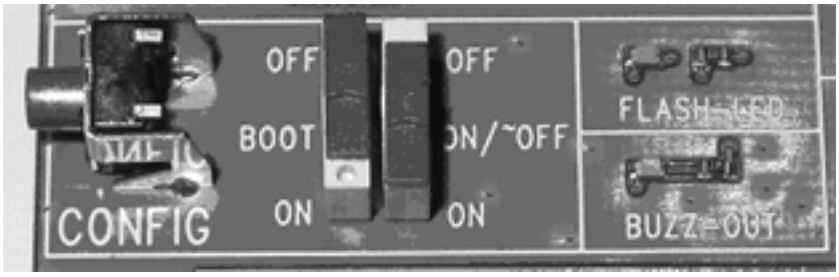
19.2 Setting the accessories

Follow the instructions below step by step.

▪ Insert a SIM card into the SIM card holder, J700 (if communications are required).	

▪ Make sure that: o The "ON/OFF" switch is on position "ON". o The "BOOT" switch is on position "OFF".	

- Also make sure that:
  - The UART1 switch is on "EN1" position.
  - The UART2 switch is on "EN2" position.
  - The UART2 switch is on "EN2" position.
  - The SIM switch is on "SIMPRES" position.
  - The all specials solders are soldered.

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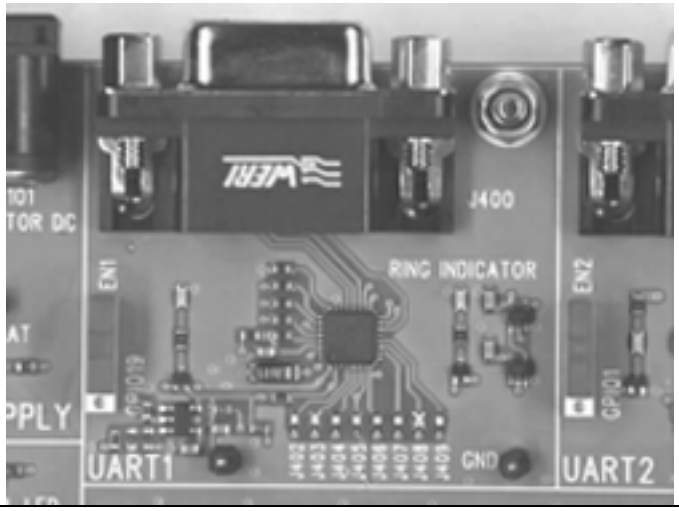
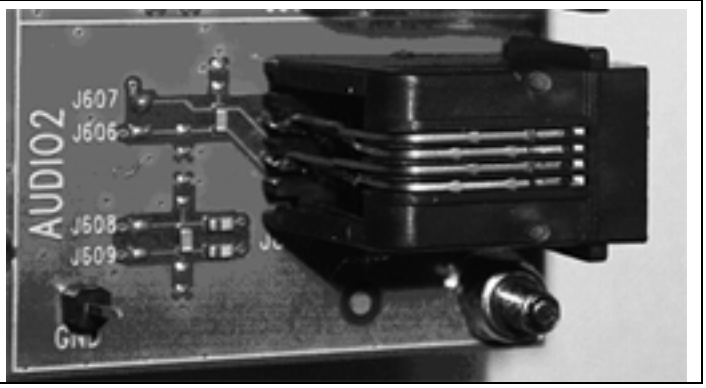
• Connect the RS232 cable, provided with the Development Kit Q26, between PC port and **J400** of the board. (baud rate by default is 115.2 kbps,8N1)	
• Connect the antenna to the **SMA** connector (J202), (if communications are required).	
• Connect the handset, provided with the Development Kit Q26, to the Main Audio connector **J600** (if communications are required).	

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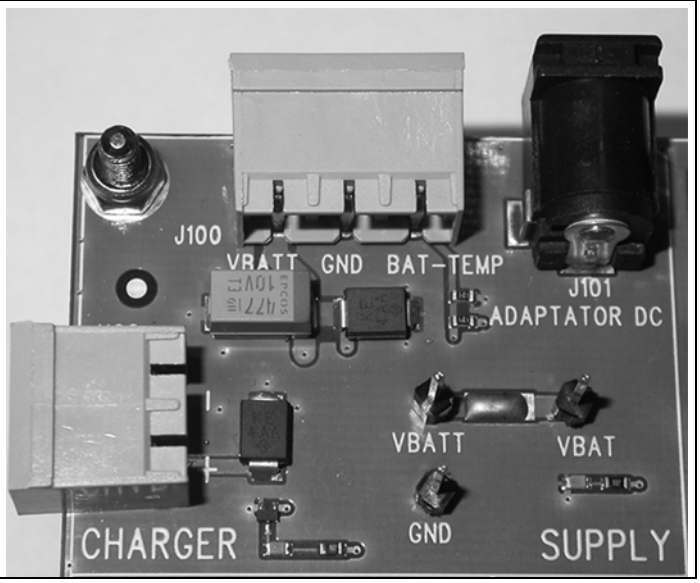
19.3 Power supply

• Plug the power supply (via the adapter (J101) or external power supply, 4V/2.5A (J100)).	

19.4 Communication test

- Using the terminal emulator, send the following command on COM port to communicate with the Quik Q26 Series: AT↵.
- When the communication is established between the PC and the Wireless CPU, the last one sends the message "OK" as a reply. The message is displayed in the terminal emulator window.

Refer to [4] for communicate between the PC and the Q2686 Wireless CPU.

Refer to [7] for communicate between the PC and the Q2687 Wireless CPU.

