
STM32
CubeMX

1. Description

1.1. Project

Project Name	MSC-GA001
Board Name	custom
Generated with:	STM32CubeMX 6.3.0
Date	09/26/2021

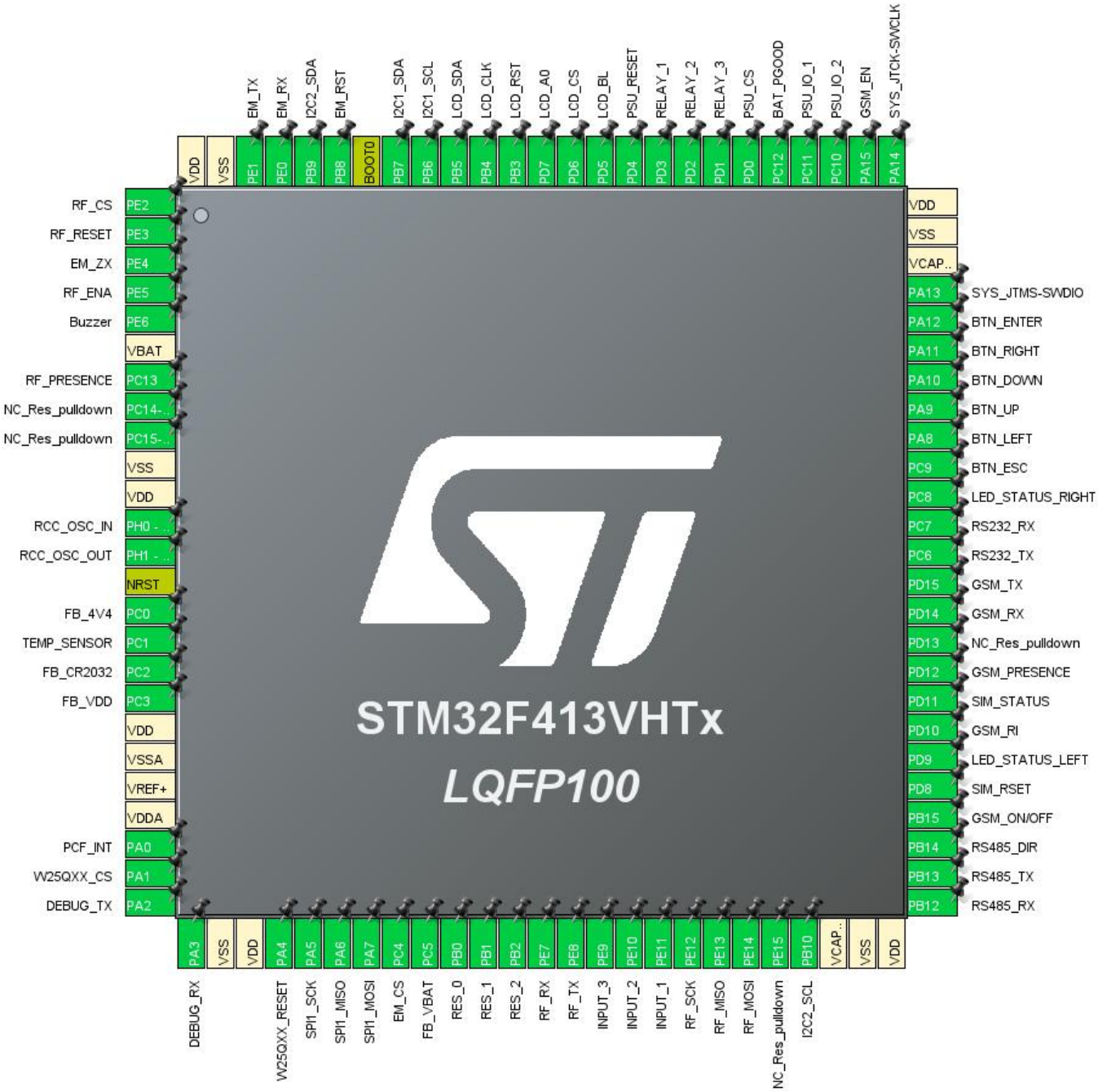
1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F413/423
MCU name	STM32F413VHTx
MCU Package	LQFP100
MCU Pin number	100

