1. Description

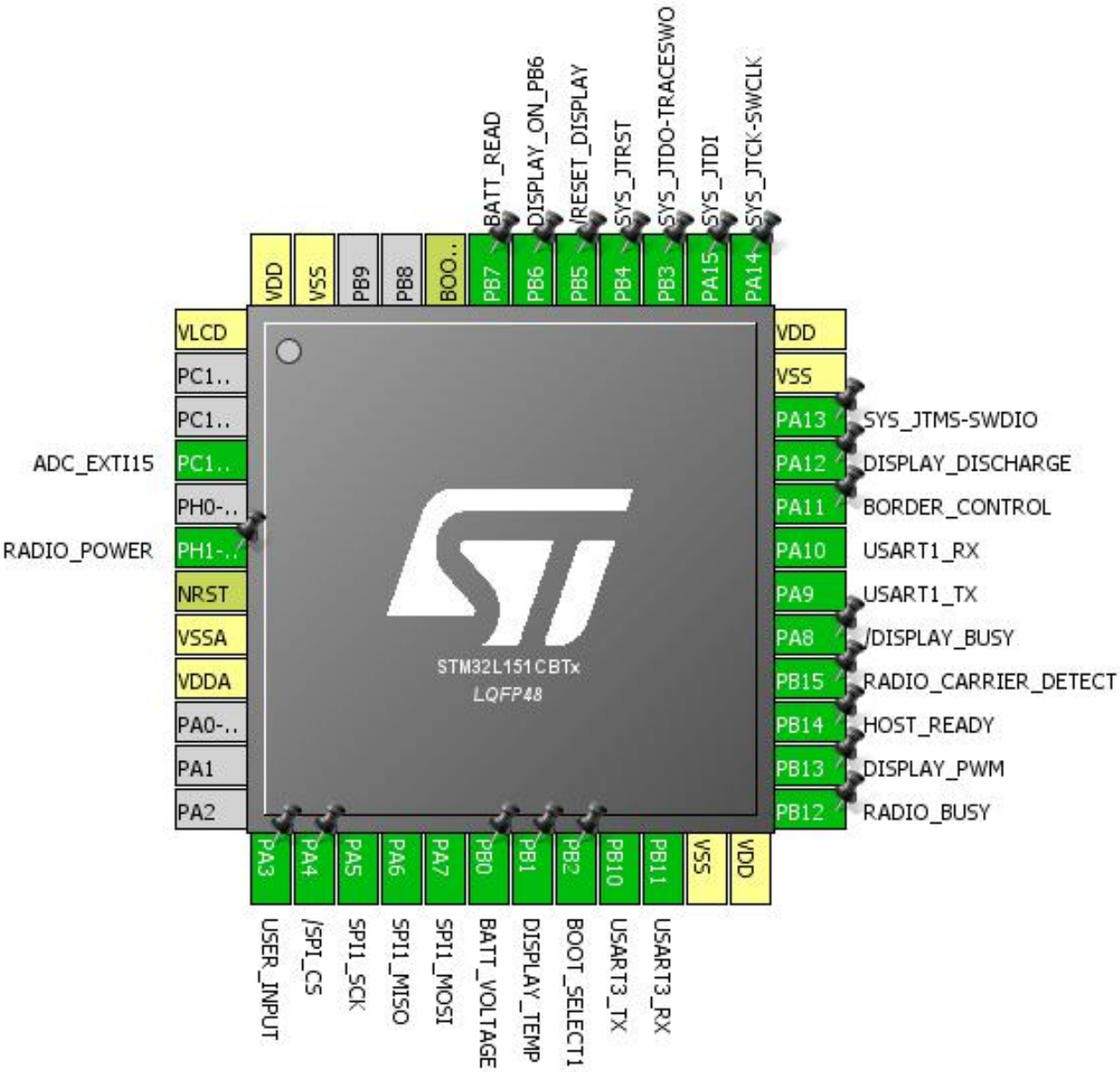
1.1. Project

Project Name	Galvanize
Board Name	Galvanize
Generated with:	STM32CubeMX 4.12.0
Date	01/22/2016

