1. Description

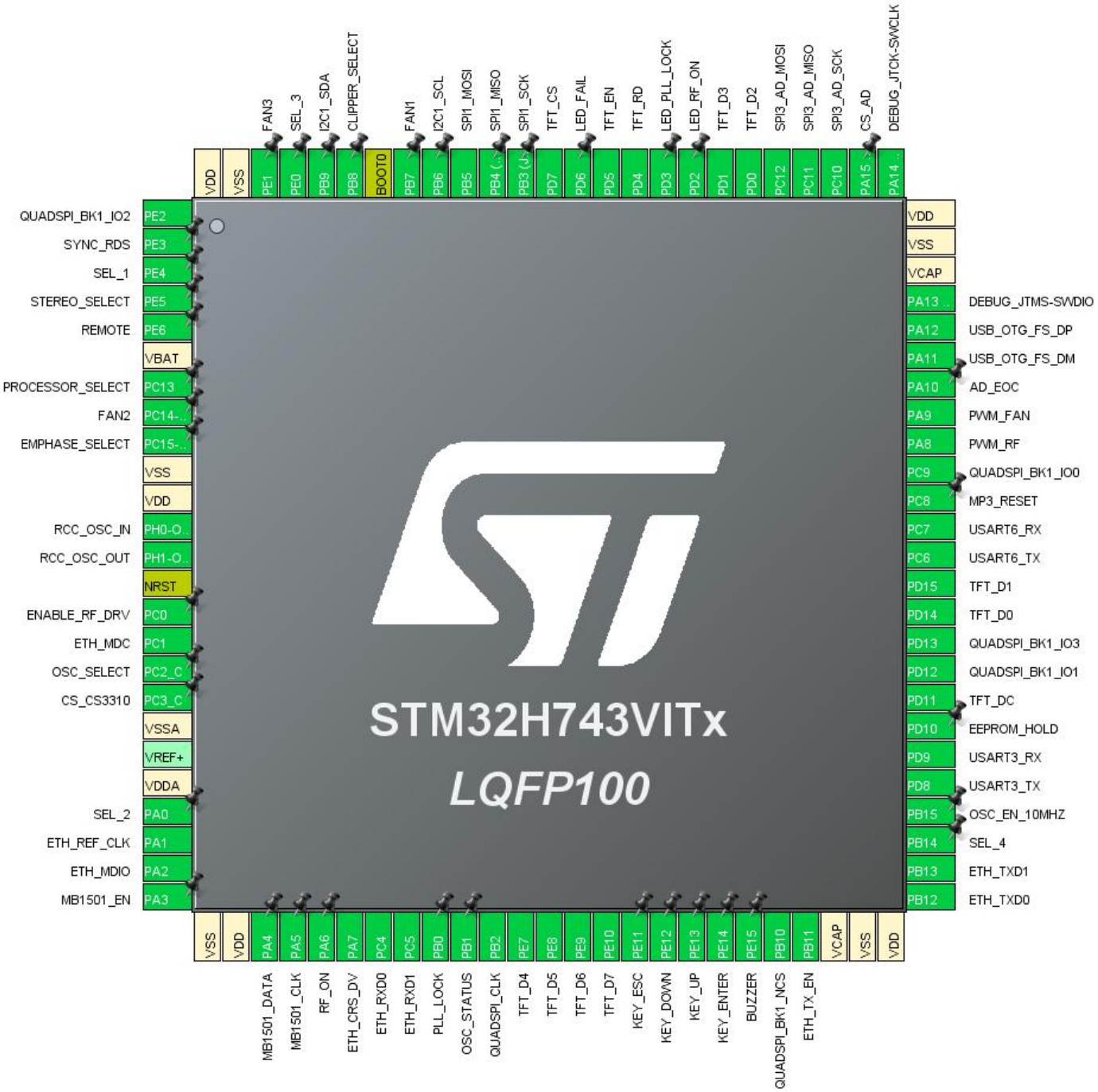
1.1. Project

Project Name	EX-XT-H7
Board Name	custom
Generated with:	STM32CubeMX 5.6.0
Date	03/06/2020

1.2. MCU

MCU Series	STM32H7
MCU Line	STM32H743/753
MCU name	STM32H743VITx
MCU Package	LQFP100
MCU Pin number	100

