

1. Description

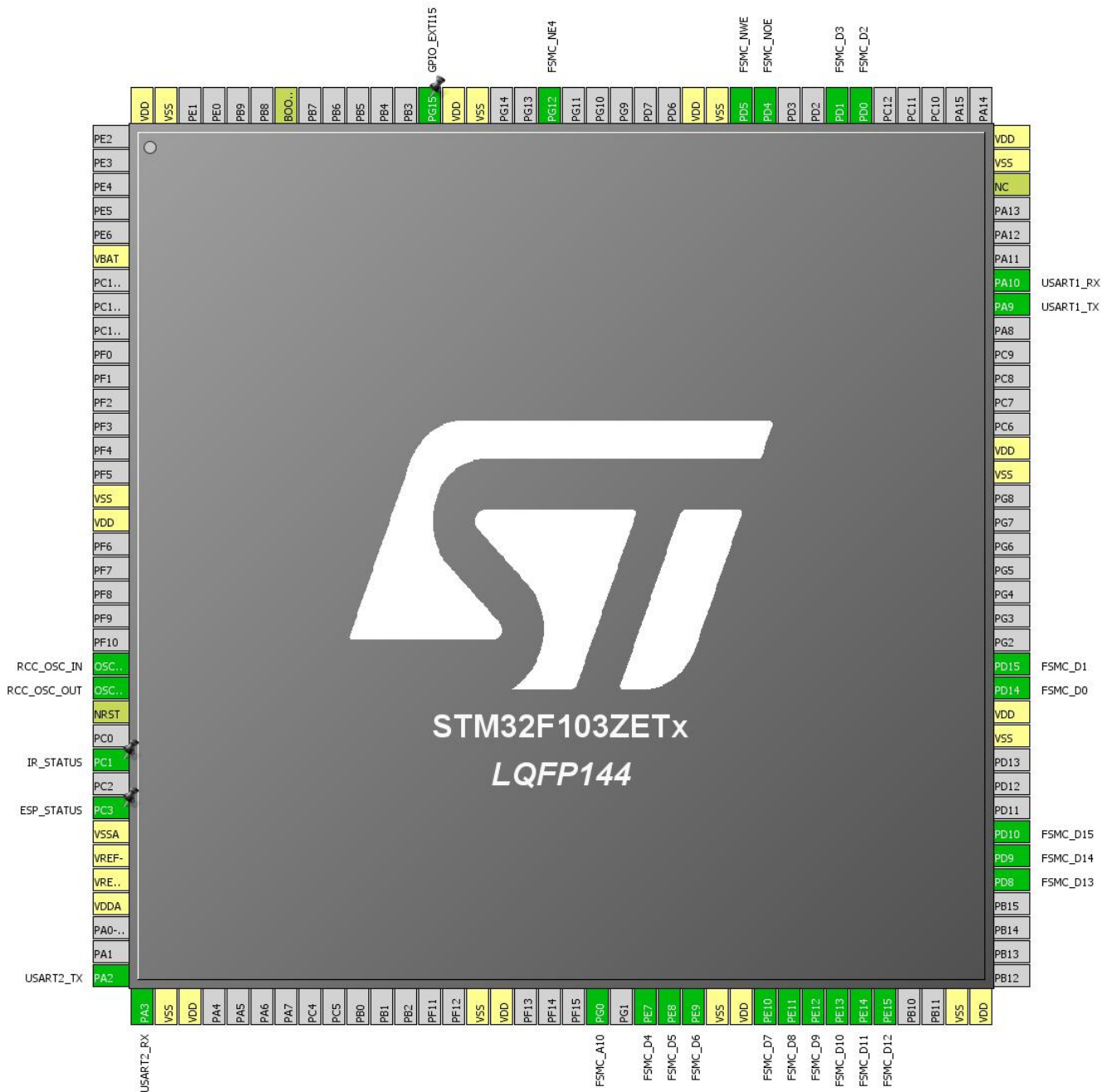
1.1. Project

Project Name	IOT1
Board Name	IOT1.0_01
Generated with:	STM32CubeMX 4.22.0
Date	10/19/2017