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20 APPENDIXES

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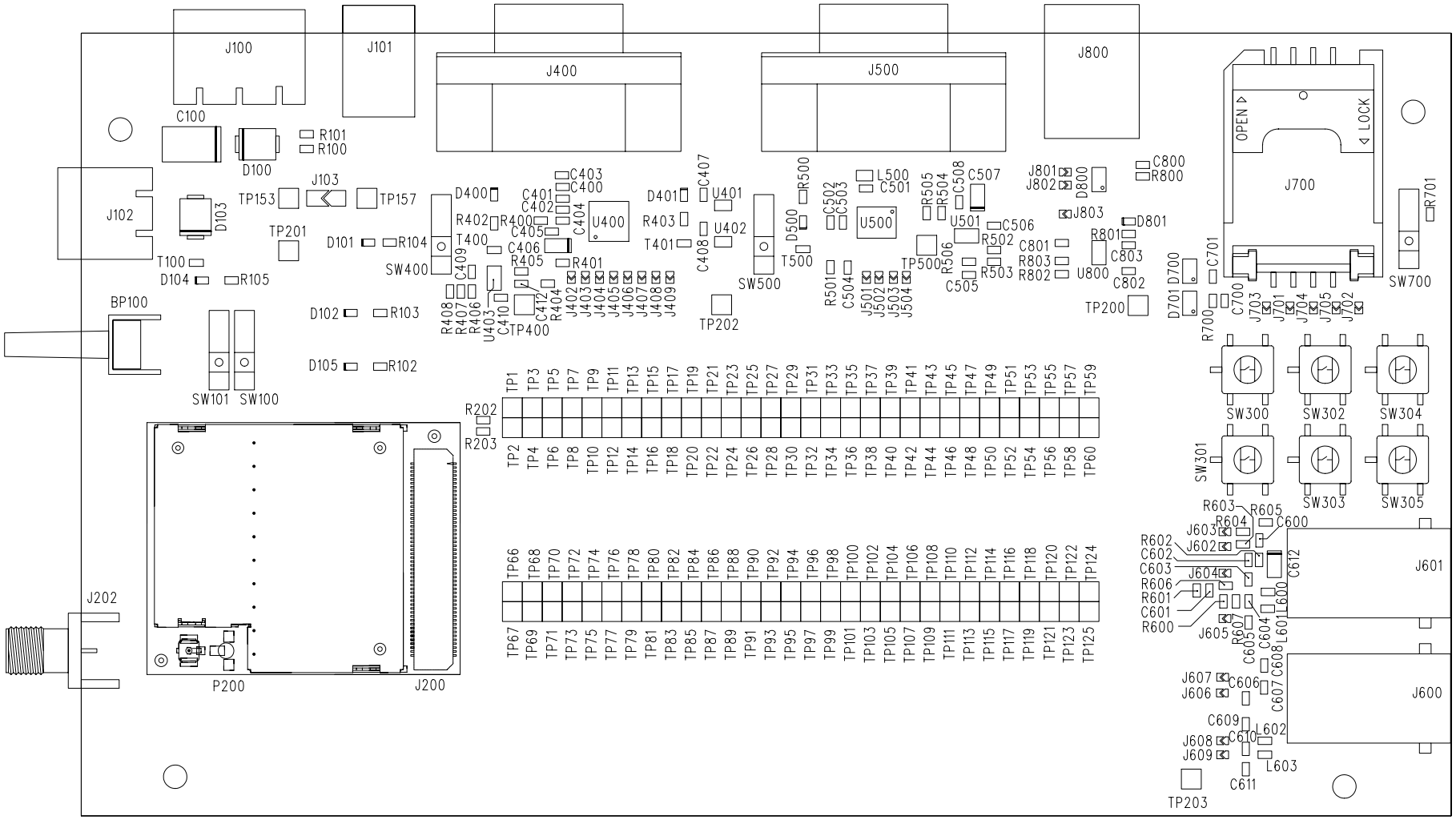

DATE	11/11/2005	wavecom confidential ©
VERSION	V3.0	
ENG	JCO / HER	
TITLE	ASSEMBLY DRAWING TOP	SCALE 0 2 4 mm
PROJECT	DEVELOPMENT KIT Q26	FORMAT --
N° D'IDENTIFIANT	WM0402301-111-30	

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CONNECTORS

RS232 (UART1)

CT104-RXD1/GPIO37
CT103-TXD1/GPIO36
~CT105-RTS1/GPIO38
~CT106-CTS1/GPIO39
~CT108-2-DTR1/GPIO41
~CT107-DSR1/GPIO40
~CT125-RI1/GPIO42
~CT109-DCD1/GPIO43
SHD-UART1

CT104-RXD1/GPIO37
CT103-TXD1/GPIO36
~CT105-RTS1/GPIO38
~CT106-CTS1/GPIO39
~CT108-2-DTR1/GPIO41
~CT107-DSR1/GPIO40
~CT125-RI1/GPIO42
~CT109-DCD1/GPIO43
SHD-UART1

CT104-RXD1/GPIO37
CT103-TXD1/GPIO36
~CT105-RTS1/GPIO38
~CT106-CTS1/GPIO39
~CT108-2-DTR1/GPIO41
~CT107-DSR1/GPIO40
~CT125-RI1/GPIO42
~CT109-DCD1/GPIO43
GPIO19

FULL UART1

RS232 (UART2)

SHD-UART2
CT104-RXD2/GPIO15
CT103-TXD2/GPIO14
~CT105-RTS2/GPIO17
~CT106-CTS2/GPIO16

SHD-UART2
CT104-RXD2/GPIO15
CT103-TXD2/GPIO14
~CT105-RTS2/GPIO17
~CT106-CTS2/GPIO16

GPIO1
CT104-RXD2/GPIO15
CT103-TXD2/GPIO14
~CT105-RTS2/GPIO17
~CT106-CTS2/GPIO16

UART2/IO

POWER & APPLI

BOOT
~RESET
ON/~OFF
CHG-IN
FLASH-LED
BAT-TEMP
BUZZ-OUT
CHARGER-LED

BOOT
~RESET
ON/~OFF
CHG-IN
FLASH-LED
BAT-TEMP
BUZZ-OUT
CHARGER-LED

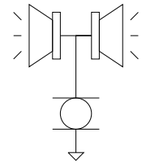
BOOT
~RESET
ON/~OFF
CHG-IN
FLASH-LED
BAT-TEMP
BUZZ-OUT
GPIO21

AUDIO

AUDIO
MIC2P
MIC2N
MIC1P
MIC1N
SPK2P
SPK2N
SPK1P
SPK1N

MIC2P
MIC2N
MIC1P
MIC1N
SPK2P
SPK2N
SPK1P
SPK1N

MIC2P
MIC2N
MIC1P
MIC1N
SPK2P
SPK2N
SPK1P
SPK1N



KEYPAD

KEYPAD
COL0/GPIO4
COL1/GPIO5
COL2/GPIO6
COL3/GPIO7
COL4/GPIO8
ROW0/GPIO9
ROW1/GPIO10
ROW2/GPIO11
ROW3/GPIO12
ROW4/GPIO13

COL0/GPIO4
COL1/GPIO5
COL2/GPIO6
COL3/GPIO7
COL4/GPIO8
ROW0/GPIO9
ROW1/GPIO10
ROW2/GPIO11
ROW3/GPIO12
ROW4/GPIO13

COL0/GPIO4
COL1/GPIO5
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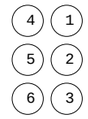
ROW3/GPIO12
ROW4/GPIO13



USB

USB
VPAD-USB
USB-DP
USB-DM

VPAD-USB
USB-DP
USB-DM

VPAD-USB
USB-DP
USB-DM

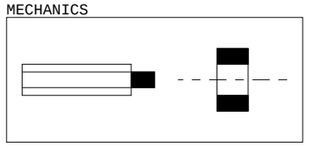
SIM

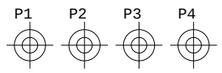
SIM
SIM-VCC
~SIM-RST
SIM-CLK
SIM-IO
SIMPRES/GPIO18

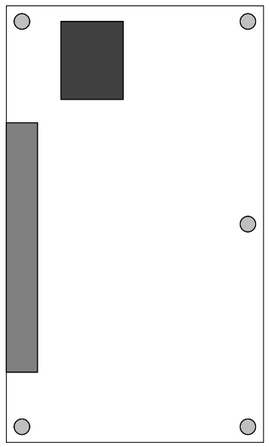
SIM-VCC
~SIM-RST
SIM-CLK
SIM-IO
SIMPRES/GPIO18