2. Pinout Configuration



3. Pins Configuration

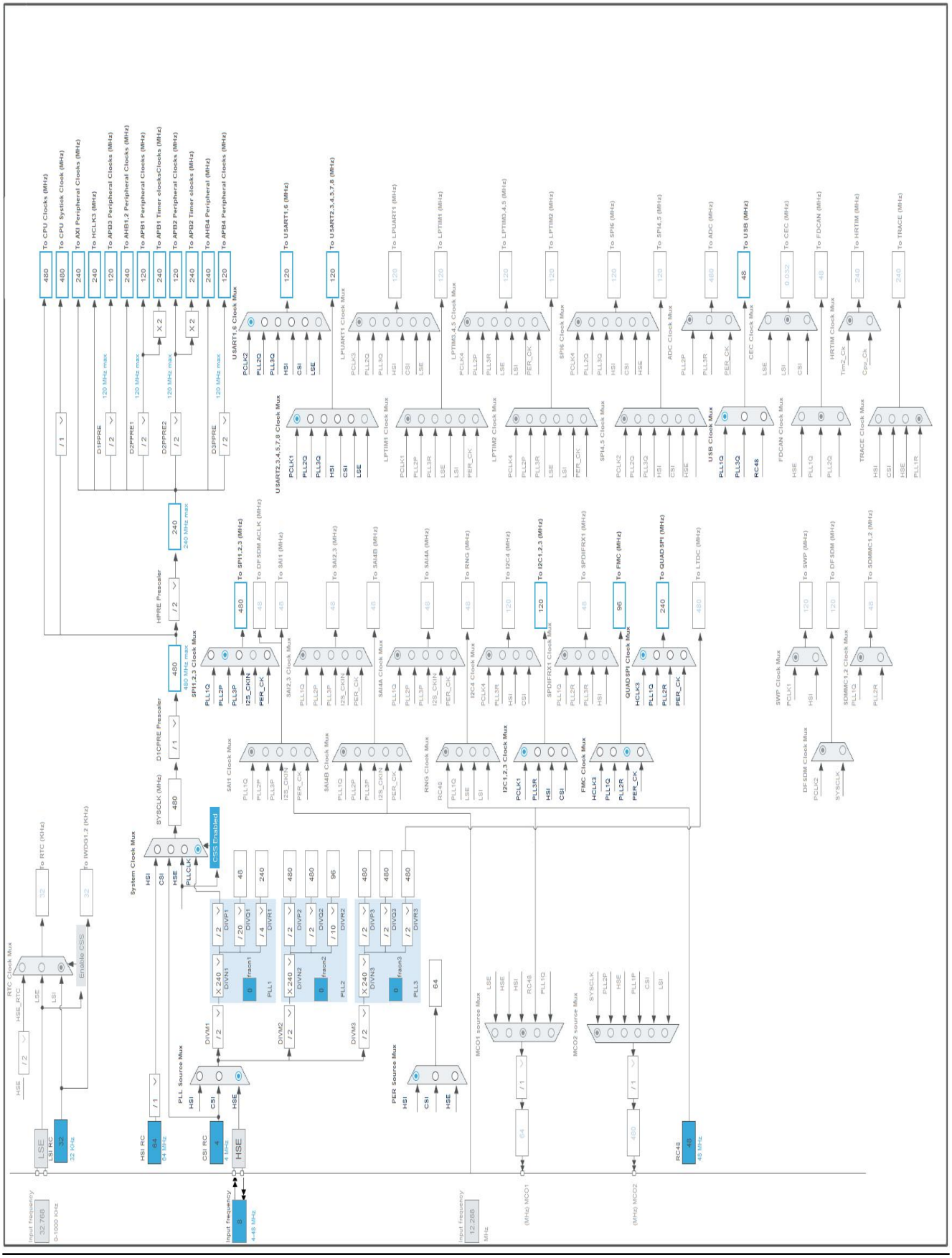
Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	PE2	I/O	QUADSPI_BK1_IO2	
2	PE3 *	I/O	GPIO_Input	SYNC_RDS
3	PE4 *	I/O	GPIO_Output	SEL_1
4	PE5 *	I/O	GPIO_Output	STEREO_SELECT
5	PE6 *	I/O	GPIO_Input	REMOTE
6	VBAT	Power		
7	PC13 *	I/O	GPIO_Output	PROCESSOR_SELECT
8	PC14-OSC32_IN (OSC32_IN) *	I/O	GPIO_Input	FAN2
9	PC15-OSC32_OUT (OSC32_OUT) *	I/O	GPIO_Output	EMPHASE_SELECT
10	VSS	Power		
11	VDD	Power		
12	PH0-OSC_IN (PH0)	I/O	RCC_OSC_IN	
13	PH1-OSC_OUT (PH1)	I/O	RCC_OSC_OUT	
14	NRST	Reset		
15	PC0 *	I/O	GPIO_Output	ENABLE_RF_DRV
16	PC1	I/O	ETH_MDC	
17	PC2_C *	I/O	GPIO_Output	OSC_SELECT
18	PC3_C *	I/O	GPIO_Output	CS_CS3310
19	VSSA	Power		
21	VDDA	Power		
22	PA0 *	I/O	GPIO_Output	SEL_2
23	PA1	I/O	ETH_REF_CLK	
24	PA2	I/O	ETH_MDIO	
25	PA3 *	I/O	GPIO_Output	MB1501_EN
26	VSS	Power		
27	VDD	Power		
28	PA4 *	I/O	GPIO_Output	MB1501_DATA
29	PA5 *	I/O	GPIO_Output	MB1501_CLK
30	PA6 *	I/O	GPIO_Output	RF_ON
31	PA7	I/O	ETH_CRS_DV	
32	PC4	I/O	ETH_RXD0	
33	PC5	I/O	ETH_RXD1	
34	PB0 *	I/O	GPIO_Input	PLL_LOCK
35	PB1 *	I/O	GPIO_Input	OSC_STATUS

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
36	PB2	I/O	QUADSPI_CLK	
37	PE7	I/O	FMC_D4	TFT_D4
38	PE8	I/O	FMC_D5	TFT_D5
39	PE9	I/O	FMC_D6	TFT_D6
40	PE10	I/O	FMC_D7	TFT_D7
41	PE11 *	I/O	GPIO_Input	KEY_ESC
42	PE12 *	I/O	GPIO_Input	KEY_DOWN
43	PE13 *	I/O	GPIO_Input	KEY_UP
44	PE14 *	I/O	GPIO_Input	KEY_ENTER
45	PE15 *	I/O	GPIO_Output	BUZZER
46	PB10	I/O	QUADSPI_BK1_NCS	
47	PB11	I/O	ETH_TX_EN	
48	VCAP	Power		
49	VSS	Power		
50	VDD	Power		
51	PB12	I/O	ETH_TXD0	
52	PB13	I/O	ETH_TXD1	
53	PB14 *	I/O	GPIO_Output	SEL_4
54	PB15 *	I/O	GPIO_Output	OSC_EN_10MHZ
55	PD8	I/O	USART3_TX	
56	PD9	I/O	USART3_RX	
57	PD10 *	I/O	GPIO_Output	EEPROM_HOLD
58	PD11	I/O	FMC_A16	TFT_DC
59	PD12	I/O	QUADSPI_BK1_IO1	
60	PD13	I/O	QUADSPI_BK1_IO3	
61	PD14	I/O	FMC_D0	TFT_D0
62	PD15	I/O	FMC_D1	TFT_D1
63	PC6	I/O	USART6_TX	
64	PC7	I/O	USART6_RX	
65	PC8 *	I/O	GPIO_Output	MP3_RESET
66	PC9	I/O	QUADSPI_BK1_IO0	
67	PA8	I/O	TIM1_CH1	PWM_RF
68	PA9	I/O	TIM1_CH2	PWM_FAN
69	PA10 *	I/O	GPIO_Input	AD_EOC
70	PA11	I/O	USB_OTG_FS_DM	
71	PA12	I/O	USB_OTG_FS_DP	
72	PA13 (JTMS/SWDIO)	I/O	DEBUG_JTMS-SWDIO	
73	VCAP	Power		
74	VSS	Power		

Pin Number LQFP100	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
75	VDD	Power		
76	PA14 (JTCK/SWCLK)	I/O	DEBUG_JTCK-SWCLK	
77	PA15 (JTDI) *	I/O	GPIO_Output	CS_AD
78	PC10	I/O	SPI3_SCK	SPI3_AD_SCK
79	PC11	I/O	SPI3_MISO	SPI3_AD_MISO
80	PC12	I/O	SPI3_MOSI	SPI3_AD_MOSI
81	PD0	I/O	FMC_D2	TFT_D2
82	PD1	I/O	FMC_D3	TFT_D3
83	PD2 *	I/O	GPIO_Output	LED_RF_ON
84	PD3 *	I/O	GPIO_Output	LED_PLL_LOCK
85	PD4	I/O	FMC_NOE	TFT_RD
86	PD5	I/O	FMC_NWE	TFT_EN
87	PD6 *	I/O	GPIO_Output	LED_FAIL
88	PD7	I/O	FMC_NE1	TFT_CS
89	PB3 (JTDO/TRACESWO)	I/O	SPI1_SCK	
90	PB4 (NJTRST)	I/O	SPI1_MISO	
91	PB5	I/O	SPI1_MOSI	
92	PB6	I/O	I2C1_SCL	
93	PB7 *	I/O	GPIO_Input	FAN1
94	BOOT0	Boot		
95	PB8 *	I/O	GPIO_Output	CLIPPER_SELECT
96	PB9	I/O	I2C1_SDA	
97	PE0 *	I/O	GPIO_Output	SEL_3
98	PE1 *	I/O	GPIO_Input	FAN3
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	EX-XT-H7
Project Folder	C:\Users\rdsan\STM32CubeIDE\workspace_1.3.0\EX-XT-H7
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_H7 V1.7.0

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	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)	No

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32H7
Line	STM32H743/753
MCU	STM32H743VITx
Datasheet	DS12110_Rev5