1.2. MCU

MCU Series	STM32L1
MCU Line	STM32L151/152
MCU name	STM32L151CBTx
MCU Package	LQFP48
MCU Pin number	48

2. Pinout Configuration



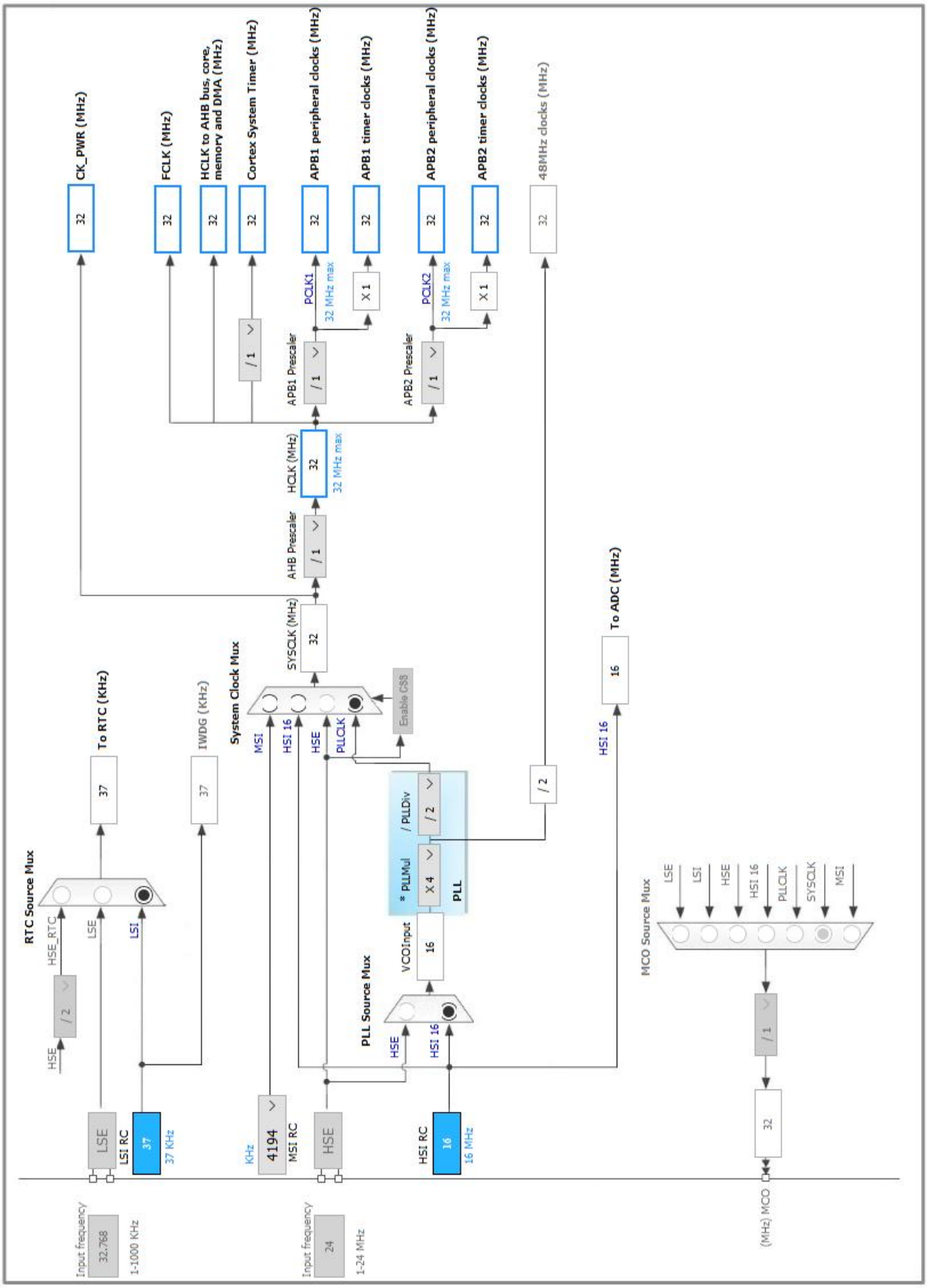
3. Pins Configuration

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VLCD	Power		
4	PC15-OSC32_OUT	I/O	ADC_EXTI15	
6	PH1-OSC_OUT *	I/O	GPIO_Output	RADIO_POWER
7	NRST	Reset		
8	VSSA	Power		
9	VDDA	Power		
13	PA3	I/O	GPIO_EXTI3	USER_INPUT
14	PA4 *	I/O	GPIO_Output	/SPI_CS
15	PA5	I/O	SPI1_SCK	
16	PA6	I/O	SPI1_MISO	
17	PA7	I/O	SPI1_MOSI	
18	PB0	I/O	ADC_IN8	BATT_VOLTAGE
19	PB1	I/O	ADC_IN9	DISPLAY_TEMP
20	PB2 *	I/O	GPIO_Input	BOOT_SELECT1
21	PB10	I/O	USART3_TX	
22	PB11	I/O	USART3_RX	
23	VSS	Power		
24	VDD	Power		
25	PB12 *	I/O	GPIO_Input	RADIO_BUSY
26	PB13 *	I/O	GPIO_Output	DISPLAY_PWM
27	PB14 *	I/O	GPIO_Output	HOST_READY
28	PB15 *	I/O	GPIO_Input	RADIO_CARRIER_DETECT
29	PA8 *	I/O	GPIO_Input	/DISPLAY_BUSY
30	PA9	I/O	USART1_TX	
31	PA10	I/O	USART1_RX	
32	PA11 *	I/O	GPIO_Output	BORDER_CONTROL
33	PA12 *	I/O	GPIO_Output	DISPLAY_DISCHARGE
34	PA13	I/O	SYS_JTMS-SWDIO	
35	VSS	Power		
36	VDD	Power		
37	PA14	I/O	SYS_JTCK-SWCLK	
38	PA15	I/O	SYS_JTDI	
39	PB3	I/O	SYS_JTDO-TRACESWO	
40	PB4	I/O	SYS_JTRST	
41	PB5 *	I/O	GPIO_Output	/RESET_DISPLAY
42	PB6 *	I/O	GPIO_Output	DISPLAY_ON_PB6

Pin Number LQFP48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
