1. Description

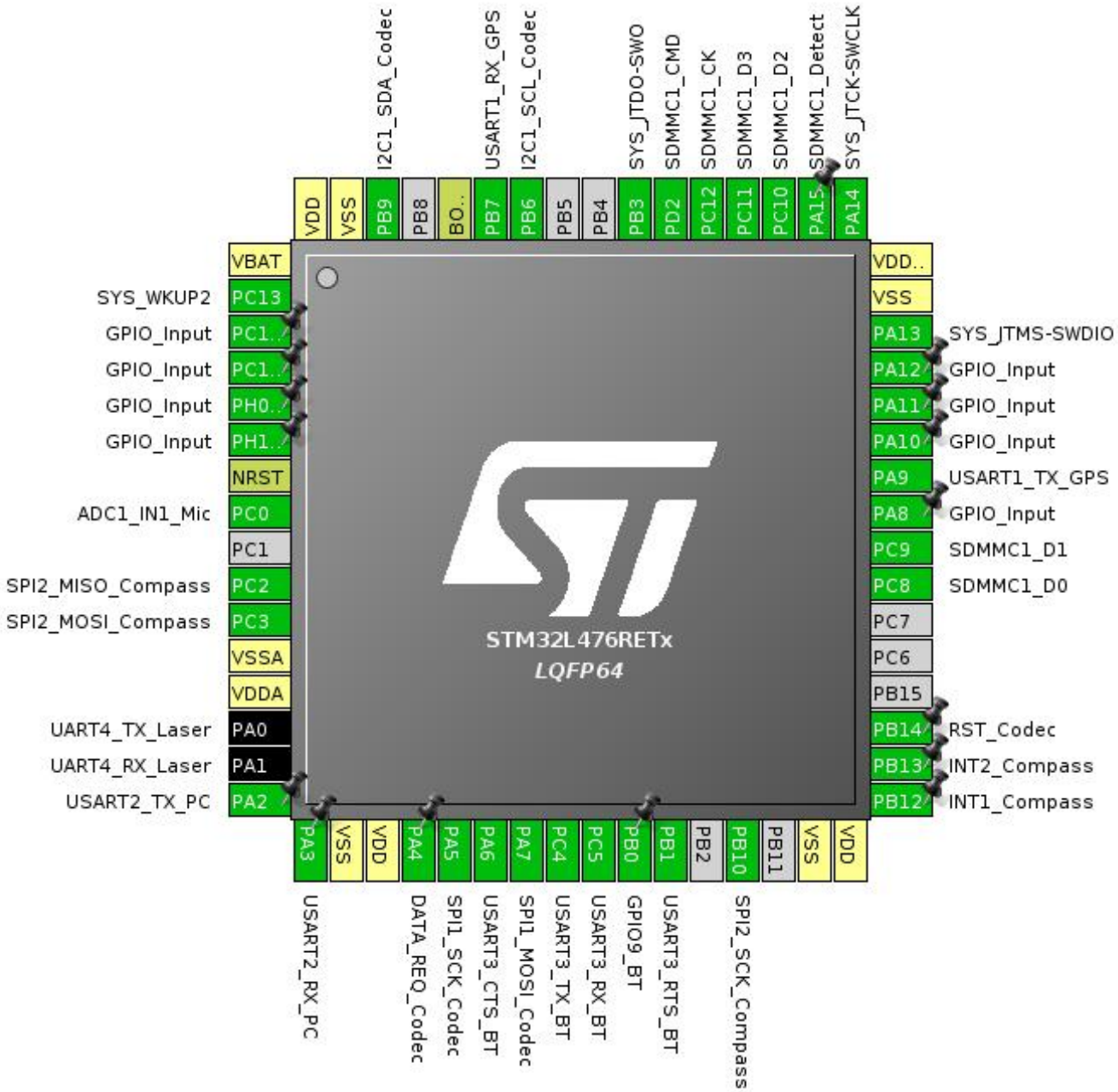
1.1. Project

Project Name	PinoutMinimal
Board Name	PinoutMinimal
Generated with:	STM32CubeMX 4.13.0
Date	02/07/2016

1.2. MCU

MCU Series	STM32L4
MCU Line	STM32L4x6
MCU name	STM32L476RETx
MCU Package	LQFP64
MCU Pin number	64