1.3. Core(s) information

Core(s)	Arm Cortex-M4

2. Pinout Configuration



3. Pins Configuration

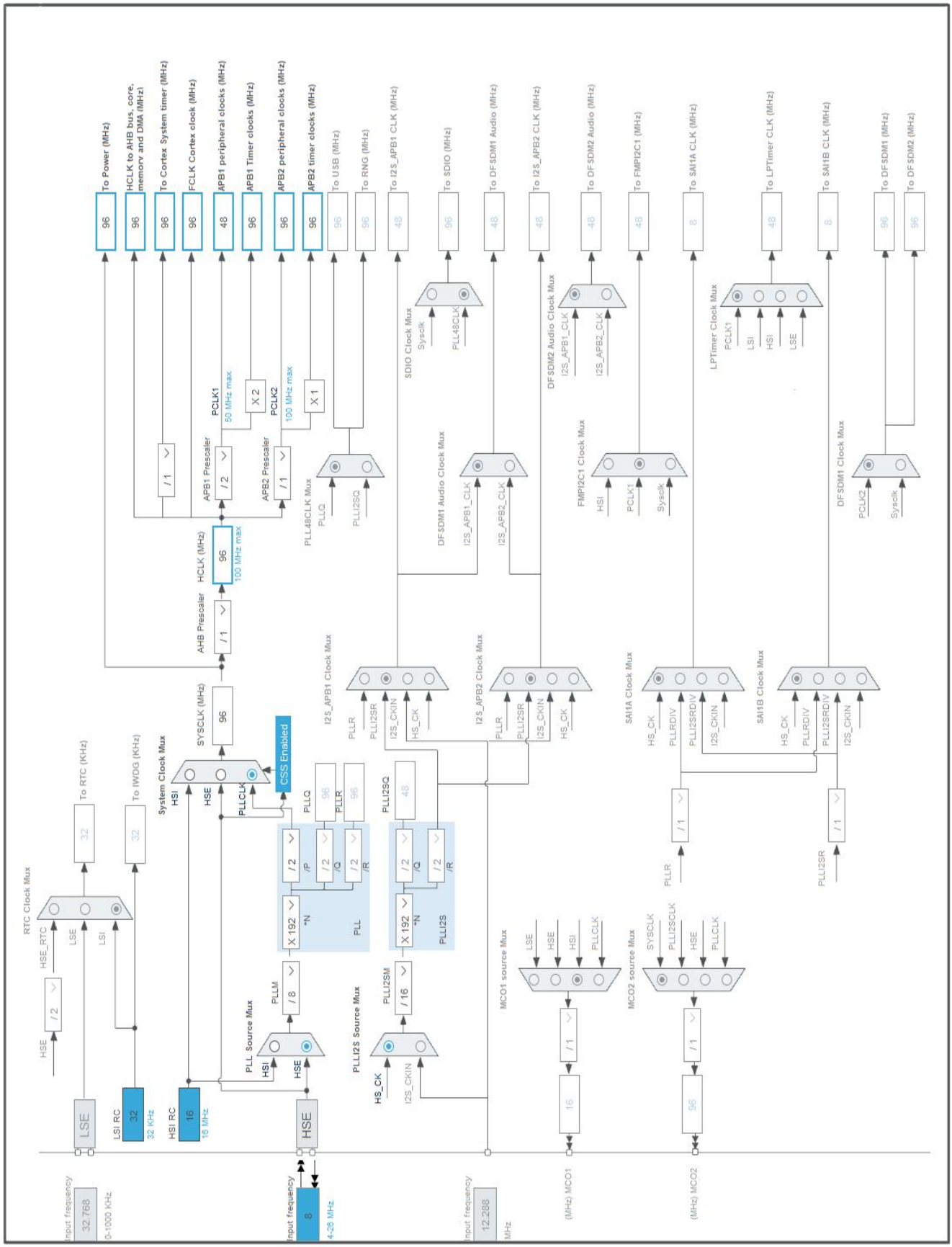
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2 *	I/O	GPIO_Output	RF_CS
2	PE3 *	I/O	GPIO_Output	RF_RESET
3	PE4 *	I/O	GPIO_Input	EM_ZX
4	PE5 *	I/O	GPIO_Output	RF_ENA
5	PE6	I/O	TIM9_CH2	Buzzer
6	VBAT	Power		
7	PC13 *	I/O	GPIO_Input	RF_PRESENCE
8	PC14-OSC32_IN *	I/O	GPIO_Input	NC_Res_pulldown
9	PC15-OSC32_OUT *	I/O	GPIO_Input	NC_Res_pulldown
10	VSS	Power		
11	VDD	Power		
12	PH0 - OSC_IN	I/O	RCC_OSC_IN	
13	PH1 - OSC_OUT	I/O	RCC_OSC_OUT	
14	NRST	Reset		
15	PC0	I/O	ADC1_IN10	FB_4V4
16	PC1	I/O	ADC1_IN11	TEMP_SENSOR
17	PC2	I/O	ADC1_IN12	FB_CR2032
18	PC3	I/O	ADC1_IN13	FB_VDD
19	VDD	Power		
20	VSSA	Power		
21	VREF+	Power		
22	VDDA	Power		
23	PA0	I/O	GPIO_EXTI0	PCF_INT
24	PA1 *	I/O	GPIO_Output	W25QXX_CS
25	PA2	I/O	USART2_TX	DEBUG_TX
26	PA3	I/O	USART2_RX	DEBUG_RX
27	VSS	Power		
28	VDD	Power		
29	PA4 *	I/O	GPIO_Output	W25QXX_RESET
30	PA5	I/O	SPI1_SCK	
31	PA6	I/O	SPI1_MISO	
32	PA7	I/O	SPI1_MOSI	
33	PC4 *	I/O	GPIO_Output	EM_CS
34	PC5	I/O	ADC1_IN15	FB_VBAT
35	PB0 *	I/O	GPIO_Input	RES_0
36	PB1 *	I/O	GPIO_Input	RES_1