43	PB7 *	I/O	GPIO_Output	BATT_READ
44	BOOT0	Boot		
47	VSS	Power		
48	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC

mode: IN8

mode: IN9

Conversion Trigger: Injected Trigger

5.1.1. Parameter Settings:

ADC_Settings:	
Clock Prescaler	Asynchronous clock mode divided by 1
Resolution	ADC 12-bit resolution
Data Alignment	Right alignment
Scan Mode	Disabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
End Of Conversion Selection	End of sequence conversion
Low Power Auto Wait	Disabled
Low Power Auto Off	Disabled
ADC_Regular_ConversionMode:	
Number Of Conversion	1
External Trigger Conversion Edge	None
Rank	1
Channel	**Channel 9 ***
Sampling Time	4 Cycles
ADC_Injected_ConversionMode:	
Number Of Conversions	0
WatchDog:	
Enable Analog WatchDog Mode	false

5.2. RTC

Alarm A: Internal Alarm A

Alarm B: Internal Alarm B

WakeUp: Internal WakeUp

5.2.1. Parameter Settings:

General:

Hour Format	Hourformat 24
Asynchronous Predivider value	127
Synchronous Predivider value	255

Calendar Time:

Data Format	BCD data format
Hours	0
Minutes	0
Seconds	0
Day Light Saving: value of hour adjustment	Daylightsaving None
Store Operation	Storeoperation Reset

Calendar Date:

Week Day	Monday
Month	January
Date	1
Year	0

Alarm A:

Hours	0
Minutes	0
Seconds	0
Alarm Mask	Alarm Mask None
Alarm Date Week Day Sel	Date
Alarm Date	1