6.2. Parameter Selection

Temperature	25
Vdd	3.0

6.3. Battery Selection

Battery	Alkaline(9V)
Capacity	625.0 mAh
Self Discharge	0.3 %/month
Nominal Voltage	9.0 V
Max Cont Current	200.0 mA
Max Pulse Current	0.0 mA
Cells in series	1
Cells in parallel	1

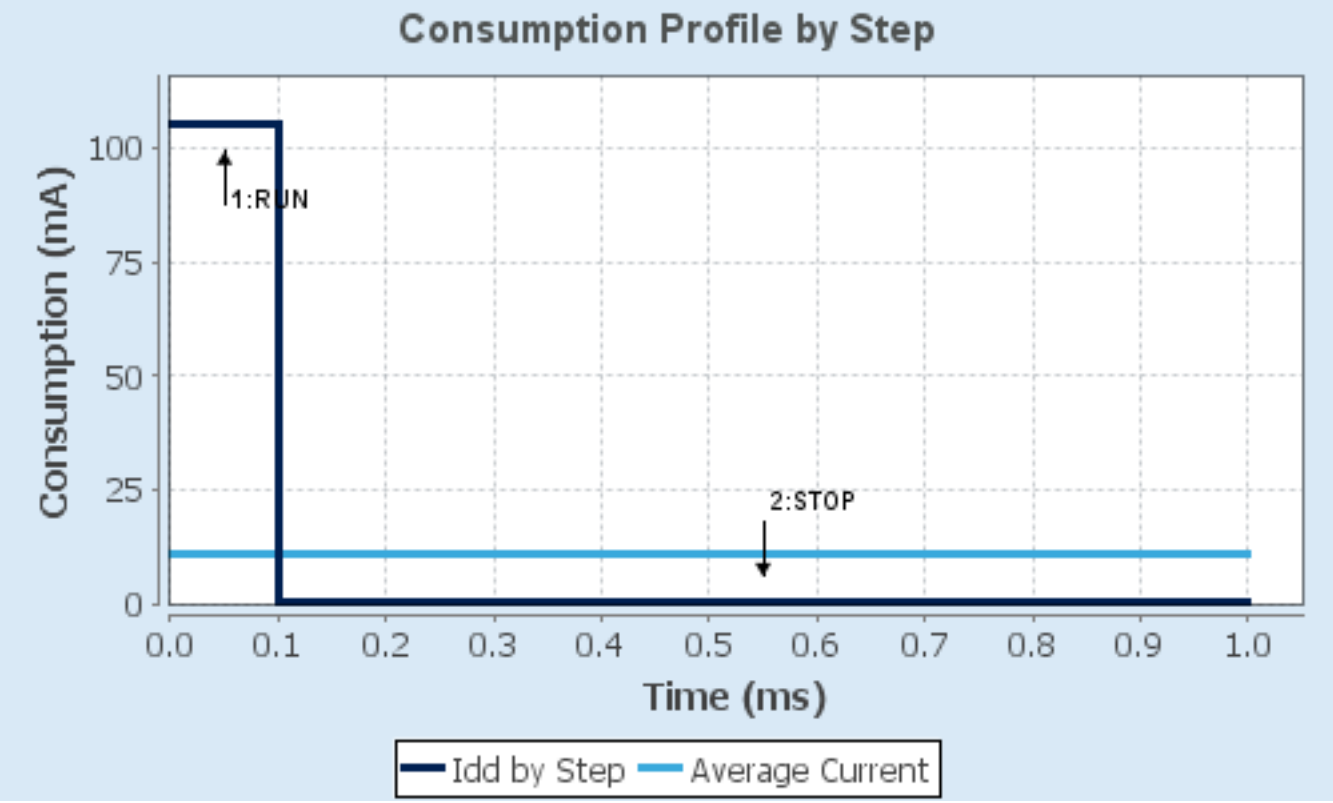
6.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP
Vdd	3.0	3.0
Voltage Source	Battery	Battery
Range	VOS1: Scale1-High	SVOS5: System-Scale5
D1 Mode	DRUN/CRUN	DSTANDBY
D2 Mode	DSTANDBY	DSTANDBY
D3 Mode	DRUN	DSTOP
Fetch Type	FLASH_A	NA
CPU Frequency	400 MHz	0 Hz
Clock Configuration	HSE BYP PLL Flash-ON Cache-ON	Flash-LP
Clock Source Frequency	25 MHz	0 Hz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	105 mA	170 µA
Duration	0.1 ms	0.9 ms
DMIPS	856.0	0.0
Ta Max	110.82	124.98
Category	In DS Table	In DS Table

6.5. RESULTS

Sequence Time	1 ms	Average Current	10.65 mA
Battery Life	2 days, 10 hours	Average DMIPS	856.0 DMIPS

6.6. Chart


Consumption Profile by Step
Consumption (mA)
100
75
50
25
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. IPs and Middleware Configuration

7.1. CORTEX_M7

7.1.1. Parameter Settings:

Cortex Interface Settings:

CPU ICache	**Enabled ***
CPU DCache	**Enabled ***

Cortex Memory Protection Unit Control Settings:

MPU Control Mode	MPU NOT USED

7.2. DEBUG

Debug: Serial Wire

7.3. ETH

Mode: RMII

7.3.1. Parameter Settings:

General : Ethernet Configuration:

Warning	The ETH can work only when RAM is pointing at 0x24000000
Note	PHY Driver must be configured from the LwIP 'Platform Settings' top right tab
Ethernet MAC Address	00:80:E1:00:00:00
Tx Descriptor Length	4
First Tx Descriptor Address	**0x30040060 ***
Rx Descriptor Length	4
First Rx Descriptor Address	**0x30040000 ***
Rx Buffers Address	**0x30040200 ***
Rx Buffers Length	1524

7.4. FMC

NOR Flash/PSRAM/SRAM/ROM/LCD 1

Chip Select: NE1

Memory type: LCD Interface

LCD Register Select: A16

Data: 8 bits

7.4.1. NOR/PSRAM 1:

NOR/PSRAM control:

Memory type	LCD Interface
Bank	Bank 1 NOR/PSRAM 1
Write operation	Enabled
Write FIFO	Enabled
Extended mode	Disabled

NOR/PSRAM timing:

Address setup time in HCLK clock cycles	15
Data setup time in HCLK clock cycles	255
Bus turn around time in HCLK clock cycles	15

7.4.2. Bank Mapping:

Mapping parameters:

FMC bank mapping	Default mapping

7.5. GPIO

7.6. I2C1

I2C: I2C

7.6.1. Parameter Settings:

Timing configuration:

I2C Speed Mode	**Fast Mode ***
I2C Speed Frequency (KHz)	400
Rise Time (ns)	0
Fall Time (ns)	0
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x00B03FDB ***

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

7.7. QUADSPI

QuadSPI Mode: Bank1 with Quad SPI Lines

7.7.1. Parameter Settings:

General Parameters:

Clock Prescaler	255
Fifo Threshold	1
Sample Shifting	No Sample Shifting
Flash Size	1
Chip Select High Time	1 Cycle
Clock Mode	Low
Flash ID	Flash ID 1
Dual Flash	Disabled