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
37	PB2 *	I/O	GPIO_Input	RES_2
38	PE7	I/O	UART7_RX	RF_RX
39	PE8	I/O	UART7_TX	RF_TX
40	PE9 *	I/O	GPIO_Input	INPUT_3
41	PE10 *	I/O	GPIO_Input	INPUT_2
42	PE11 *	I/O	GPIO_Input	INPUT_1
43	PE12	I/O	SPI4_SCK	RF_SCK
44	PE13	I/O	SPI4_MISO	RF_MISO
45	PE14	I/O	SPI4_MOSI	RF_MOSI
46	PE15 *	I/O	GPIO_Input	NC_Res_pulldown
47	PB10	I/O	I2C2_SCL	
48	VCAP_1	Power		
49	VSS	Power		
50	VDD	Power		
51	PB12	I/O	UART5_RX	RS485_RX
52	PB13	I/O	UART5_TX	RS485_TX
53	PB14 *	I/O	GPIO_Output	RS485_DIR
54	PB15 *	I/O	GPIO_Output	GSM_ON/OFF
55	PD8 *	I/O	GPIO_Output	SIM_RSET
56	PD9 *	I/O	GPIO_Output	LED_STATUS_LEFT
57	PD10 *	I/O	GPIO_Input	GSM_RI
58	PD11 *	I/O	GPIO_Input	SIM_STATUS
59	PD12 *	I/O	GPIO_Input	GSM_PRESENCE
60	PD13 *	I/O	GPIO_Input	NC_Res_pulldown
61	PD14	I/O	UART9_RX	GSM_RX
62	PD15	I/O	UART9_TX	GSM_TX
63	PC6	I/O	USART6_TX	RS232_TX
64	PC7	I/O	USART6_RX	RS232_RX
65	PC8 *	I/O	GPIO_Output	LED_STATUS_RIGHT
66	PC9 *	I/O	GPIO_Input	BTN_ESC
67	PA8 *	I/O	GPIO_Input	BTN_LEFT
68	PA9 *	I/O	GPIO_Input	BTN_UP
69	PA10 *	I/O	GPIO_Input	BTN_DOWN
70	PA11 *	I/O	GPIO_Input	BTN_RIGHT
71	PA12 *	I/O	GPIO_Input	BTN_ENTER
72	PA13	I/O	SYS_JTMS-SWDIO	
73	VCAP_2	Power		
74	VSS	Power		
75	VDD	Power		

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
76	PA14	I/O	SYS_JTCK-SWCLK	
77	PA15 *	I/O	GPIO_Output	GSM_EN
78	PC10 *	I/O	GPIO_Output	PSU_IO_2
79	PC11 *	I/O	GPIO_Output	PSU_IO_1
80	PC12 *	I/O	GPIO_Input	BAT_PGOOD
81	PD0 *	I/O	GPIO_Output	PSU_CS
82	PD1 *	I/O	GPIO_Output	RELAY_3
83	PD2 *	I/O	GPIO_Output	RELAY_2
84	PD3 *	I/O	GPIO_Output	RELAY_1
85	PD4 *	I/O	GPIO_Output	PSU_RESET
86	PD5 *	I/O	GPIO_Output	LCD_BL
87	PD6 *	I/O	GPIO_Output	LCD_CS
88	PD7 *	I/O	GPIO_Output	LCD_A0
89	PB3 *	I/O	GPIO_Output	LCD_RST
90	PB4 *	I/O	GPIO_Output	LCD_CLK
91	PB5 *	I/O	GPIO_Output	LCD_SDA
92	PB6	I/O	I2C1_SCL	
93	PB7	I/O	I2C1_SDA	
94	BOOT0	Boot		
95	PB8 *	I/O	GPIO_Output	EM_RST
96	PB9	I/O	I2C2_SDA	
97	PE0	I/O	UART8_RX	EM_RX
98	PE1	I/O	UART8_TX	EM_TX
99	VSS	Power		
100	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. Software Project