SIM-VCC
~SIM-RST
SIM-CLK
SIM-IO
SIMPRES/GPIO18

MECHANICS







PCB=V3.0
PCB

P5
TM3.2P6.5

P6
TM3.2P6.5

P7
TM3.2P6.5

P8
TM3.2P6.5

P9
TM3.2P6.5

wavecom

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Verify by:	FDL
Made-by:	GGI
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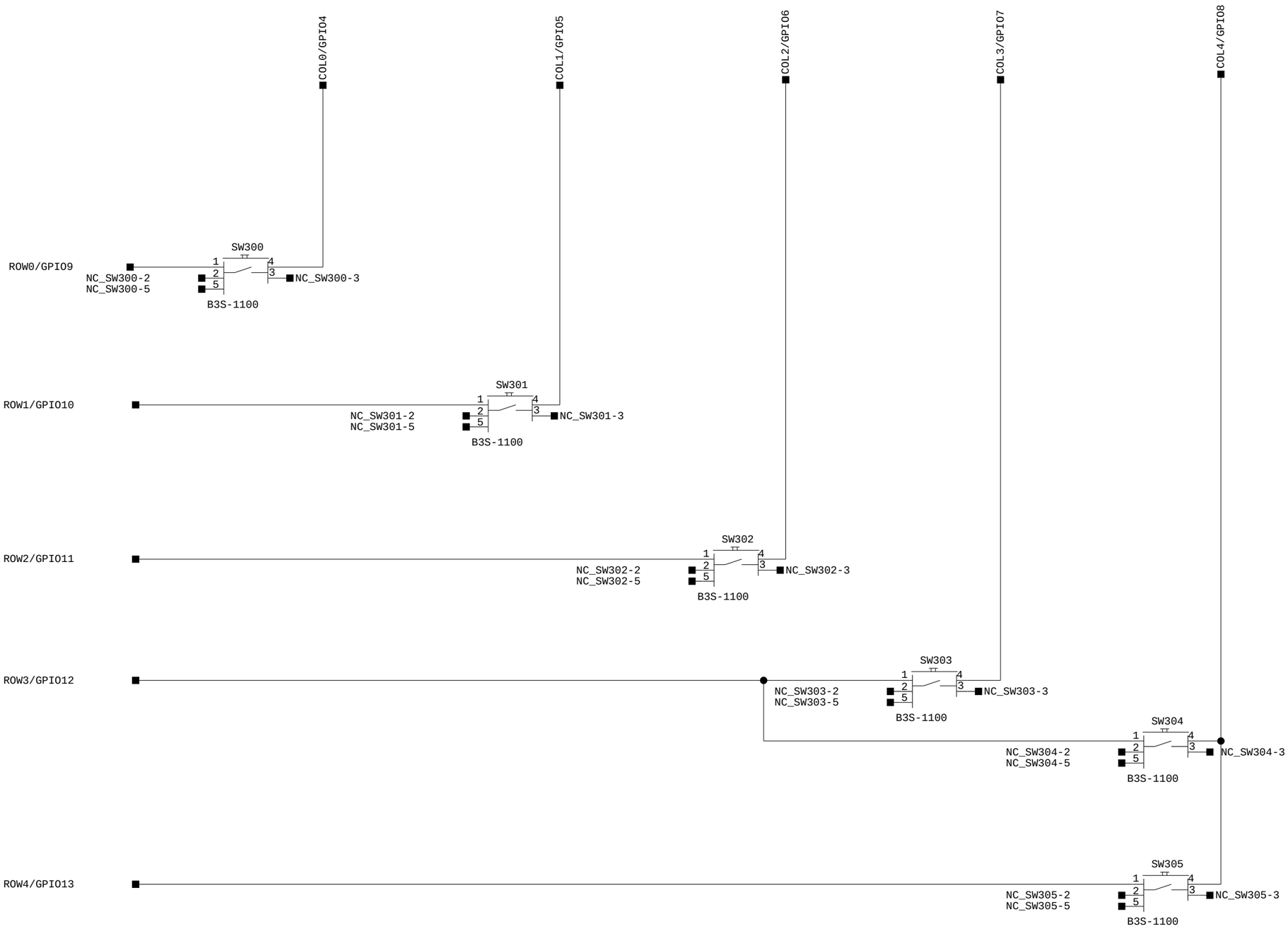
Version:	3.0
Sheet :	0/8



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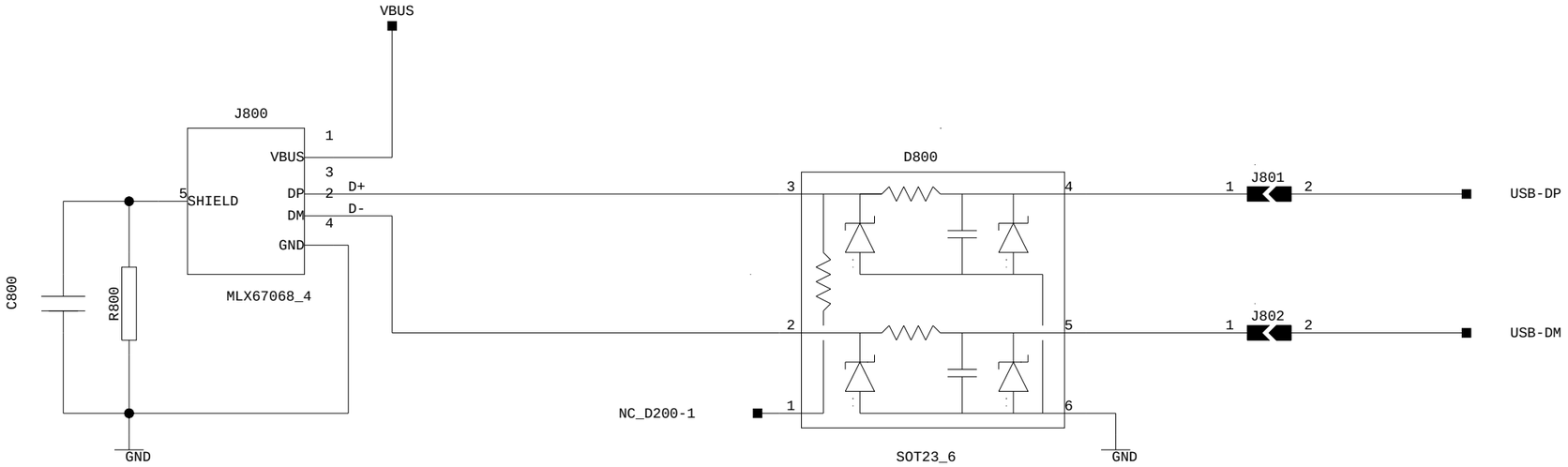