1.2. MCU

MCU Series	STM32F1
MCU Line	STM32F103
MCU name	STM32F103ZETx
MCU Package	LQFP144
MCU Pin number	144

2. Pinout Configuration



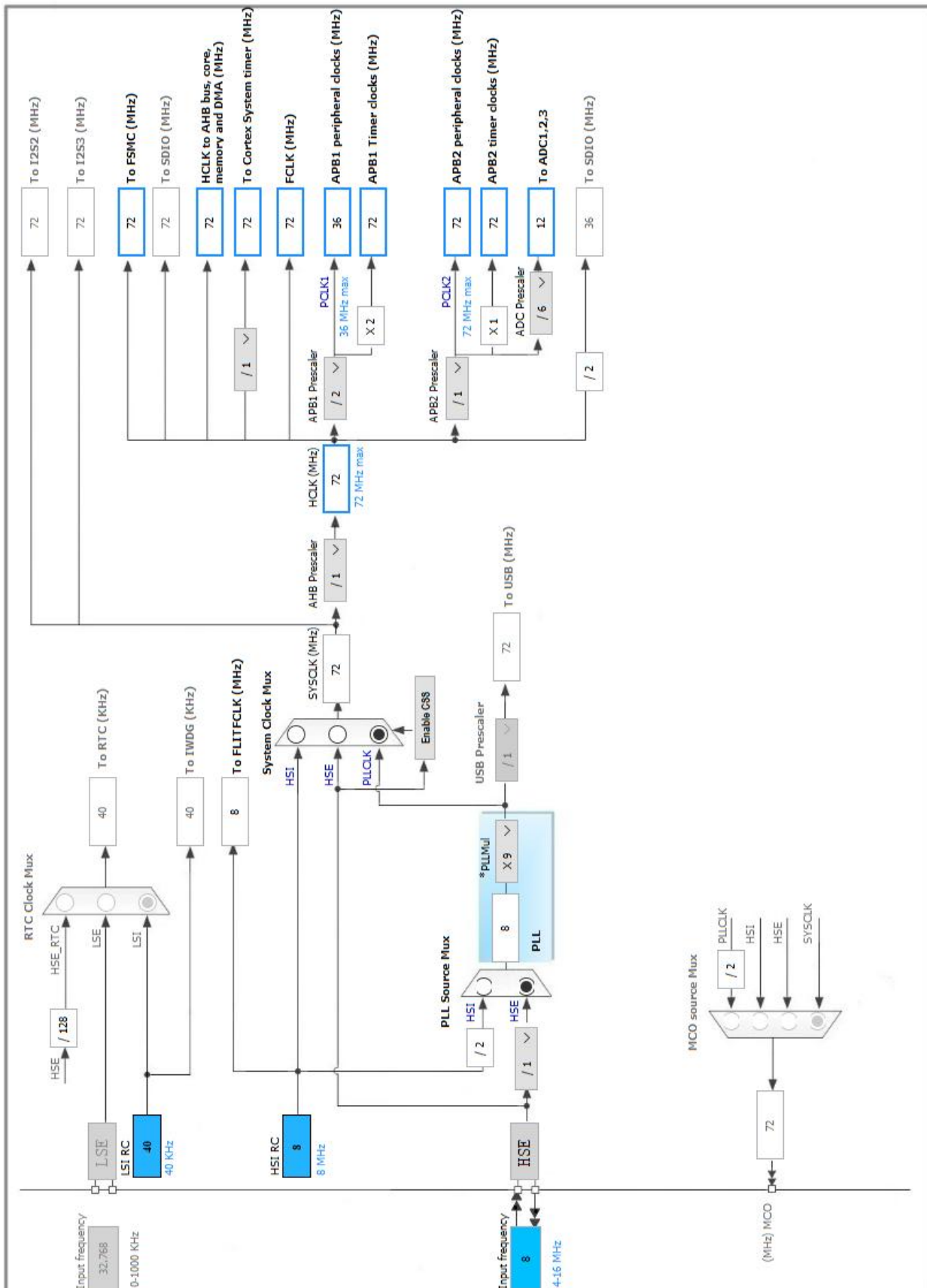
3. Pins Configuration

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
6	VBAT	Power		
16	VSS	Power		
17	VDD	Power		
23	OSC_IN	I/O	RCC_OSC_IN	
24	OSC_OUT	I/O	RCC_OSC_OUT	
25	NRST	Reset		
27	PC1 *	I/O	GPIO_Output	IR_STATUS
29	PC3 *	I/O	GPIO_Output	ESP_STATUS
30	VSSA	Power		
31	VREF-	Power		
32	VREF+	Power		
33	VDDA	Power		
36	PA2	I/O	USART2_TX	
37	PA3	I/O	USART2_RX	
38	VSS	Power		
39	VDD	Power		
51	VSS	Power		
52	VDD	Power		
56	PG0	I/O	FSMC_A10	
58	PE7	I/O	FSMC_D4	
59	PE8	I/O	FSMC_D5	
60	PE9	I/O	FSMC_D6	
61	VSS	Power		
62	VDD	Power		
63	PE10	I/O	FSMC_D7	
64	PE11	I/O	FSMC_D8	
65	PE12	I/O	FSMC_D9	
66	PE13	I/O	FSMC_D10	
67	PE14	I/O	FSMC_D11	
68	PE15	I/O	FSMC_D12	
71	VSS	Power		
72	VDD	Power		
77	PD8	I/O	FSMC_D13	
78	PD9	I/O	FSMC_D14	
79	PD10	I/O	FSMC_D15	
83	VSS	Power		

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
84	VDD	Power		
85	PD14	I/O	FSMC_D0	
86	PD15	I/O	FSMC_D1	
94	VSS	Power		
95	VDD	Power		
101	PA9	I/O	USART1_TX	
102	PA10	I/O	USART1_RX	
106	NC	NC		
107	VSS	Power		
108	VDD	Power		
114	PD0	I/O	FSMC_D2	
115	PD1	I/O	FSMC_D3	
118	PD4	I/O	FSMC_NOE	
119	PD5	I/O	FSMC_NWE	
120	VSS	Power		
121	VDD	Power		
127	PG12	I/O	FSMC_NE4	
130	VSS	Power		
131	VDD	Power		