5.1. Project Settings

Name	Value
Project Name	MSC-GA001
Project Folder	C:\Users\CAO VAN HUONG\STM32CubeIDE\workspace_1.7.0\MSC-GA001
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_F4 V1.26.2
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

5.2. Code Generation Settings

Name	Value
STM32Cube MCU packages and embedded software	Copy only the necessary library files
Generate peripheral initialization as a pair of '.c/.h' files	No
Backup previously generated files when re-generating	No
Keep User Code when re-generating	Yes
Delete previously generated files when not re-generated	Yes
Set all free pins as analog (to optimize the power consumption)	No
Enable Full Assert	No

5.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	MX_GPIO_Init	GPIO
2	SystemClock_Config	RCC
3	MX_ADC1_Init	ADC1
4	MX_I2C1_Init	I2C1
5	MX_I2C2_Init	I2C2
6	MX_SPI1_Init	SPI1
7	MX_SPI4_Init	SPI4
8	MX_UART5_Init	UART5
9	MX_UART7_Init	UART7
10	MX_UART8_Init	UART8
11	MX_UART9_Init	UART9

Rank	Function Name	Peripheral Instance Name
12	MX_USART2_UART_Init	USART2
13	MX_USART6_UART_Init	USART6
14	MX_TIM9_Init	TIM9

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32F4
Line	STM32F413/423
MCU	STM32F413VHTx
Datasheet	DS11581_Rev5

6.2. Parameter Selection

Temperature	25
Vdd	1.7

6.3. Battery Selection

Battery	Li-SOCL2(A3400)
Capacity	3400.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	100.0 mA
Max Pulse Current	200.0 mA
Cells in series	1
Cells in parallel	1

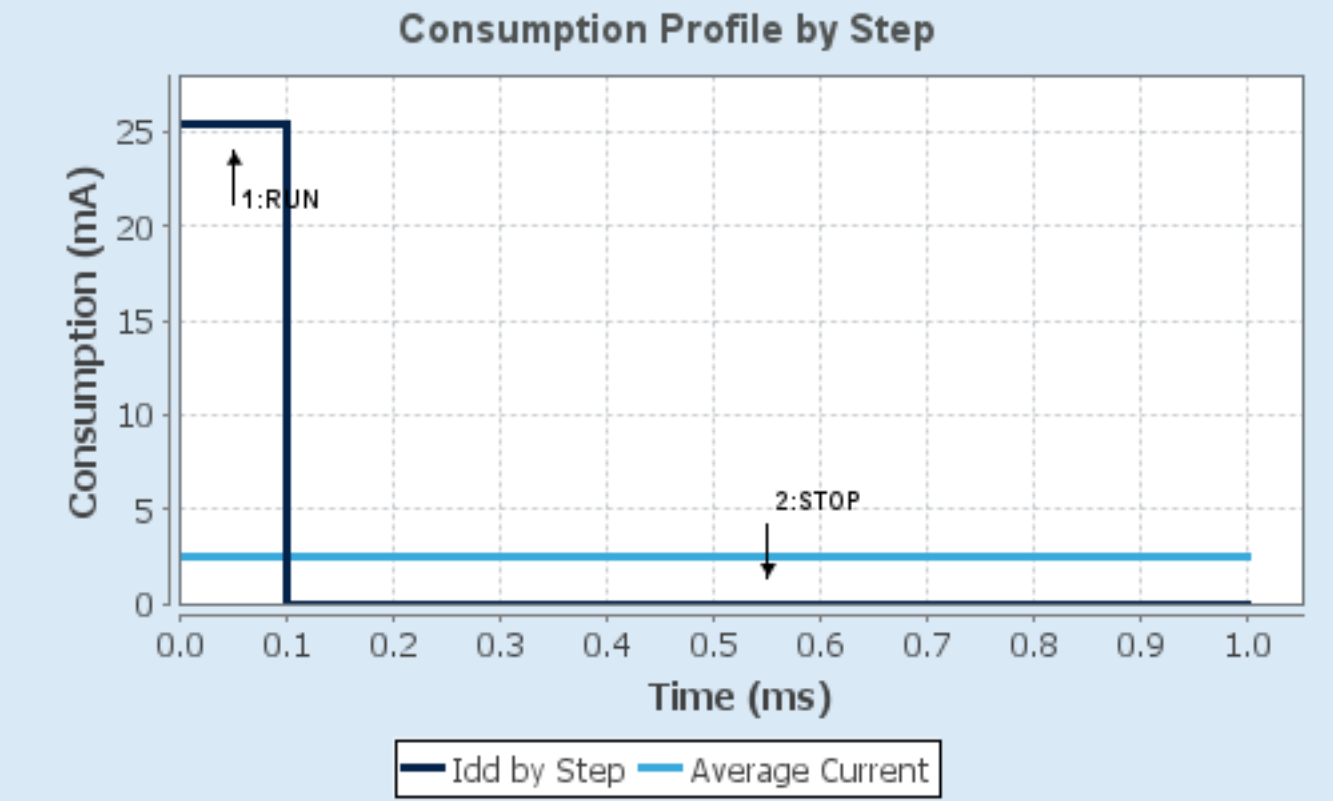
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	1.7	1.7
Voltage Source	Battery	Battery
Range	Scale1-High	No Scale
Fetch Type	FLASH/ART/PREFETCH	n/a
CPU Frequency	100 MHz	0 Hz
Clock Configuration	HSE PLL	Regulator_LPLV Flash-PwrDwn
Clock Source Frequency	4 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	25.4 mA	15.3 µA
Duration	0.1 ms	0.9 ms
DMIPS	125.0	0.0
Ta Max	103.14	105
Category	In DS Table	In DS Table