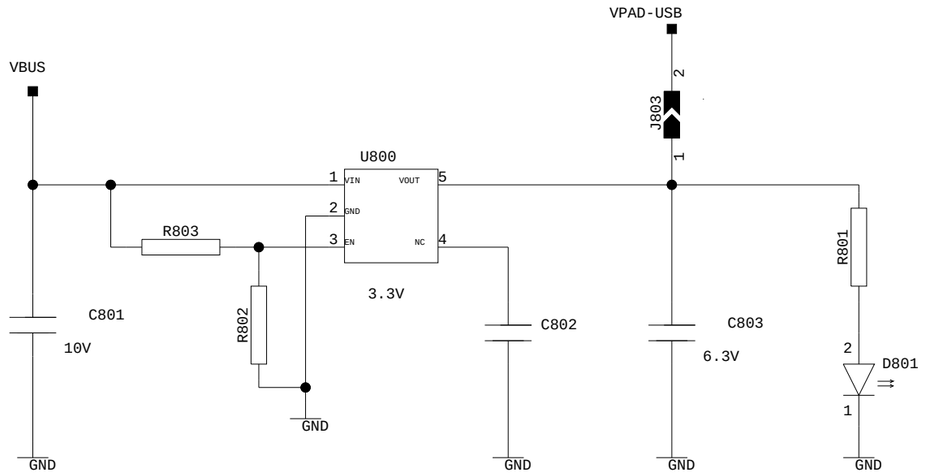

GREEN

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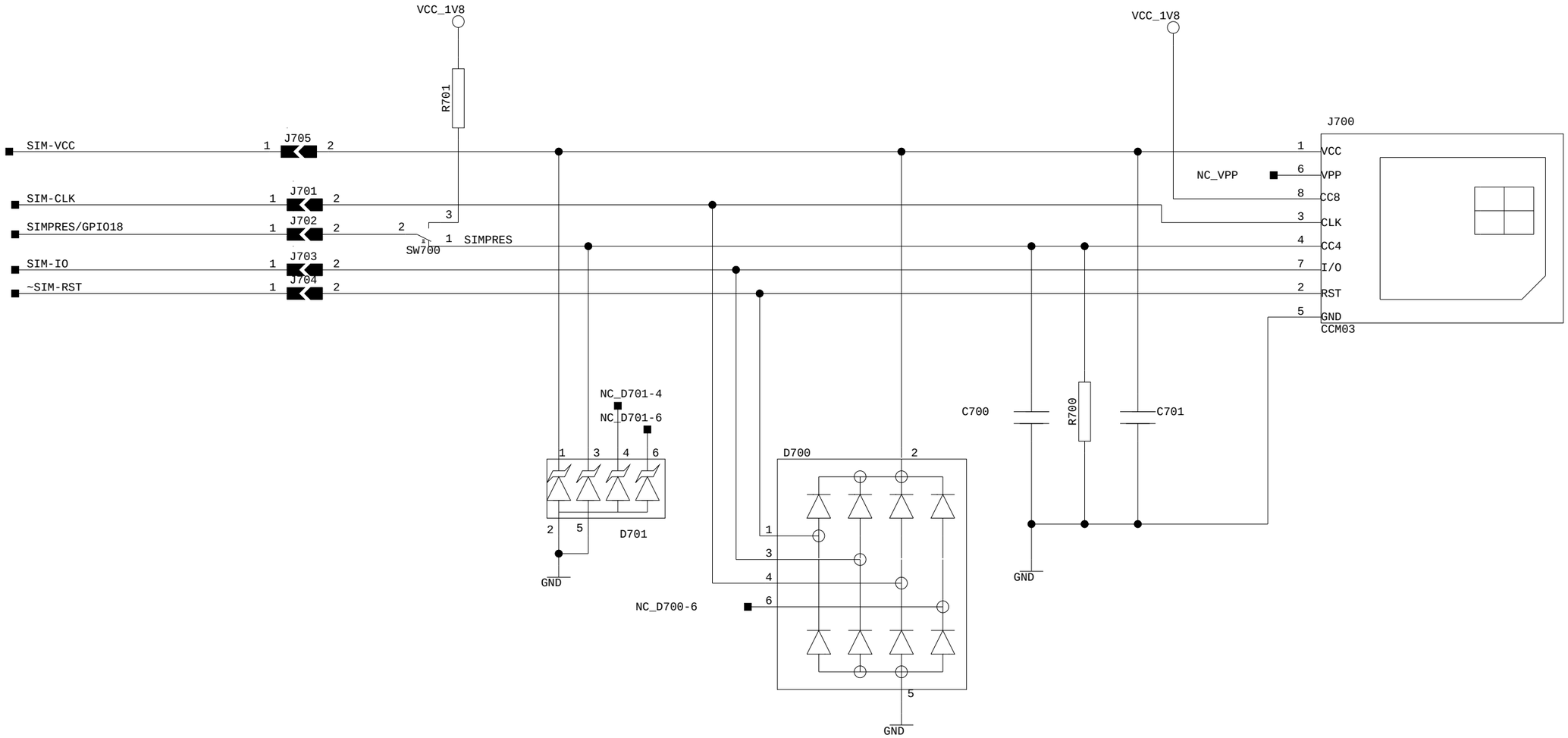