7.8. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

7.8.1. Parameter Settings:

SupplySource	PWR_LDO_SUPPLY

RCC Parameters:

TIM Prescaler Selection	Disabled
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000
CSI Calibration Value	16
HSI Calibration Value	32

System Parameters:

VDD voltage (V)	3.3
Flash Latency(WS)	4 WS (5 CPU cycle)

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 0

PLL range Parameters:

PLL1 clock Input range	Between 4 and 8 MHz
PLL2 input frequency range	Between 4 and 8 MHz
PLL1 clock Output range	Wide VCO range

PLL2 clock Output range	Wide VCO range

7.9. SPI1

Mode: Full-Duplex Master

7.9.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	**8 Bits ***
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**4 ***
Baud Rate	**120.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Software
Fifo Threshold	Fifo Threshold 01 Data
Tx Crc Initialization Pattern	All Zero Pattern
Rx Crc Initialization Pattern	All Zero Pattern
Nss Polarity	Nss Polarity Low
Master Ss Idleness	00 Cycle
Master Inter Data Idleness	00 Cycle
Master Receiver Auto Susp	Disable
Master Keep Io State	Master Keep Io State Disable
IO Swap	Disabled

7.10. SPI3

Mode: Full-Duplex Master

7.10.1. Parameter Settings:

Basic Parameters:

Frame Format	Motorola
Data Size	**8 Bits ***
First Bit	MSB First

Clock Parameters:

Prescaler (for Baud Rate)	**32 ***
Baud Rate	**15.0 MBits/s ***
Clock Polarity (CPOL)	Low
Clock Phase (CPHA)	1 Edge

Advanced Parameters:

CRC Calculation	Disabled
NSSP Mode	Enabled
NSS Signal Type	Software
Fifo Threshold	Fifo Threshold 01 Data
Tx Crc Initialization Pattern	All Zero Pattern
Rx Crc Initialization Pattern	All Zero Pattern
Nss Polarity	Nss Polarity Low
Master Ss Idleness	00 Cycle
Master Inter Data Idleness	00 Cycle
Master Receiver Auto Susp	Disable
Master Keep Io State	Master Keep Io State Disable
IO Swap	Disabled

7.11. SYS

Timebase Source: TIM6

7.12. TIM1

Clock Source : Internal Clock

Channel1: PWM Generation CH1

Channel2: PWM Generation CH2

7.12.1. Parameter Settings:

Counter Settings:

Prescaler (PSC - 16 bits value)	0
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value)	0
Internal Clock Division (CKD)	No Division
Repetition Counter (RCR - 16 bits value)	0
auto-reload preload	Disable

Trigger Output (TRGO) Parameters:

Master/Slave Mode (MSM bit)	Disable (Trigger input effect not delayed)
Trigger Event Selection TRGO	Reset (UG bit from TIMx_EGR)

Trigger Event Selection TRGO2	Reset (UG bit from TIMx_EGR)

Break And Dead Time management - BRK Configuration:

BRK State	Disable
BRK Polarity	High
BRK Filter (4 bits value)	0
BRK Sources Configuration	
- Digital Input	Disable
- COMP1	Disable
- COMP2	Disable
- DFSDM	Disable

Break And Dead Time management - BRK2 Configuration:

BRK2 State	Disable
BRK2 Polarity	High
BRK2 Filter (4 bits value)	0
BRK2 Sources Configuration	
- Digital Input	Disable
- COMP1	Disable
- COMP2	Disable
- DFSDM	Disable

Break And Dead Time management - Output Configuration:

Automatic Output State	Disable
Off State Selection for Run Mode (OSSR)	Disable
Off State Selection for Idle Mode (OSSI)	Disable
Lock Configuration	Off

Clear Input:

Clear Input Source	Disable

PWM Generation Channel 1:

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

PWM Generation Channel 2:

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

7.13. USART3

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
Single Sample	Disable
ClockPrescaler	clock /1
Fifo Mode	Disable
Txfifo Threshold	1 eighth full configuration
Rxfifo Threshold	1 eighth full configuration

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

7.14. USART6

Mode: Asynchronous

7.14.1. Parameter Settings:

Basic Parameters:

Baud Rate	**2400 ***
Word Length	8 Bits (including Parity)
Parity	None
Stop Bits	1

Advanced Parameters:

Data Direction	Receive and Transmit
Over Sampling	16 Samples
Single Sample	Disable
ClockPrescaler	clock /1
Fifo Mode	Disable
Txfifo Threshold	1 eighth full configuration
Rxfifo Threshold	1 eighth full configuration

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

7.15. USB_OTG_FS

Mode: Device_Only

7.15.1. Parameter Settings:

Speed	Full Speed 12MBit/s
Enable internal IP DMA	Disabled
Low power	Disabled
Battery charging	Disabled
Link Power Management	Disabled
Use dedicated end point 1 interrupt	Disabled
VBUS sensing	Disabled
Signal start of frame	Disabled

7.16. FATFS

mode: User-defined

7.16.1. Set Defines:

Version:

FATFS version	R0.12c

Function Parameters:

FS_READONLY (Read-only mode)	Disabled
FS_MINIMIZE (Minimization level)	Disabled
USE_STRFUNC (String functions)	Enabled with LF -> CRLF conversion
USE_FIND (Find functions)	Disabled
USE_MKFS (Make filesystem function)	Enabled
USE_FASTSEEK (Fast seek function)	Enabled
USE_EXPAND (Use f_expand function)	Disabled
USE_CHMOD (Change attributes function)	Disabled
USE_LABEL (Volume label functions)	Disabled
USE_FORWARD (Forward function)	Disabled

Locale and Namespace Parameters:

CODE_PAGE (Code page on target)	Latin 1
USE_LFN (Use Long Filename)	**Enabled with dynamic working buffer on the HEAP ***
MAX_LFN (Max Long Filename)	255
LFN_UNICODE (Enable Unicode)	ANSI/OEM
STRF_ENCODE (Character encoding)	UTF-8
FS_RPATH (Relative Path)	Disabled

Physical Drive Parameters:

VOLUMES (Logical drives)	1
MAX_SS (Maximum Sector Size)	512
MIN_SS (Minimum Sector Size)	512
MULTI_PARTITION (Volume partitions feature)	Disabled
USE_TRIM (Erase feature)	Disabled
FS_NOFSINFO (Force full FAT scan)	0

System Parameters:

FS_TINY (Tiny mode)	Disabled
FS_EXFAT (Support of exFAT file system)	Disabled
FS_NORTC (Timestamp feature)	Dynamic timestamp
FS_REENTRANT (Re-Entrancy)	Enabled
FS_TIMEOUT (Timeout ticks)	1000
USE_MUTEX	Disabled
SYNC_t (O/S sync object)	osSemaphoreId_t
FS_LOCK (Number of files opened simultaneously)	2

7.17. FREERTOS

Interface: CMSIS_V2

7.17.1. Config parameters:

API:

FreeRTOS API	CMSIS v2

Versions:

FreeRTOS version	10.2.1
CMSIS-RTOS version	2.00

MPU/FPU:

ENABLE_MPU	Disabled
ENABLE_FPU	Disabled

Kernel settings:

USE_PREEMPTION	Enabled
CPU_CLOCK_HZ	SystemCoreClock
TICK_RATE_HZ	1000
MAX_PRIORITIES	56
MINIMAL_STACK_SIZE	128
MAX_TASK_NAME_LEN	16
USE_16_BIT_TICKS	Disabled
IDLE_SHOULD_YIELD	Enabled
USE_MUTEXES	Enabled
USE_RECURSIVE_MUTEXES	Enabled
USE_COUNTING_SEMAPHORES	Enabled
QUEUE_REGISTRY_SIZE	8
USE_APPLICATION_TASK_TAG	Disabled
ENABLE_BACKWARD_COMPATIBILITY	Enabled
USE_PORT_OPTIMISED_TASK_SELECTION	Disabled
USE_TICKLESS_IDLE	Disabled
USE_TASK_NOTIFICATIONS	Enabled
RECORD_STACK_HIGH_ADDRESS	Disabled

Memory management settings:

Memory Allocation	Dynamic / Static
TOTAL_HEAP_SIZE	15360
Memory Management scheme	heap_4

Hook function related definitions:

USE_IDLE_HOOK	Disabled
USE_TICK_HOOK	Disabled
USE_MALLOC_FAILED_HOOK	Disabled
USE_DAEMON_TASK_STARTUP_HOOK	Disabled
CHECK_FOR_STACK_OVERFLOW	Disabled

Run time and task stats gathering related definitions:

GENERATE_RUN_TIME_STATS	Disabled
USE_TRACE_FACILITY	Enabled

USE_STATS_FORMATTING_FUNCTIONS	Disabled

Co-routine related definitions:

USE_CO_ROUTINES	Disabled
MAX_CO_ROUTINE_PRIORITIES	2

Software timer definitions:

USE_TIMERS	Enabled
TIMER_TASK_PRIORITY	2
TIMER_QUEUE_LENGTH	10
TIMER_TASK_STACK_DEPTH	256

Interrupt nesting behaviour configuration:

LIBRARY_LOWEST_INTERRUPT_PRIORITY	15
LIBRARY_MAX_SYSCALL_INTERRUPT_PRIORITY	5

Added with 10.2.1 support:

MESSAGE_BUFFER_LENGTH_TYPE	size_t
USE_POSIX_ERRNO	Disabled

7.17.2. Include parameters:

Include definitions:

vTaskPrioritySet	Enabled
uxTaskPriorityGet	Enabled
vTaskDelete	Enabled
vTaskCleanUpResources	Disabled
vTaskSuspend	Enabled
vTaskDelayUntil	Enabled
vTaskDelay	Enabled
xTaskGetSchedulerState	Enabled
xTaskResumeFromISR	Enabled
xQueueGetMutexHolder	Enabled
xSemaphoreGetMutexHolder	Disabled
pcTaskGetTaskName	Disabled
uxTaskGetStackHighWaterMark	Enabled
xTaskGetCurrentTaskHandle	Disabled
eTaskGetState	Enabled
xEventGroupSetBitFromISR	Disabled
xTimerPendFunctionCall	Enabled
xTaskAbortDelay	Disabled
xTaskGetHandle	Disabled
uxTaskGetStackHighWaterMark2	Disabled

7.17.3. Advanced settings:

Newlib settings (see parameter description first):

USE_NEWLIB_REENTRANT	Disabled

Project settings (see parameter description first):

Use FW pack heap file	Enabled

7.18. LWIP

mode: Enabled

Advanced parameters are not listed except if modified by user.

7.18.1. General Settings:

LwIP Version:

LwIP Version (Version of LwIP supported by CubeMX ** CubeMX specific **)	2.0.3

IPv4 - DHCP Options:

LWIP_DHCP (DHCP Module)	Enabled

RTOS Dependency:

WITH_RTOS (Use FREERTOS ** CubeMX specific **)	Enabled
CMSIS_VERSION (CMSIS API Version used)	CMSIS v2

Platform Settings:

PHY Driver	Choose/LAN8742

Protocols Options:

LWIP_ICMP (ICMP Module Activation)	Enabled
LWIP_IGMP (IGMP Module)	Disabled
LWIP_DNS (DNS Module)	Disabled
LWIP_UDP (UDP Module)	Enabled
MEMP_NUM_UDP_PCB (Number of UDP Connections)	4
LWIP_TCP (TCP Module)	Enabled
MEMP_NUM_TCP_PCB (Number of TCP Connections)	5

7.18.2. Key Options:

Infrastructure - OS Awarness Option:

NO_SYS (OS Awarness)	OS Used

Infrastructure - Timers Options:

LWIP_TIMERS (Use Support For sys_timeout)	Enabled

Infrastructure - Core Locking and MPU Options:

SYS_LIGHTWEIGHT_PROT (Memory Functions Protection)	Enabled

Infrastructure - Heap and Memory Pools Options:

MEM_SIZE (Heap Memory Size)	1600
LWIP_RAM_HEAP_POINTER (RAM Heap Pointer)	**0x30044000 ***

Infrastructure - Internal Memory Pool Sizes:

MEMP_NUM_PBUF (Number of Memory Pool struct Pbufs)	16
MEMP_NUM_RAW_PCB (Number of Raw Protocol Control Blocks)	4
MEMP_NUM_TCP_PCB_LISTEN (Number of Listening TCP Connections)	8
MEMP_NUM_TCP_SEG (Number of TCP Segments simultaneously queued)	16
MEMP_NUM_LOCALHOSTLIST (Number of Host Entries in the Local Host List)	1

Pbuf Options:

PBUF_POOL_SIZE (Number of Buffers in the Pbuf Pool)	16
PBUF_POOL_BUFSIZE (Size of each pbuf in the pbuf pool)	592

IPv4 - ARP Options:

LWIP_ARP (ARP Functionality)	Enabled

Callback - TCP Options:

TCP_TTL (Number of Time-To-Live Used by TCP Packets)	255
TCP_WND (TCP Receive Window Maximum Size)	2144
TCP_QUEUE_OOSEQ (Allow Out-Of-Order Incoming Packets)	Enabled
TCP_MSS (Maximum Segment Size)	536
TCP_SND_BUF (TCP Sender Buffer Space)	1072
TCP_SND_QUEUELEN (Number of Packet Buffers Allowed for TCP Sender)	9

Network Interfaces Options:

LWIP_NETIF_STATUS_CALLBACK (Callback Function on Interface Status Changes)	Disabled
LWIP_NETIF_LINK_CALLBACK (Callback Function on Interface Link Changes)	Disabled

NETIF - Loopback Interface Options:

LWIP_NETIF_LOOPBACK (NETIF Loopback)	Disabled

Infrastructure - Threading Options:

TCPIP_THREAD_NAME (TCPIP Thread Name)	"tcpip_thread"
TCPIP_THREAD_STACKSIZE (TCPIP Thread Stack Size)	1024
TCPIP_THREAD_PRIO (TCPIP Thread Priority Level)	24
TCPIP_MBOX_SIZE (TCPIP Mailbox Size)	6
DEFAULT_THREAD_NAME (Default LwIP Thread Name)	"lwIP"
DEFAULT_THREAD_STACKSIZE (Default LwIP Thread Stack Size)	1024
DEFAULT_THREAD_PRIO (Default LwIP Thread Priority Level)	3
DEFAULT_RAW_RECVMBOX_SIZE (Default Mailbox Size on a NETCONN Raw)	0
DEFAULT_TCP_RECVMBOX_SIZE (Default Mailbox Size on a NETCONN TCP)	6
DEFAULT_ACCEPTMBOX_SIZE (Default Mailbox Size for Incoming Connections)	6

Thread Safe APIs - Netconn Options:

LWIP_NETCONN (NETCONN API)	Enabled

Thread Safe APIs - Socket Options:

LWIP_SOCKET (Socket API)	Enabled
LWIP_COMPAT_SOCKETS (BSD-style Socket Functions Names)	1
LWIP_SOCKET_OFFSET (Socket Offset Number)	0

7.18.3. PPP:

PPP Options:

PPP_SUPPORT (PPP Module)	Disabled

7.18.4. IPv6:

IPv6 Options:

LWIP_IPV6 (IPv6 Protocol)	Disabled

7.18.5. HTTPD:

HTTPD Options:

LWIP_HTTPD (LwIP HTTPD Support ** CubeMX specific **)	Disabled

7.18.6. SNMP:

SNMP Options:

LWIP_SNMP (LwIP SNMP Agent)	Disabled

7.18.7. SNTP:

SNTP Options:

LWIP_SNTP (LWIP SNTP Support ** CubeMX specific **)	Disabled

7.18.8. MDNS/TFTP:

MDNS Options:

LWIP_MDNS (Multicast DNS Support ** CubeMX specific **)	Disabled

TFTP Options:

LWIP_TFTP (TFTP Support ** CubeMX specific **)	Disabled

7.18.9. Perf/Checks:

Sanity Checks:

LWIP_DISABLE_TCP_SANITY_CHECKS (TCP Sanity Checks)	Disabled
LWIP_DISABLE_MEMP_SANITY_CHECKS (MEMP Sanity Checks)	Disabled

Performance Options:

LWIP_PERF (Performace Testing for LwIP)	Disabled

7.18.10. Statistics:

Debug - Statistics Options:

LWIP_STATS (Statictics Collection)	Disabled

7.18.11. Checksum:

Infrastructure - Checksum Options:

CHECKSUM_BY_HARDWARE (Hardware Checksum ** CubeMX specific **)	Disabled
LWIP_CHECKSUM_CTRL_PER_NETIF (Generate/Check Checksum per Netif)	Disabled
CHECKSUM_GEN_IP (Generate Software Checksum for Outgoing IP Packets)	Disabled
CHECKSUM_GEN_UDP (Generate Software Checksum for Outgoing UDP Packets)	Disabled
CHECKSUM_GEN_TCP (Generate Software Checksum for Outgoing TCP Packets)	Disabled
CHECKSUM_GEN_ICMP (Generate Software Checksum for Outgoing ICMP Packets)	Disabled
CHECKSUM_GEN_ICMP6 (Generate Software Checksum for Outgoing ICMP6 Packets)	Disabled
CHECKSUM_CHECK_IP (Generate Software Checksum for Incoming IP Packets)	Disabled
CHECKSUM_CHECK_UDP (Generate Software Checksum for Incoming UDP Packets)	Disabled
CHECKSUM_CHECK_TCP (Generate Software Checksum for Incoming TCP Packets)	Disabled
CHECKSUM_CHECK_ICMP (Generate Software Checksum for Incoming ICMP Packets)	Disabled
CHECKSUM_CHECK_ICMP6 (Generate Software Checksum for Incoming ICMP6 Packets)	Disabled

7.18.12. Debug:

LwIP Main Debugging Options:

LWIP_DBG_MIN_LEVEL (Minimum Level)	All

7.19. USB_DEVICE

Class For FS IP: Communication Device Class (Virtual Port Com)

7.19.1. Parameter Settings:

Basic Parameters:

USBD_MAX_NUM_INTERFACES (Maximum number of supported interfaces)	1
USBD_MAX_NUM_CONFIGURATION (Maximum number of supported configuration)	1
USBD_MAX_STR_DESC_SIZ (Maximum size for the string descriptors)	512
USBD_SELF_POWERED (Enabled self power)	Enabled
USBD_DEBUG_LEVEL (USBD Debug Level)	0: No debug message

Class Parameters:

USB CDC Rx Buffer Size	2048
USB CDC Tx Buffer Size	2048

7.19.2. Device Descriptor:

Device Descriptor:

VID (Vendor IDentifier)	1155
LANGID_STRING (Language Identifier)	English(United States)
MANUFACTURER_STRING (Manufacturer Identifier)	STMicroelectronics

Device Descriptor FS:

PID (Product IDentifier)	22336
PRODUCT_STRING (Product Identifier)	STM32 Virtual ComPort
CONFIGURATION_STRING (Configuration Identifier)	CDC Config
INTERFACE_STRING (Interface Identifier)	CDC Interface

*** User modified value**

8. System Configuration

8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
DEBUG	PA13 (JTMS/SWDIO)	DEBUG_JTMS-SWDIO	n/a	n/a	n/a	
	PA14 (JTCK/SWCLK)	DEBUG_JTCK-SWCLK	n/a	n/a	n/a	
ETH	PC1	ETH_MDC	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA1	ETH_REF_CLK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA2	ETH_MDIO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA7	ETH_CRS_DV	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC4	ETH_RXD0	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC5	ETH_RXD1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB11	ETH_TX_EN	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB12	ETH_TXD0	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB13	ETH_TXD1	Alternate Function Push Pull	No pull-up and no pull-down	Low	
FMC	PE7	FMC_D4	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_D4
	PE8	FMC_D5	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_D5
	PE9	FMC_D6	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_D6
	PE10	FMC_D7	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_D7
	PD11	FMC_A16	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_DC
	PD14	FMC_D0	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_D0
	PD15	FMC_D1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_D1
	PD0	FMC_D2	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_D2
	PD1	FMC_D3	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_D3
	PD4	FMC_NOE	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_RD
	PD5	FMC_NWE	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_EN
	PD7	FMC_NE1	Alternate Function Push Pull	No pull-up and no pull-down	Very High	TFT_CS
I2C1	PB6	I2C1_SCL	Alternate Function Open Drain	No pull-up and no pull-down	Low	
	PB9	I2C1_SDA	Alternate Function Open Drain	No pull-up and no pull-down	Low	
QUADSPI	PE2	QUADSPI_BK1_IO2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB2	QUADSPI_CLK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB10	QUADSPI_BK1_NCS	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD12	QUADSPI_BK1_IO1	Alternate Function Push Pull	No pull-up and no pull-down	Low	