6.5. Results

Sequence Time	1 ms	Average Current	2.55 mA
Battery Life	1 month, 24 days, 23 hours	Average DMIPS	125.0 DMIPS

6.6. Chart


Consumption Profile by Step
Consumption (mA)
25
20
15
10
5
0
1:RUN
2:STOP
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
Time (ms)
Idd by Step
Average Current

7. Peripherals and Middlewares Configuration

7.1. ADC1

mode: IN10

mode: IN11

mode: IN12

mode: IN13

mode: IN15

7.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode	Independent mode

ADC_Settings:

Clock Prescaler	PCLK2 divided by 4
Resolution	12 bits (15 ADC Clock cycles)
Data Alignment	Right alignment
Scan Conversion Mode	Disabled
Continuous Conversion Mode	Disabled
Discontinuous Conversion Mode	Disabled
DMA Continuous Requests	Disabled
End Of Conversion Selection	EOC flag at the end of single channel conversion

ADC_Regular_ConversionMode:

Number Of Conversion	1
External Trigger Conversion Source	Regular Conversion launched by software
External Trigger Conversion Edge	None
Rank	1
Channel	Channel 10
Sampling Time	3 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions	0

WatchDog:

Enable Analog WatchDog Mode	false

7.2. I2C1

I2C: I2C

7.2.1. Parameter Settings:

Master Features:

I2C Speed Mode	Standard Mode
I2C Clock Speed (Hz)	100000

Slave Features:

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

7.3. I2C2

I2C: I2C

7.3.1. Parameter Settings:

Master Features:

I2C Speed Mode	Standard Mode
I2C Clock Speed (Hz)	100000

Slave Features:

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

7.4. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

7.4.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Enabled
Data Cache	Enabled
Flash Latency(WS)	3 WS (4 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
TIM Prescaler Selection	Disabled
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

7.5. SPI1

Mode: Full-Duplex Master

7.5.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**48.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

7.6. SPI4

Mode: Full-Duplex Master

7.6.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	8 Bits
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	2
Baud Rate	**48.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSS Signal Type	Software

7.7. SYS

Debug: Serial Wire

Timebase Source: SysTick

7.8. TIM9

Channel2: PWM Generation CH2

7.8.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	**24-1 ***
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	**1000-1 ***
Internal Clock Division (CKD)	No Division
auto-reload preload	**Enable ***

PWM Generation Channel 2:

Mode	PWM mode 1
Pulse (16 bits value)	0
Output compare preload	Enable
Fast Mode	Disable
CH Polarity	High