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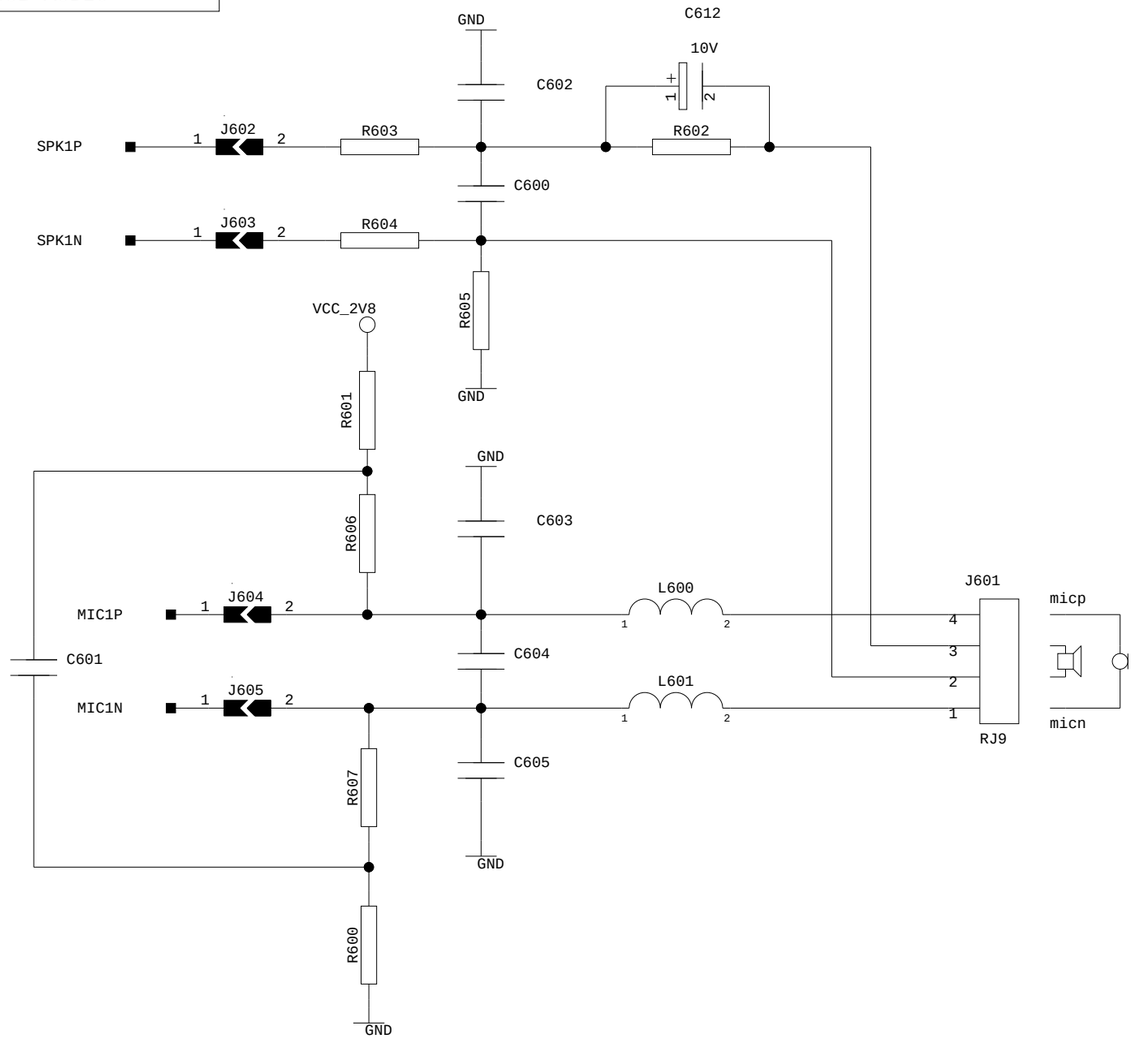
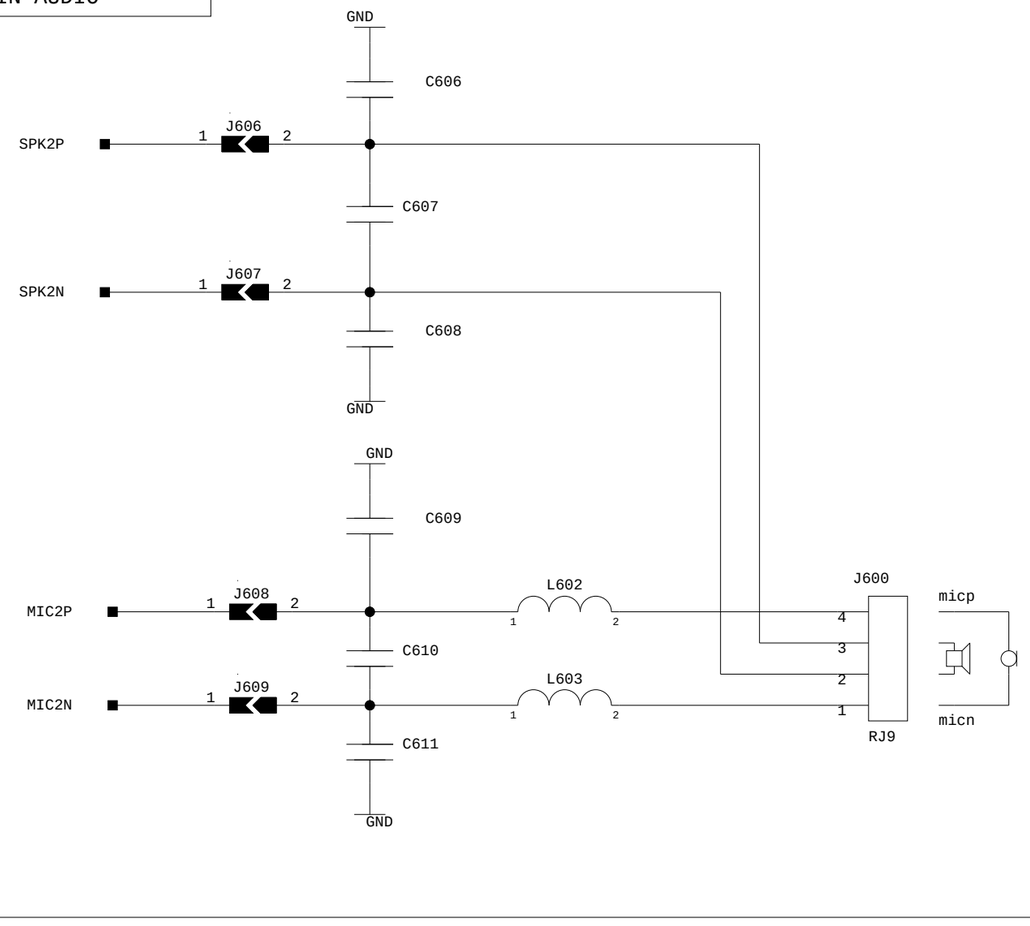
Made-by:	GGI		

SUB AUDIO



MAIN AUDIO



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SCHEMATIC:	AUDIO

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		Version: 3.0
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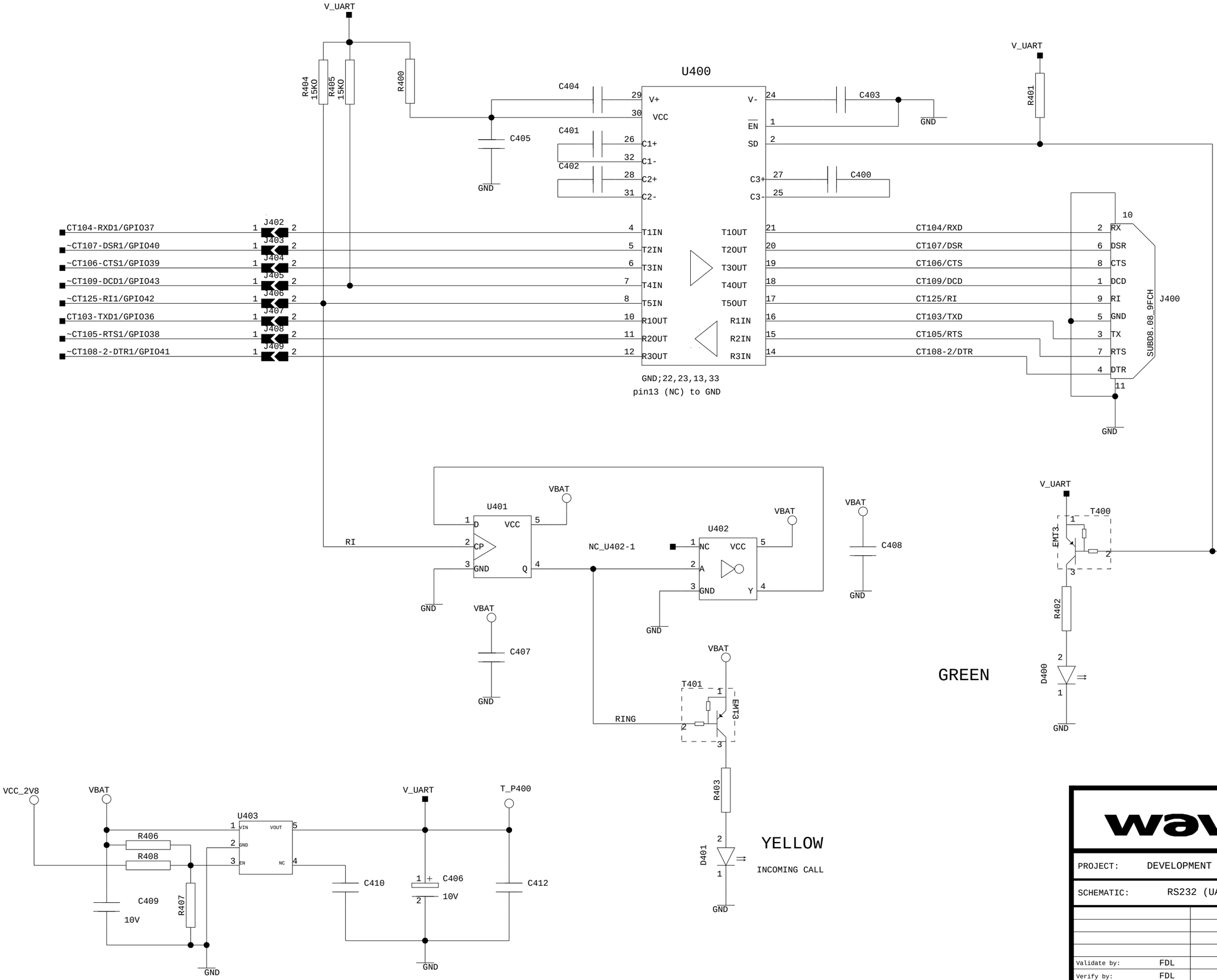
Verify by:	FDL	Sheet : 6/8
Made-by:	GGI	