132	PG15	I/O	GPIO_EXTI15	
138	BOOT0	Boot		
143	VSS	Power		
144	VDD	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



5. IPs and Middleware Configuration

5.1. ADC1

mode: Temperature Sensor Channel

5.1.1. Parameter Settings:

ADCs_Common_Settings:

Mode Independent mode

ADC_Settings:

Data Alignment Right alignment

Scan Conversion Mode Disabled

Continuous Conversion Mode Disabled

Discontinuous Conversion Mode Disabled

ADC_Regular_ConversionMode:

Enable Regular Conversions Enable

Number Of Conversion 1

External Trigger Conversion Source Regular Conversion launched by software

Rank 1

Channel Channel Temperature Sensor

Sampling Time 1.5 Cycles

ADC_Injected_ConversionMode:

Number Of Conversions 0

WatchDog:

Enable Analog WatchDog Mode false

5.2. FSMC

NOR Flash/PSRAM/SRAM/ROM/LCD 1

Chip Select: NE4

Memory type: LCD Interface

LCD Register Select: A10

Data: 16 bits

5.2.1. NOR/PSRAM 1:

NOR/PSRAM control:

Memory type	LCD Interface
Bank	Bank 1 NOR/PSRAM 4
Write operation	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

5.3. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator

5.3.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Prefetch Buffer	Enabled
Flash Latency(WS)	2 WS (3 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
HSE Startup Timeout Value (ms)	100
LSE Startup Timeout Value (ms)	5000