2. Pinout Configuration



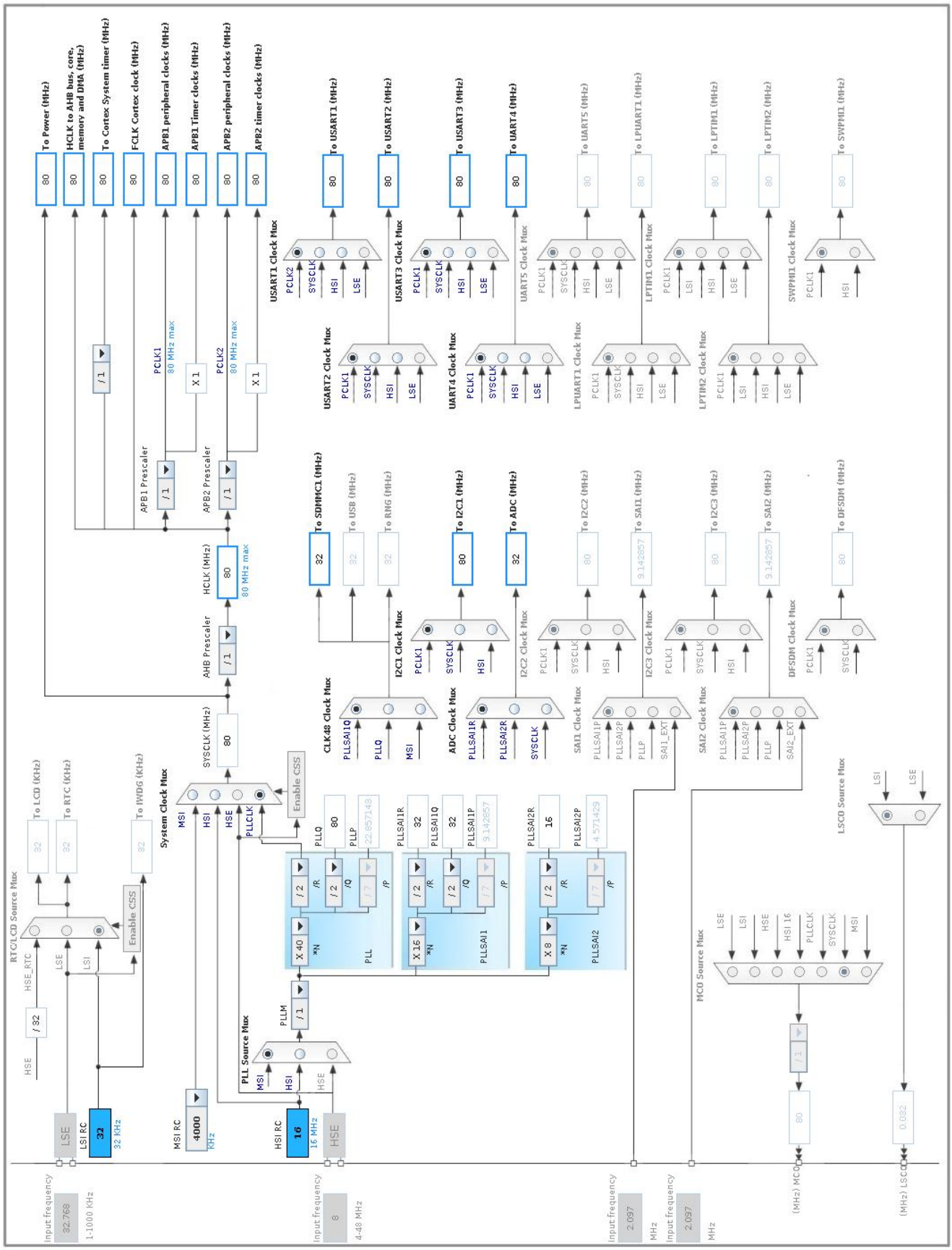
3. Pins Configuration

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC13	I/O	SYS_WKUP2	
3	PC14/OSC32_IN *	I/O	GPIO_Input	
4	PC15/OSC32_OUT *	I/O	GPIO_Input	
5	PH0/OSC_IN *	I/O	GPIO_Input	
6	PH1/OSC_OUT *	I/O	GPIO_Input	
7	NRST	Reset		
8	PC0	I/O	ADC1_IN1	ADC1_IN1_Mic
10	PC2	I/O	SPI2_MISO	SPI2_MISO_Compass
11	PC3	I/O	SPI2_MOSI	SPI2_MOSI_Compass
12	VSSA	Power		
13	VDDA	Power		
14	PA0	I/O	UART4_TX	UART4_TX_Laser
15	PA1	I/O	UART4_RX	UART4_RX_Laser
16	PA2	I/O	USART2_TX	USART2_TX_PC
17	PA3	I/O	USART2_RX	USART2_RX_PC
18	VSS	Power		
19	VDD	Power		
20	PA4 *	I/O	GPIO_Input	DATA_REQ_Codec
21	PA5	I/O	SPI1_SCK	SPI1_SCK_Codec
22	PA6	I/O	USART3_CTS	USART3_CTS_BT
23	PA7	I/O	SPI1_MOSI	SPI1_MOSI_Codec
24	PC4	I/O	USART3_TX	USART3_TX_BT
25	PC5	I/O	USART3_RX	USART3_RX_BT
26	PB0 *	I/O	GPIO_Output	GPIO9_BT
27	PB1	I/O	USART3_RTS	USART3_RTS_BT
29	PB10	I/O	SPI2_SCK	SPI2_SCK_Compass
31	VSS	Power		
32	VDD	Power		
33	PB12 *	I/O	GPIO_Input	INT1_Compass
34	PB13 *	I/O	GPIO_Input	INT2_Compass
35	PB14 *	I/O	GPIO_Output	RST_Codec
39	PC8	I/O	SDMMC1_D0	
40	PC9	I/O	SDMMC1_D1	
41	PA8 *	I/O	GPIO_Input	
42	PA9	I/O	USART1_TX	USART1_TX_GPS

Pin Number LQFP64	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
43	PA10 *	I/O	GPIO_Input	
44	PA11 *	I/O	GPIO_Input	
45	PA12 *	I/O	GPIO_Input	
46	PA13	I/O	SYS_JTMS-SWDIO	
47	VSS	Power		
48	VDDUSB	Power		
49	PA14	I/O	SYS_JTCK-SWCLK	
50	PA15 *	I/O	GPIO_Input	SDMMC1_Detect
51	PC10	I/O	SDMMC1_D2	
52	PC11	I/O	SDMMC1_D3	
53	PC12	I/O	SDMMC1_CK	
54	PD2	I/O	SDMMC1_CMD	
55	PB3	I/O	SYS_JTDO-SWO	
58	PB6	I/O	I2C1_SCL	I2C1_SCL_Codec
59	PB7	I/O	USART1_RX	USART1_RX_GPS
60	BOOT0	Boot		
62	PB9	I/O	I2C1_SDA	I2C1_SDA_Codec
63	VSS	Power		
64	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC1

IN1: IN1 Single-ended

5.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Clock Prescaler	Asynchronous clock mode divided by 1
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
End Of Conversion Selection	End of single conversion
Overrun behaviour	Overrun data preserved
Low Power Auto Wait	Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions	Enable
Enable Regular Oversampling	Disable
Number Of Conversion	1