wavecom			
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SCHEMATIC:	RS232 (UART1)		
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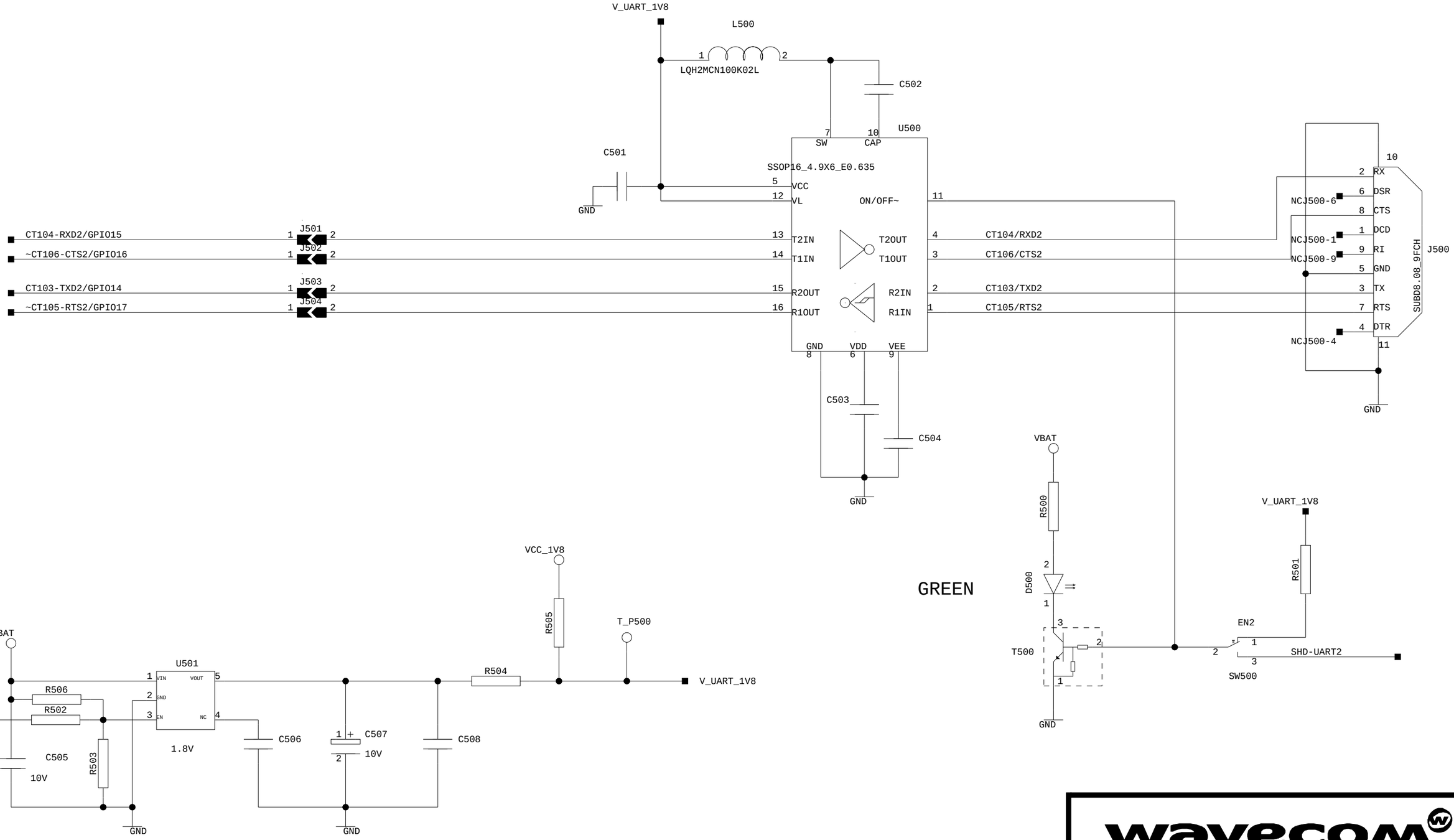
		Version:	3.0
Validate by:	FDL	Sheet :	4/8
Verify by:	FDL		
Made-by:	GGI		



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			Version: 3.0
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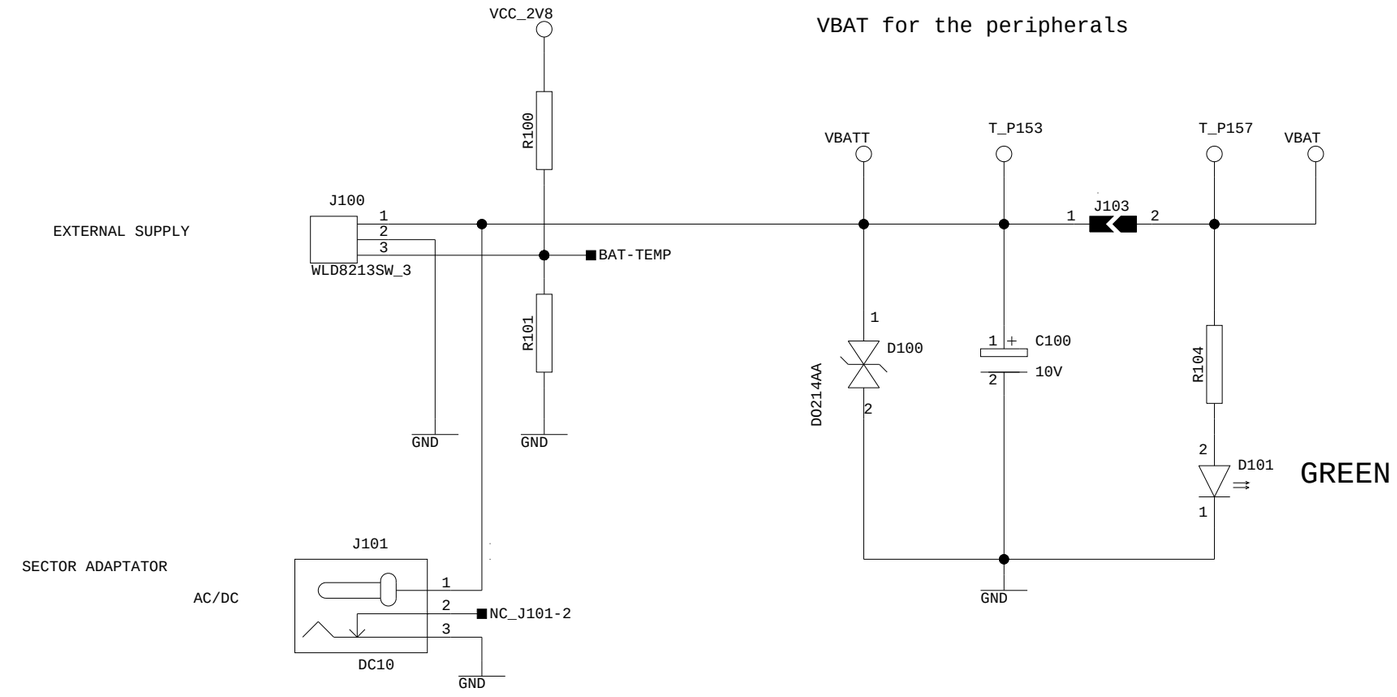
Verify by:	FDL		Sheet : 5/8
Made-by:	GGI		