7.9. UART5

Mode: Asynchronous

7.9.1. 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

7.10. UART7

Mode: Asynchronous

7.10.1. 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

7.11. UART8

Mode: Asynchronous

7.11.1. 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

7.12. UART9

Mode: Asynchronous

7.12.1. 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

7.13. USART2

Mode: Asynchronous

7.13.1. 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

7.14. USART6

Mode: Asynchronous

7.14.1. 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

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ADC1	PC0	ADC1_IN10	Analog mode	No pull-up and no pull-down	n/a	FB_4V4
	PC1	ADC1_IN11	Analog mode	No pull-up and no pull-down	n/a	TEMP_SENSOR
	PC2	ADC1_IN12	Analog mode	No pull-up and no pull-down	n/a	FB_CR2032
	PC3	ADC1_IN13	Analog mode	No pull-up and no pull-down	n/a	FB_VDD
	PC5	ADC1_IN15	Analog mode	No pull-up and no pull-down	n/a	FB_VBAT
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	No pull-up and no pull-down	**High ***	
	PB7	I2C1_SDA	Alternate Function Open Drain	No pull-up and no pull-down	**High ***	
I2C2	PB10	I2C2_SCL	Alternate Function Open Drain	No pull-up and no pull-down	**High ***	
	PB9	I2C2_SDA	Alternate Function Open Drain	No pull-up and no pull-down	**High ***	
RCC	PH0 - OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	PH1 - OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
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 ***	
SPI4	PE12	SPI4_SCK	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	RF_SCK
	PE13	SPI4_MISO	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	RF_MISO
	PE14	SPI4_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	RF_MOSI
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
TIM9	PE6	TIM9_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	Buzzer
UART5	PB12	UART5_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	RS485_RX
	PB13	UART5_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	RS485_TX
UART7	PE7	UART7_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	RF_RX
	PE8	UART7_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	RF_TX
UART8	PE0	UART8_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	EM_RX
	PE1	UART8_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	EM_TX
UART9	PD14	UART9_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	GSM_RX

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PD15	UART9_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	GSM_TX
USART2	PA2	USART2_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	DEBUG_TX
	PA3	USART2_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	DEBUG_RX
USART6	PC6	USART6_TX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	RS232_TX
	PC7	USART6_RX	Alternate Function Push Pull	No pull-up and no pull-down	**High ***	RS232_RX
GPIO	PE2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RF_CS
	PE3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RF_RESET
	PE4	GPIO_Input	Input mode	**Pull-up ***	n/a	EM_ZX
	PE5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RF_ENA
	PC13	GPIO_Input	Input mode	**Pull-up ***	n/a	RF_PRESENCE
	PC14-OSC32_IN	GPIO_Input	Input mode	**Pull-down ***	n/a	NC_Res_pulldown
	PC15-OSC32_OUT	GPIO_Input	Input mode	**Pull-down ***	n/a	NC_Res_pulldown
	PA0	GPIO_EXTI0	External Interrupt Mode with Rising edge trigger detection	**Pull-up ***	n/a	PCF_INT
	PA1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	W25QXX_CS
	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	W25QXX_RESET
	PC4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	EM_CS
	PB0	GPIO_Input	Input mode	**Pull-up ***	n/a	RES_0
	PB1	GPIO_Input	Input mode	**Pull-up ***	n/a	RES_1
	PB2	GPIO_Input	Input mode	**Pull-up ***	n/a	RES_2
	PE9	GPIO_Input	Input mode	**Pull-up ***	n/a	INPUT_3
	PE10	GPIO_Input	Input mode	**Pull-up ***	n/a	INPUT_2
	PE11	GPIO_Input	Input mode	**Pull-up ***	n/a	INPUT_1
	PE15	GPIO_Input	Input mode	**Pull-down ***	n/a	NC_Res_pulldown
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RS485_DIR
	PB15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	GSM_ON/OFF
	PD8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SIM_RSET
	PD9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_STATUS_LEFT
	PD10	GPIO_Input	Input mode	**Pull-up ***	n/a	GSM_RI
	PD11	GPIO_Input	Input mode	**Pull-up ***	n/a	SIM_STATUS
	PD12	GPIO_Input	Input mode	**Pull-up ***	n/a	GSM_PRESENCE
	PD13	GPIO_Input	Input mode	**Pull-down ***	n/a	NC_Res_pulldown
	PC8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_STATUS_RIGHT
	PC9	GPIO_Input	Input mode	**Pull-up ***	n/a	BTN_ESC

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PA8	GPIO_Input	Input mode	**Pull-up ***	n/a	BTN_LEFT
	PA9	GPIO_Input	Input mode	**Pull-up ***	n/a	BTN_UP
	PA10	GPIO_Input	Input mode	**Pull-up ***	n/a	BTN_DOWN
	PA11	GPIO_Input	Input mode	**Pull-up ***	n/a	BTN_RIGHT
	PA12	GPIO_Input	Input mode	**Pull-up ***	n/a	BTN_ENTER
	PA15	GPIO_Output	Output Push Pull	**Pull-up ***	Low	GSM_EN
	PC10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PSU_IO_2
	PC11	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PSU_IO_1
	PC12	GPIO_Input	Input mode	**Pull-up ***	n/a	BAT_PGOOD
	PD0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PSU_CS
	PD1	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RELAY_3
	PD2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RELAY_2
	PD3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RELAY_1
	PD4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PSU_RESET
	PD5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_BL
	PD6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_CS
	PD7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_A0
	PB3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_RST
	PB4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_CLK
	PB5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LCD_SDA
	PB8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	EM_RST