Alarm B:

Hours	0
Minutes	0
Seconds	0
Alarm Mask	Alarm Mask None
Alarm Date Week Day Sel	Date
Alarm Date	1

Wake UP:

Wake Up Clock	RTCCLK / 16
Wake Up Counter	0

5.3. SPI1

Mode: Full-Duplex Master

5.3.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**4 ***
Baud Rate	**8.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

5.4. SYS

Debug: JTAG(5-pin)

5.5. USART1

Mode: Asynchronous

5.5.1. Parameter Settings:

Basic Parameters:

Baud Rate	115200
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples

5.6. USART3

Mode: Asynchronous

5.6.1. Parameter Settings:

Basic Parameters:

Baud Rate	**19200 ***
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples

*** User modified value**

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC	PC15-OSC32_OUT	ADC_EXTI15	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	
	PB0	ADC_IN8	Analog mode	No pull-up and no pull-down	n/a	BATT_VOLTAGE
	PB1	ADC_IN9	Analog mode	No pull-up and no pull-down	n/a	DISPLAY_TEMP
SPI1	PA5	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PA6	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
	PA7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
	PA15	SYS_JTDI	n/a	n/a	n/a	
	PB3	SYS_JTDO-TRACESWO	n/a	n/a	n/a	
	PB4	SYS_JTRST	n/a	n/a	n/a	
USART1	PA9	USART1_TX	Alternate Function Push Pull	Pull-up	**High ***	
	PA10	USART1_RX	Alternate Function Push Pull	Pull-up	**High ***	
USART3	PB10	USART3_TX	Alternate Function Push Pull	Pull-up	**High ***	
	PB11	USART3_RX	Alternate Function Push Pull	Pull-up	**High ***	
GPIO	PH1-OSC_OUT	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Very Low	RADIO_POWER
	PA3	GPIO_EXTI3	**External Interrupt Mode with Rising/Falling edge**	No pull-up and no pull-down	n/a	USER_INPUT
	PA4	GPIO_Output	Output Push Pull	**Pull-up ***	**Medium ***	/SPI_CS
	PB2	GPIO_Input	Input mode	No pull-up and no pull-down	**n/a**	BOOT_SELECT1
	PB12	GPIO_Input	Input mode	No pull-up and no pull-down	**n/a**	RADIO_BUSY
	PB13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Very Low	DISPLAY_PWM
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Very Low	HOST_READY
	PB15	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	RADIO_CARRIER_DETECT
	PA8	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	/DISPLAY_BUSY

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PA11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Very Low	BORDER_CONTROL
	PA12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Very Low	DISPLAY_DISCHARGE
	PB5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Very Low	/RESET_DISPLAY
	PB6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Very Low	DISPLAY_ON_PB6
	PB7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Very Low	BATT_READ

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
RTC wake-up interrupt through EXTI line 20	true	4	0
EXTI line3 interrupt	true	3	0
USART1 global interrupt	true	2	0
USART3 global interrupt	true	2	0
RTC alarms A and B interrupts through EXTI line17	true	4	0
Non maskable interrupt	unused		
Hard fault interrupt	unused		
Memory management fault	unused		
Pre-fetch fault, memory access fault	unused		
Undefined instruction or illegal state	unused		
Debug monitor	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC global interrupt	unused		
SPI1 global interrupt	unused		
EXTI line[15:10] interrupts	unused		

*** User modified value**

7. Power Plugin report

7.1. Microcontroller Selection

Series	STM32L1
Line	STM32L151/152
MCU	STM32L151CBTx
Datasheet	17659_Rev11

7.2. Parameter Selection

Temperature	25
Vdd	3.6

8. Software Project

8.1. Project Settings

Name	Value
Project Name	Galvanize
Project Folder	C:\Users\petec\Dropbox\GalvanizeCode\Galvanize
Toolchain / IDE	TrueSTUDIO
Firmware Package Name and Version	STM32Cube FW_L1 V1.4.0

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	Yes
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)	Yes