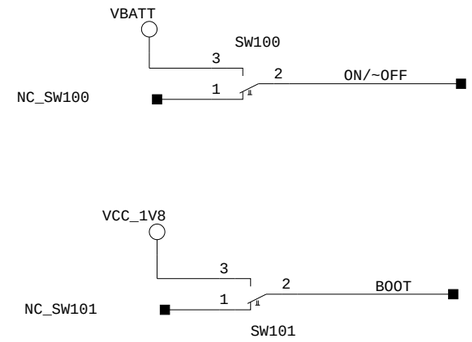
POWER SUPPLY

VBATT for the module

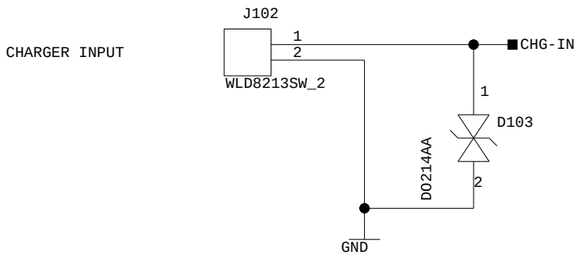
VBAT for the peripherals



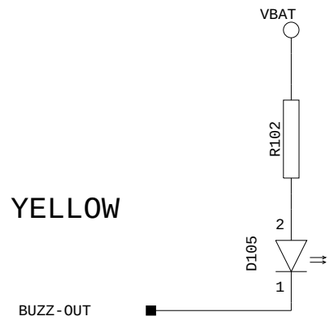
CONFIG



CHARGER



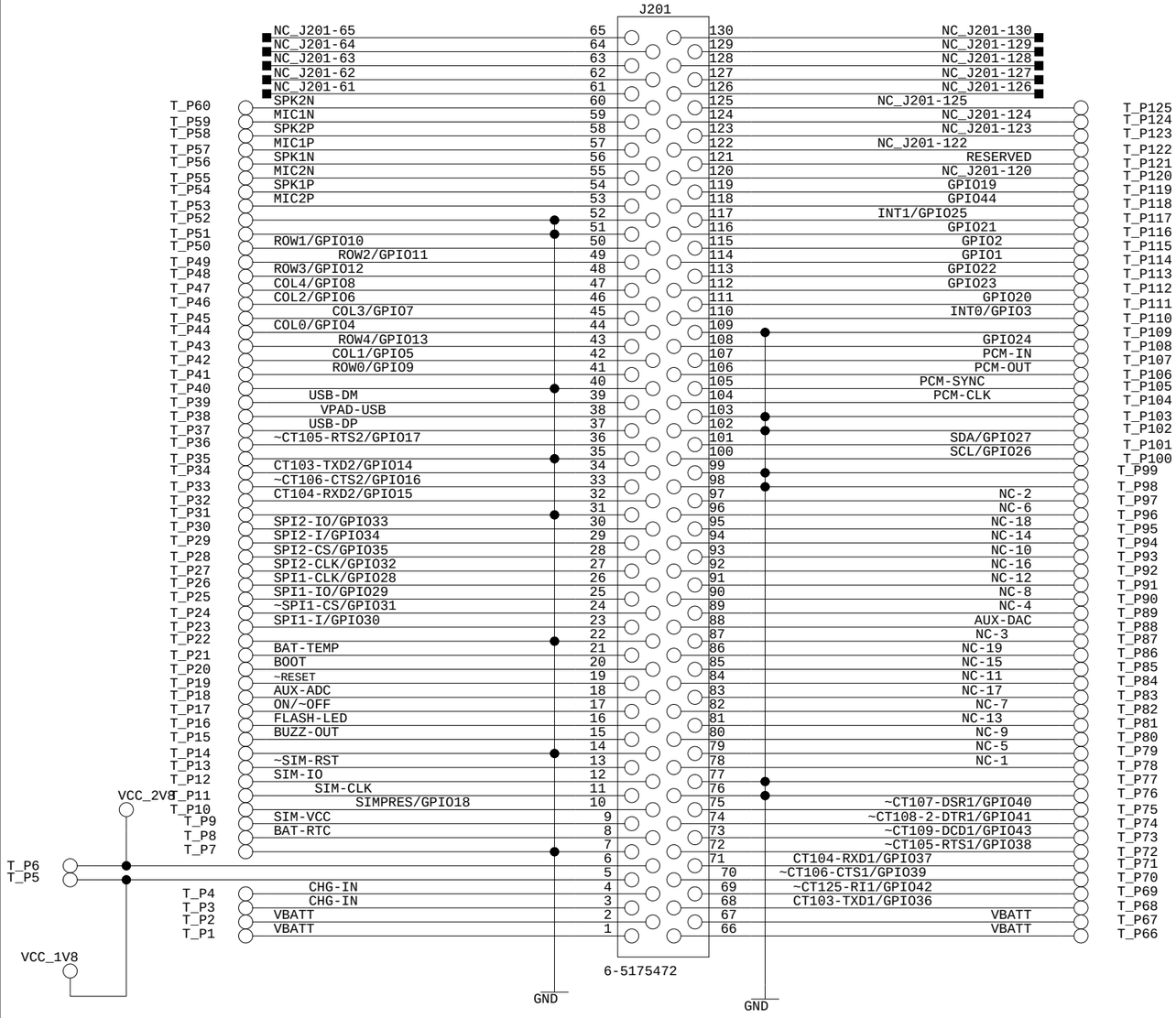
BUZZER



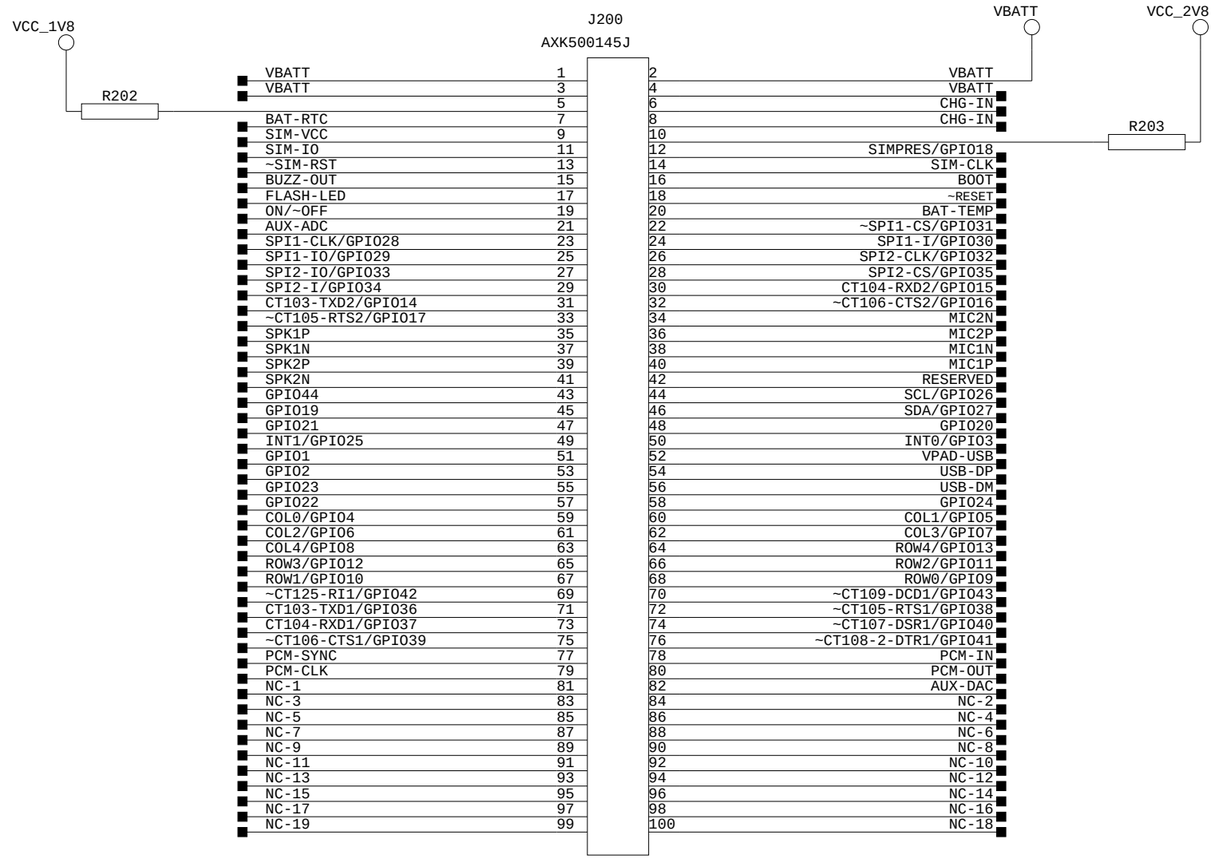
wavecom

PROJECT:	DEVELOPMENT KIT Q26
SCHEMATIC:	POWER + CTRL
Validate by: FDL	Date: 23/01/05
Verify by: FDL	Version: 3.0
Made-by: GGI	Sheet : 1/8

EXTERNAL BOARD CONNECTOR



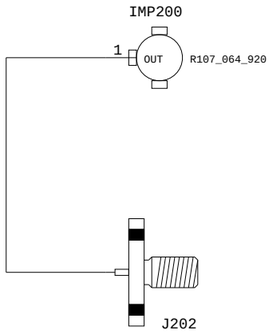
MODULE CONNECTOR

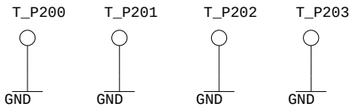


DETAILS OF THE PINS NAMES
ACCORDING TO THE MODULE

J201	J200	Q2686	NAMES ON BOARD	Q2687
J201-78	J200-81	NC-1	EP-17	~OE-R/W
J201-79	J200-85	NC-5	EP-0	D0
J201-80	J200-89	NC-9	EP-2	D2
J201-81	J200-93	NC-13	EP-4	D4
J201-82	J200-87	NC-7	EP-1	D1
J201-83	J200-97	NC-17	EP-6	D6
J201-84	J200-91	NC-11	EP-3	D3
J201-85	J200-95	NC-15	EP-5	D5
J201-86	J200-99	NC-19	EP-7	D7
J201-87	J200-83	NC-3	EP-18	~CS3
J201-89	J200-86	NC-4	EP-15	D15
J201-90	J200-90	NC-8	EP-13	D13