8.2. DMA configuration

nothing configured in DMA service

8.3. NVIC configuration

8.3.1. NVIC

Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
Memory management fault	true	0	0
Pre-fetch fault, memory access fault	true	0	0
Undefined instruction or illegal state	true	0	0
System service call via SWI instruction	true	0	0
Debug monitor	true	0	0
Pendable request for system service	true	0	0
System tick timer	true	15	0
TIM1 break interrupt and TIM9 global interrupt	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
EXTI line0 interrupt	unused		
ADC1 global interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
I2C2 event interrupt	unused		
I2C2 error interrupt	unused		
SPI1 global interrupt	unused		
USART2 global interrupt	unused		
UART5 global interrupt	unused		
USART6 global interrupt	unused		
FPU global interrupt	unused		
UART7 global interrupt	unused		
UART8 global interrupt	unused		
SPI4 global interrupt	unused		
UART9 global interrupt	unused		

8.3.2. NVIC Code generation

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	true
Hard fault interrupt	false	true	false
Memory management fault	false	true	false
Pre-fetch fault, memory access fault	false	true	false
Undefined instruction or illegal state	false	true	false

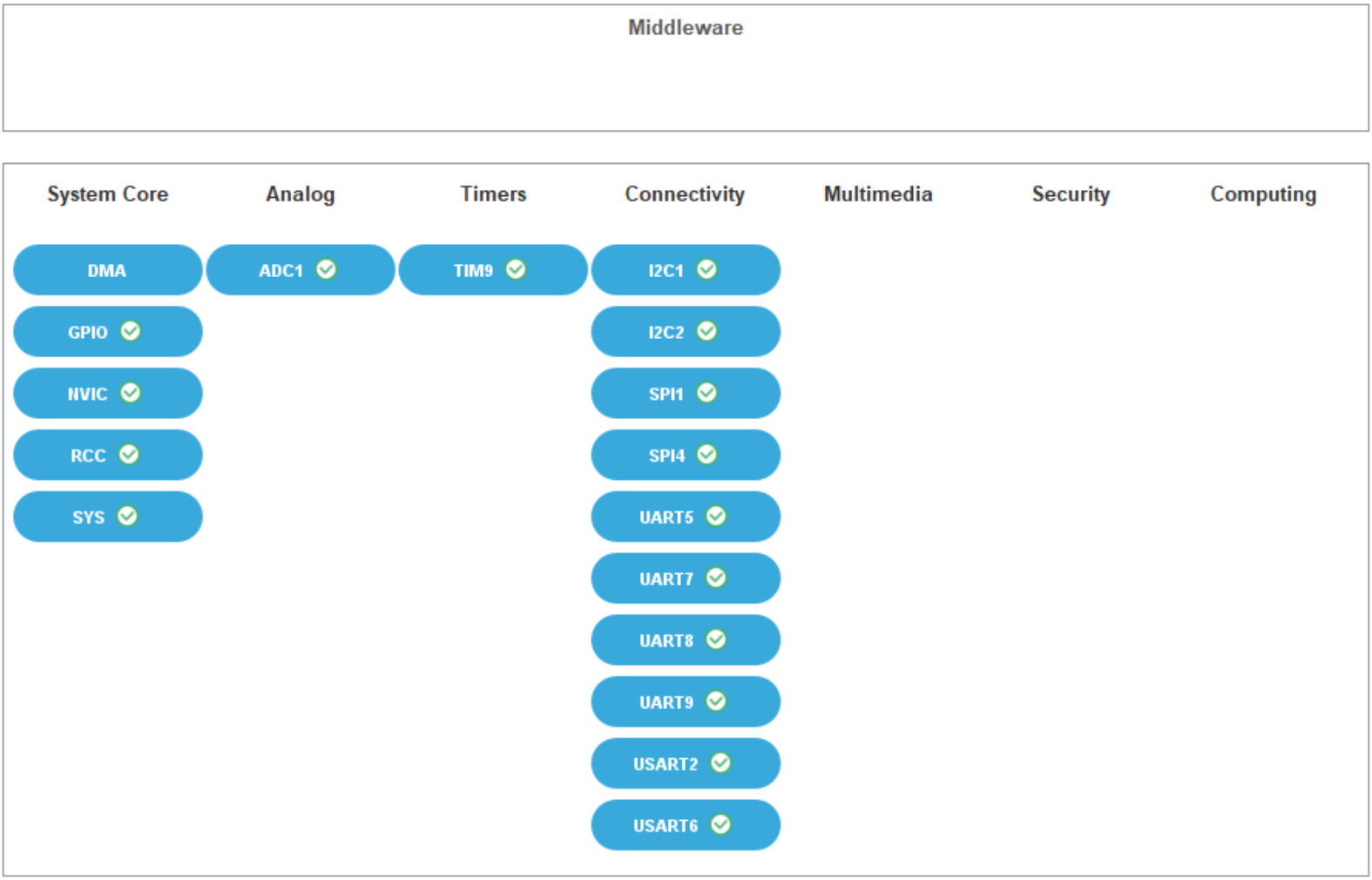
Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
System service call via SWI instruction	false	true	false
Debug monitor	false	true	false
Pendable request for system service	false	true	false
System tick timer	false	true	true
TIM1 break interrupt and TIM9 global interrupt	false	true	true