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PD13	QUADSPI_BK1_IO3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC9	QUADSPI_BK1_IO0	Alternate Function Push Pull	No pull-up and no pull-down	Low	
RCC	PH0-OSC_IN (PH0)	RCC_OSC_IN	n/a	n/a	n/a	
	PH1-OSC_OUT (PH1)	RCC_OSC_OUT	n/a	n/a	n/a	
SPI1	PB3 (JTDO/TRACESWO)	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB4 (NJTRST)	SPI1_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PB5	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	
SPI3	PC10	SPI3_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI3_AD_SCK
	PC11	SPI3_MISO	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI3_AD_MISO
	PC12	SPI3_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	SPI3_AD_MOSI
TIM1	PA8	TIM1_CH1	Alternate Function Push Pull	No pull-up and no pull-down	Low	PWM_RF
	PA9	TIM1_CH2	Alternate Function Push Pull	No pull-up and no pull-down	Low	PWM_FAN
USART3	PD8	USART3_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PD9	USART3_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
USART6	PC6	USART6_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PC7	USART6_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	
USB_OTG_FS	PA11	USB_OTG_FS_DM	Alternate Function Push Pull	No pull-up and no pull-down	Low	
	PA12	USB_OTG_FS_DP	Alternate Function Push Pull	No pull-up and no pull-down	Low	
GPIO	PE3	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	SYNC_RDS
	PE4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SEL_1
	PE5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	STEREO_SELECT
	PE6	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	REMOTE
	PC13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	PROCESSOR_SELECT
	PC14-OSC32_IN (OSC32_IN)	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FAN2
	PC15-OSC32_OUT	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	EMPHASE_SELECT
	PC0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	ENABLE_RF_DRV
	PC2_C	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OSC_SELECT
	PC3_C	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	CS_CS3310

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
	PA0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SEL_2
	PA3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MB1501_EN
	PA4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MB1501_DATA
	PA5	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MB1501_CLK
	PA6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	RF_ON
	PB0	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	PLL_LOCK
	PB1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	OSC_STATUS
	PE11	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	KEY_ESC
	PE12	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	KEY_DOWN
	PE13	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	KEY_UP
	PE14	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	KEY_ENTER
	PE15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	BUZZER
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SEL_4
	PB15	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	OSC_EN_10MHZ
	PD10	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	EEPROM_HOLD
	PC8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	MP3_RESET
	PA10	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	AD_EOC
	PA15 (JTDI)	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	CS_AD
	PD2	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_RF_ON
	PD3	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_PLL_LOCK
	PD6	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	LED_FAIL
	PB7	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FAN1
	PB8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	CLIPPER_SELECT
	PE0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	SEL_3
	PE1	GPIO_Input	Input mode	No pull-up and no pull-down	n/a	FAN3