J201-91	J200-94	NC-12	EP-11	D11
J201-92	J200-98	NC-16	EP-9	D9
J201-93	J200-92	NC-10	EP-12	D12
J201-94	J200-96	NC-14	EP-10	D10
J201-95	J200-100	NC-18	EP-8	D8
J201-96	J200-88	NC-6	EP-14	D14
J201-97	J200-84	NC-2	EP-16	~WE-E
J201-114	J200-51	GPIO1	EP-20	~CS2/A25/GPIO1
J201-115	J200-53	GPIO2	EP-21	A24/GPIO2
J201-121	J200-42	RESERVED	EP-19	A1

ANTENNA
CONNECTOR





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PROJECT: DEVELOPMENT KIT Q26

SCHEMATIC: CONNECTORS

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			Version: 3.0
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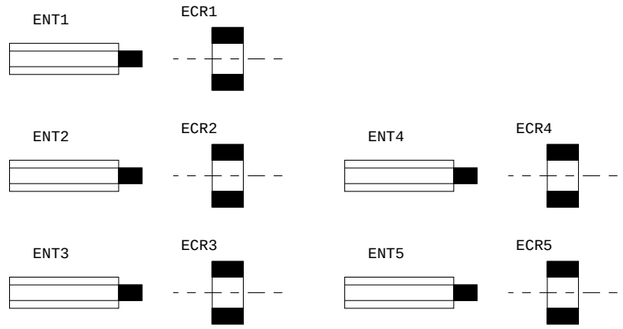
Verify by:	FDL		Sheet : 2/8
Made-by:	GGI		



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PROJECT:	DEVELOPMENT KIT Q26		
SCHEMATIC:	MECHANICS		
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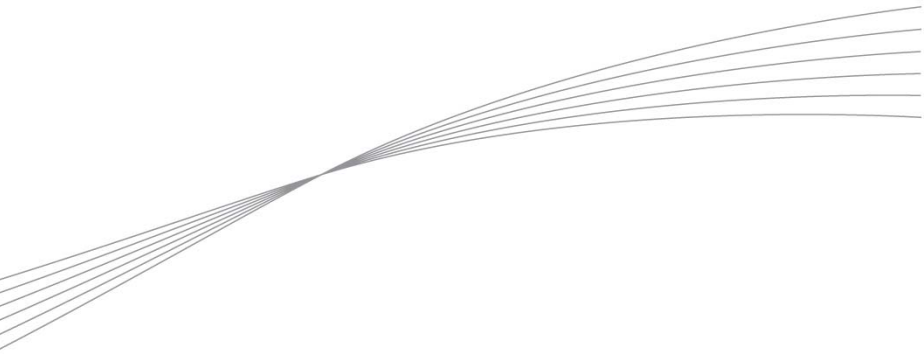

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Make it wireless

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