*** User modified value**

9. System Views

9.1. Category view

9.1.1. Current



10. Docs & Resources

Type	Link
Datasheet	http://www.st.com/resource/en/datasheet/DM00282249.pdf
Reference manual	http://www.st.com/resource/en/reference_manual/DM00305666.pdf
Programming manual	http://www.st.com/resource/en/programming_manual/DM00046982.pdf
Errata sheet	http://www.st.com/resource/en/errata_sheet/DM00318678.pdf
Application note	http://www.st.com/resource/en/application_note/CD00167594.pdf
Application note	http://www.st.com/resource/en/application_note/CD00211314.pdf
Application note	http://www.st.com/resource/en/application_note/CD00249778.pdf
Application note	http://www.st.com/resource/en/application_note/CD00259245.pdf
Application note	http://www.st.com/resource/en/application_note/CD00264321.pdf
Application note	http://www.st.com/resource/en/application_note/CD00264342.pdf
Application note	http://www.st.com/resource/en/application_note/CD00264379.pdf
Application note	http://www.st.com/resource/en/application_note/DM00024853.pdf
Application note	http://www.st.com/resource/en/application_note/DM00040802.pdf
Application note	http://www.st.com/resource/en/application_note/DM00040808.pdf
Application note	http://www.st.com/resource/en/application_note/DM00042534.pdf
Application note	http://www.st.com/resource/en/application_note/DM00046011.pdf
Application note	http://www.st.com/resource/en/application_note/DM00072315.pdf
Application note	http://www.st.com/resource/en/application_note/DM00073742.pdf
Application note	http://www.st.com/resource/en/application_note/DM00073853.pdf
Application note	http://www.st.com/resource/en/application_note/DM00080497.pdf
Application note	http://www.st.com/resource/en/application_note/DM00081379.pdf
Application note	http://www.st.com/resource/en/application_note/DM00115714.pdf
Application note	http://www.st.com/resource/en/application_note/DM00129215.pdf
Application note	http://www.st.com/resource/en/application_note/DM00160482.pdf
Application note	http://www.st.com/resource/en/application_note/DM00213525.pdf

Application note	http://www.st.com/resource/en/application_note/DM00220769.pdf
Application note	http://www.st.com/resource/en/application_note/DM00226326.pdf
Application note	http://www.st.com/resource/en/application_note/DM00227538.pdf
Application note	http://www.st.com/resource/en/application_note/DM00236305.pdf
Application note	http://www.st.com/resource/en/application_note/DM00257177.pdf
Application note	http://www.st.com/resource/en/application_note/DM00272912.pdf
Application note	http://www.st.com/resource/en/application_note/DM00281138.pdf
Application note	http://www.st.com/resource/en/application_note/DM00296349.pdf
Application note	http://www.st.com/resource/en/application_note/DM00315319.pdf
Application note	http://www.st.com/resource/en/application_note/DM00325582.pdf
Application note	http://www.st.com/resource/en/application_note/DM00327191.pdf
Application note	http://www.st.com/resource/en/application_note/DM00343623.pdf
Application note	http://www.st.com/resource/en/application_note/DM00354244.pdf
Application note	http://www.st.com/resource/en/application_note/DM00354333.pdf
Application note	http://www.st.com/resource/en/application_note/DM00377852.pdf
Application note	http://www.st.com/resource/en/application_note/DM00380469.pdf
Application note	http://www.st.com/resource/en/application_note/DM00395696.pdf
Application note	http://www.st.com/resource/en/application_note/DM00431633.pdf
Application note	http://www.st.com/resource/en/application_note/DM00493651.pdf
Application note	http://www.st.com/resource/en/application_note/DM00536349.pdf
Application note	http://www.st.com/resource/en/application_note/DM00725181.pdf