8.2. DMA configuration

nothing configured in DMA service

8.3. BDMA configuration

nothing configured in DMA service

8.4. MDMA configuration

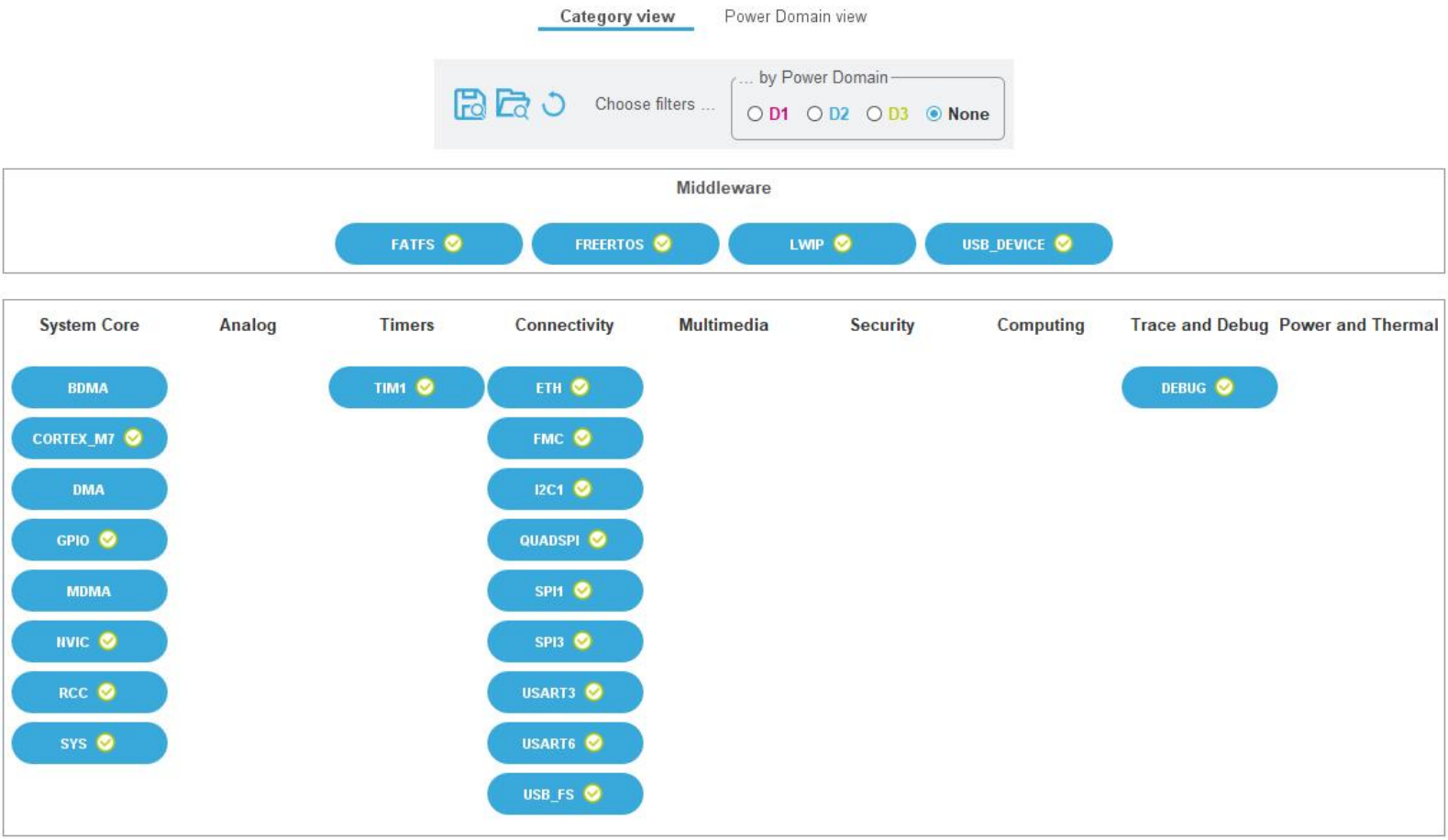
nothing configured in DMA service

8.5. NVIC configuration

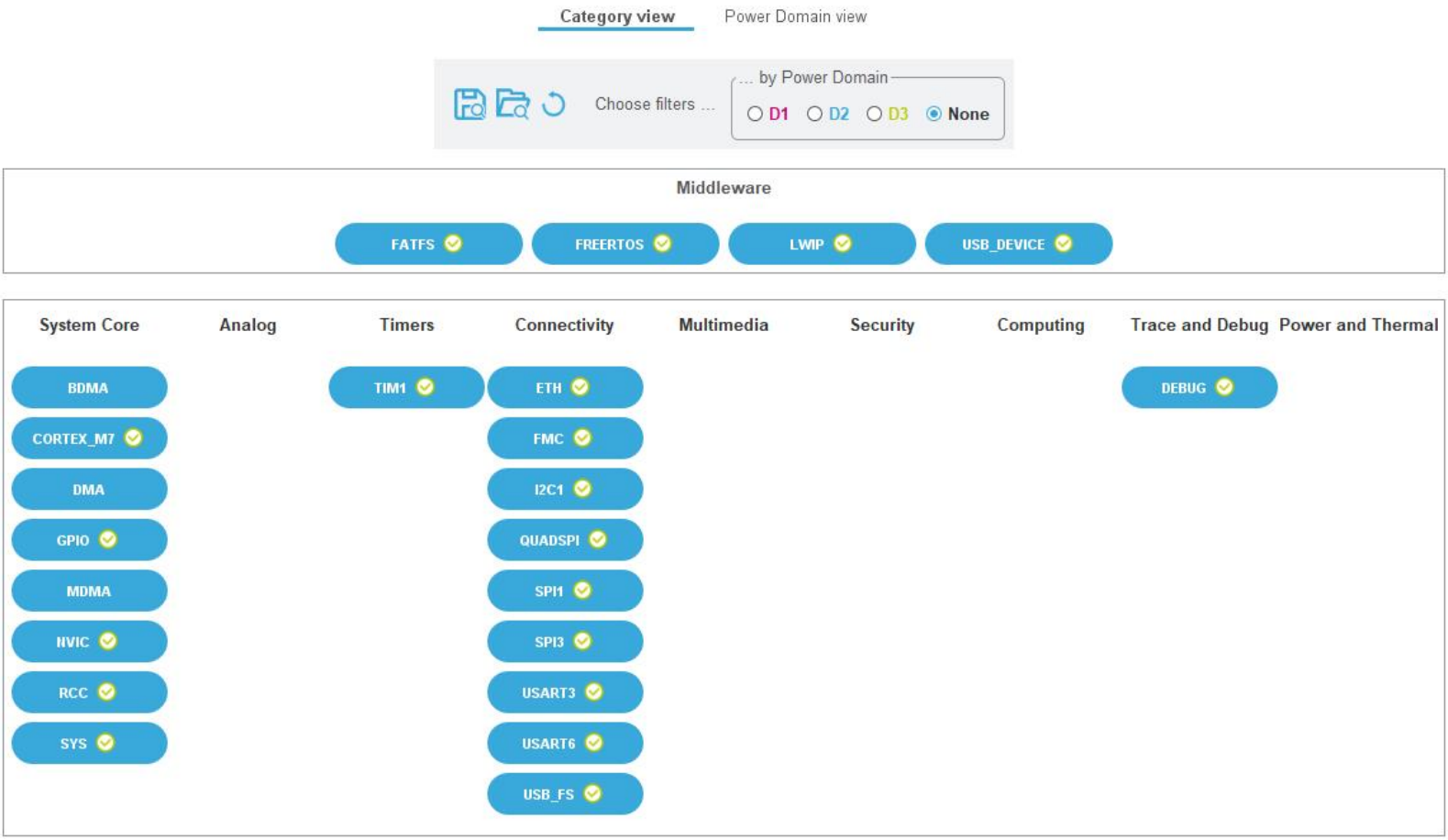
Interrupt Table	Enable	Preenmption Priority	SubPriority
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
Memory management fault	true	0	0
Pre-fetch fault, memory access fault	true	0	0
Undefined instruction or illegal state	true	0	0
System service call via SWI instruction	true	0	0
Debug monitor	true	0	0
Pendable request for system service	true	15	0
System tick timer	true	15	0
TIM6 global interrupt, DAC1_CH1 and DAC1_CH2 underrun error interrupts	true	0	0
USB On The Go FS global interrupt	true	5	0
PVD and AVD interrupts through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
TIM1 break interrupt	unused		
TIM1 update interrupt	unused		
TIM1 trigger and commutation interrupts	unused		
TIM1 capture compare interrupt	unused		
I2C1 event interrupt	unused		
I2C1 error interrupt	unused		
SPI1 global interrupt	unused		
USART3 global interrupt	unused		
SPI3 global interrupt	unused		
Ethernet global interrupt	unused		
Ethernet wake-up interrupt through EXTI line 86	unused		
USART6 global interrupt	unused		
FPU global interrupt	unused		
QUADSPI global interrupt	unused		
USB On The Go FS End Point 1 Out global interrupt	unused		
USB On The Go FS End Point 1 In global interrupt	unused		
HSEM1 global interrupt	unused		

*** User modified value**

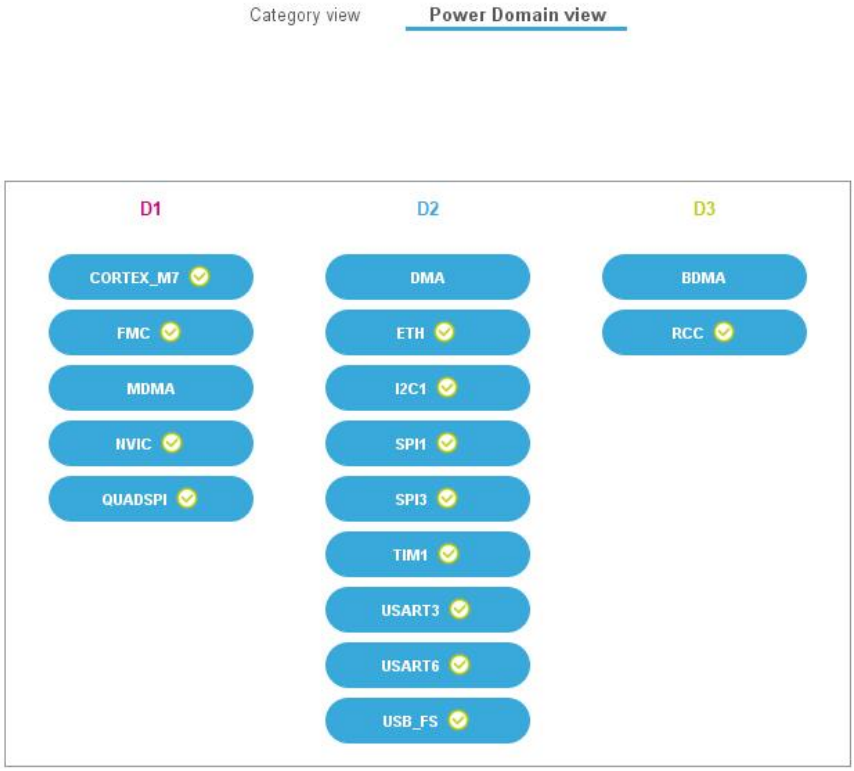
9. Predefined Views - Category view : Current



10. Predefined Views - Category view : Without filters



11. Predefined Views - Power Domain view



12. Software Pack Report

12.1. Software Pack selected

Vendor	Name	Version	Component
STMicroelectronics	FreeRTOS	0.0.1	Class : RTOS Group : Core Version : 10.2.0