5.4. SYS

Debug: No Debug

Timebase Source: SysTick

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. USART2

Mode: Asynchronous

5.6.1. 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

6. System Configuration

6.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
FSMC	PG0	FSMC_A10	Alternate Function Push Pull	n/a	High	
	PE7	FSMC_D4	Alternate Function Push Pull	n/a	High	
	PE8	FSMC_D5	Alternate Function Push Pull	n/a	High	
	PE9	FSMC_D6	Alternate Function Push Pull	n/a	High	
	PE10	FSMC_D7	Alternate Function Push Pull	n/a	High	
	PE11	FSMC_D8	Alternate Function Push Pull	n/a	High	
	PE12	FSMC_D9	Alternate Function Push Pull	n/a	High	
	PE13	FSMC_D10	Alternate Function Push Pull	n/a	High	
	PE14	FSMC_D11	Alternate Function Push Pull	n/a	High	
	PE15	FSMC_D12	Alternate Function Push Pull	n/a	High	
	PD8	FSMC_D13	Alternate Function Push Pull	n/a	High	
	PD9	FSMC_D14	Alternate Function Push Pull	n/a	High	
	PD10	FSMC_D15	Alternate Function Push Pull	n/a	High	
	PD14	FSMC_D0	Alternate Function Push Pull	n/a	High	
	PD15	FSMC_D1	Alternate Function Push Pull	n/a	High	
	PD0	FSMC_D2	Alternate Function Push Pull	n/a	High	
	PD1	FSMC_D3	Alternate Function Push Pull	n/a	High	
	PD4	FSMC_NOE	Alternate Function Push Pull	n/a	High	
	PD5	FSMC_NWE	Alternate Function Push Pull	n/a	High	
	PG12	FSMC_NE4	Alternate Function Push Pull	n/a	High	
RCC	OSC_IN	RCC_OSC_IN	n/a	n/a	n/a	
	OSC_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
USART1	PA9	USART1_TX	Alternate Function Push Pull	n/a	High *	
	PA10	USART1_RX	Input mode	No pull-up and no pull-down	n/a	
USART2	PA2	USART2_TX	Alternate Function Push Pull	n/a	High *	
	PA3	USART2_RX	Input mode	No pull-up and no pull-down	n/a	
GPIO	PC1	GPIO_Output	Output Push Pull	n/a	Low	IR_STATUS
	PC3	GPIO_Output	Output Push Pull	n/a	Low	ESP_STATUS
	PG15	GPIO_EXTI15	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	

6.2. DMA configuration

DMA request	Stream	Direction	Priority
USART1_RX	DMA1_Channel5	Peripheral To Memory	Low
USART2_RX	DMA1_Channel6	Peripheral To Memory	Low

USART1_RX: DMA1_Channel5 DMA request Settings:

Mode: Normal
Peripheral Increment: Disable
Memory Increment: **Enable ***
Peripheral Data Width: Byte
Memory Data Width: Byte

USART2_RX: DMA1_Channel6 DMA request Settings:

Mode: Normal
Peripheral Increment: Disable
Memory Increment: **Enable ***
Peripheral Data Width: Byte
Memory Data Width: Byte

6.3. 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
Prefetch 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	0	0
DMA1 channel5 global interrupt	true	0	0
DMA1 channel6 global interrupt	true	0	0
USART1 global interrupt	true	0	0
USART2 global interrupt	true	0	0
EXTI line[15:10] interrupts	true	0	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 and ADC2 global interrupts	unused		

* User modified value

7. Power Consumption Calculator report

7.1. Microcontroller Selection

Series	STM32F1
Line	STM32F103
MCU	STM32F103ZETx
Datasheet	14611_Rev12

7.2. Parameter Selection

Temperature	25
Vdd	3.3

8. Software Project

8.1. Project Settings

Name	Value
Project Name	IOT1.0_01
Project Folder	E:\STM32F103ZET6\IOT1.0_01
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F1 V1.6.0

8.2. Code Generation Settings

Name	Value
STM32Cube Firmware Library Package	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