External Trigger Conversion Edge	None
External Trigger Conversion Source	Software Trigger
Rank	1
Channel	Channel 1
Sampling Time	2.5 Cycles
Offset Number	No offset

ADC_Injected_ConversionMode:

Enable Injected Conversions	Disable

Analog Watchdog 1:

Enable Analog WatchDog1 Mode	false

Analog Watchdog 2:

Enable Analog WatchDog2 Mode	false

Analog Watchdog 3:

Enable Analog WatchDog3 Mode	false

5.2. I2C1

I2C: I2C

5.2.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x10909CEC ***

Slave Features:

Clock No Stretch Mode	Disabled
General Call Address Detection	Disabled
Primary Address Length selection	7-bit
Dual Address Acknowledged	Disabled
Primary slave address	0

5.3. SDMMC1

Mode: SD 4 bits Wide bus

5.3.1. Parameter Settings:

SDMMC parameters:

SDMMCCLK clock divide factor	0

5.4. SPI1

Mode: Transmit Only Master

5.4.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	4 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**40.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Software

5.5. SPI2

Mode: Full-Duplex Master

5.5.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	4 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**40.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Software

5.6. SYS

Debug: SWD and Asynchronous Trace
mode: System Wake-Up 2
Timebase Source: SysTick

5.7. UART4

Mode: Asynchronous

5.7.1. Parameter Settings:

Basic Parameters:

Baud Rate	**19200 ***
Word Length	7 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable

Advanced Features:

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

5.8. USART1

Mode: Asynchronous

5.8.1. Parameter Settings:

Basic Parameters:

Baud Rate	115200
Word Length	7 Bits (including Parity)
Parity	None

Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable

Advanced Features:

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

5.9. USART2

Mode: Asynchronous

5.9.1. Parameter Settings:

Basic Parameters:

Baud Rate	115200
Word Length	7 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable

Advanced Features:

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

5.10. USART3

Mode: Asynchronous

Hardware Flow Control (RS232): CTS/RTS

5.10.1. Parameter Settings:

Basic Parameters:

Baud Rate	115200
Word Length	7 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable

Advanced Features:

Auto Baudrate	Disable
TX Pin Active Level Inversion	Disable
RX Pin Active Level Inversion	Disable
Data Inversion	Disable
TX and RX Pins Swapping	Disable
Overrun	Enable
DMA on RX Error	Enable
MSB First	Disable

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6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PC0	ADC1_IN1	Analog mode for ADC conversion	No pull-up and no pull-down	n/a	ADC1_IN1_Mic
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	Pull-up	**High ***	I2C1_SCL_Codec
	PB9	I2C1_SDA	Alternate Function Open Drain	Pull-up	**High ***	I2C1_SDA_Codec
SDMMC1	PC8	SDMMC1_D0	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC9	SDMMC1_D1	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC10	SDMMC1_D2	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC11	SDMMC1_D3	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PC12	SDMMC1_CK	Alternate Function Push Pull	No pull-up and no pull-down	High	
	PD2	SDMMC1_CMD	Alternate Function Push Pull	No pull-up and no pull-down	High	
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	SPI1_SCK_Codec
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	SPI1_MOSI_Codec
SPI2	PC2	SPI2_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	SPI2_MISO_Compass
	PC3	SPI2_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	SPI2_MOSI_Compass
	PB10	SPI2_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	SPI2_SCK_Compass
SYS	PC13	SYS_WKUP2	n/a	n/a	n/a	
	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
	PB3	SYS_JTDO-SWO	n/a	n/a	n/a	
UART4	PA0	UART4_TX	Alternate Function Push Pull	Pull-up	**High ***	UART4_TX_Laser
	PA1	UART4_RX	Alternate Function Push Pull	Pull-up	**High ***	UART4_RX_Laser
USART1	PA9	USART1_TX	Alternate Function Push Pull	Pull-up	**High ***	USART1_TX_GPS
	PB7	USART1_RX	Alternate Function Push Pull	Pull-up	**High ***	USART1_RX_GPS
USART2	PA2	USART2_TX	Alternate Function Push Pull	Pull-up	**High ***	USART2_TX_PC
	PA3	USART2_RX	Alternate Function Push Pull	Pull-up	**High ***	USART2_RX_PC
USART3	PA6	USART3_CTS	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	USART3_CTS_BT
	PC4	USART3_TX	Alternate Function Push Pull	Pull-up	**High ***	USART3_TX_BT
	PC5	USART3_RX	Alternate Function Push Pull	Pull-up		USART3_RX_BT

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
					High *	
	PB1	USART3_RTS	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	USART3_RTS_BT
GPIO	PC14/OSC32_IN	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PC15/OSC32_OUT	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PH0/OSC_IN	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PH1/OSC_OUT	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PA4	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	DATA_REQ_Codec
	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	GPIO9_BT
	PB12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	INT1_Compass
	PB13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	INT2_Compass
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RST_Codec
	PA8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PA10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PA11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PA12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	
	PA15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SDMMC1_Detect

6.2. DMA configuration

nothing configured in DMA service

6.3. NVIC configuration

Interrupt Table	Enable	Preenmption Priority	SubPriority
System tick timer	true	0	0
Non maskable interrupt	unused		
Hard fault interrupt	unused		
Memory management fault	unused		
Prefetch fault, memory access fault	unused		
Undefined instruction or illegal state	unused		
Debug monitor	unused		
PVD/PVM1/PVM2/PVM3/PVM4 interrupts through EXTI lines 16/35/36/37/38	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 and ADC2 interrupts	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
SPI1 global interrupt	unused		
SPI2 global interrupt	unused		
USART1 global interrupt	unused		
USART2 global interrupt	unused		
USART3 global interrupt	unused		
SDMMC1 global interrupt	unused		
UART4 global interrupt	unused		

*** User modified value**

7. Power Plugin report

7.1. Microcontroller Selection

Series	STM32L4
Line	STM32L4x6
MCU	STM32L476RETx
Datasheet	025976_Rev3

7.2. Parameter Selection

Temperature	25
Vdd	null

8. Software Project

8.1. Project Settings

Name	Value
Project Name	PinoutMinimal
Project Folder	/orb/Dev/SeniorDesign/Schematic/Minimal/PinoutMinimal
Toolchain / IDE	SW4STM32
Firmware Package Name and Version	STM32Cube FW_L4 V1.3.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	Copy all used libraries into the project folder
Generate peripheral initialization as a pair of '.c/.h' files	No
Backup previously generated files when re-generating	No
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No