

## 1. Description

### 1.1. Project

Project Name	STCubeGenerated
Board Name	custom
Generated with:	STM32CubeMX 5.1.0
Date	03/28/2019

### 1.2. MCU

MCU Series	STM32F4
MCU Line	STM32F429/439
MCU name	STM32F429ZITx
MCU Package	LQFP144
MCU Pin number	144



### 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		
25	NRST	Reset		
27	PC1	I/O	ETH_MDC	
30	VDD	Power		
31	VSSA	Power		
32	VREF+	Power		
33	VDDA	Power		
35	PA1	I/O	ETH_REF_CLK	
36	PA2	I/O	ETH_MDIO	
38	VSS	Power		
39	VDD	Power		
43	PA7	I/O	ETH_CRS_DV	
44	PC4	I/O	ETH_RXD0	
45	PC5	I/O	ETH_RXD1	
46	PB0 *	I/O	GPIO_Output	
51	VSS	Power		
52	VDD	Power		
61	VSS	Power		
62	VDD	Power		
70	PB11	I/O	ETH_TX_EN	
71	VCAP_1	Power		
72	VDD	Power		
73	PB12	I/O	ETH_TXD0	
74	PB13	I/O	ETH_TXD1	
75	PB14 *	I/O	GPIO_Output	
83	VSS	Power		
84	VDD	Power		
94	VSS	Power		
95	VDD	Power		
106	VCAP_2	Power		
107	VSS	Power		
108	VDD	Power		
120	VSS	Power		
121	VDD	Power		

Pin Number LQFP144	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
130	VSS	Power		
131	VDD	Power		
137	PB7 *	I/O	GPIO_Output	
138	BOOT0	Boot		
143	PDR_ON	Reset		
144	VDD	Power		

\* The pin is affected with an I/O function



## 5. Software Project

### 5.1. Project Settings

Name	Value
Project Name	STCubeGenerated
Project Folder	C:\TPod\cpp\cortex_f429_t1\RTE\Device\STM32F429ZITx\STCubeGenerated
Toolchain / IDE	MDK-ARM V5
Firmware Package Name and Version	STM32Cube FW_F4 V1.24.0

### 5.2. 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

## 6. Power Consumption Calculator report

### 6.1. Microcontroller Selection

Series	STM32F4
Line	STM32F429/439
MCU	STM32F429ZITx
Datasheet	024030_Rev9

### 6.2. Parameter Selection

Temperature	25
Vdd	3.3

## 7. IPs and Middleware Configuration

### 7.1. ETH

#### Mode: RMII

##### 7.1.1. Parameter Settings:

###### Advanced : Ethernet Media Configuration:

Auto Negotiation Enabled

###### General : Ethernet Configuration:

Ethernet MAC Address 00:80:E1:00:00:00

PHY Address 1

##### 7.1.2. Advanced Parameters:

###### External PHY Configuration:

PHY LAN8742A\_PHY\_ADDRESS

PHY Address Value 1

PHY Reset delay these values are based on a 1 ms  
Systick interrupt 0x000000FF \*

PHY Configuration delay 0x00000FFF \*

PHY Read TimeOut 0x0000FFFF \*

PHY Write TimeOut 0x0000FFFF \*

###### Common : External PHY Configuration:

Transceiver Basic Control Register 0x00 \*

Transceiver Basic Status Register 0x01 \*

PHY Reset 0x8000 \*

Select loop-back mode 0x4000 \*

Set the full-duplex mode at 100 Mb/s 0x2100 \*

Set the half-duplex mode at 100 Mb/s 0x2000 \*

Set the full-duplex mode at 10 Mb/s 0x0100 \*

Set the half-duplex mode at 10 Mb/s 0x0000 \*

Enable auto-negotiation function 0x1000 \*

Restart auto-negotiation function 0x0200 \*

Select the power down mode 0x0800 \*

Isolate PHY from MII 0x0400 \*

Auto-Negotiation process completed 0x0020 \*

Valid link established 0x0004 \*

Jabber condition detected



0x0002 \*

**Extended : External PHY Configuration:**

PHY special control/status register Offset	0x1F *
PHY Speed mask	0x0004 *
PHY Duplex mask	0x0010 *
PHY Interrupt Source Flag register Offset	0x001D *
PHY Link down interrupt	0x000B *

## 7.2. GFXSIMULATOR

### 7.2.1. Simulator Graphic:

## 7.3. SYS

**Timebase Source: SysTick**

## 7.4. TIM6

**mode: Activated**

### 7.4.1. Parameter Settings:

**Counter Settings:**

Prescaler (PSC - 16 bits value)	9000 *
Counter Mode	Up
Counter Period (AutoReload Register - 16 bits value )	10000 *
auto-reload preload	Disable

**Trigger Output (TRGO) Parameters:**

Trigger Event Selection	Reset (UG bit from TIMx_EGR)
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## 7.5. LWIP

**mode: Enabled**

Advanced parameters are not listed except if modified by user.

### 7.5.1. General Settings:

**LwIP Version:**

LwIP Version (Version of LwIP supported by CubeMX ** CubeMX specific **)	2.0.3
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**IPv4 - DHCP Options:**

LWIP_DHCP (DHCP Module)	Disabled *
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### IP Address Settings:

IP_ADDRESS (IP Address)	192.168.001.100 *
NETMASK_ADDRESS (Netmask Address)	255.255.255.000 *
GATEWAY_ADDRESS (Gateway Address)	192.168.001.001 *

### RTOS Dependency:

WITH_RTOS (Use FREERTOS ** CubeMX specific **)	Disabled
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### 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

## 7.5.2. Key Options:

### Infrastructure - OS Awareness Option:

NO_SYS (OS Awareness)	OS Not Used
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### Infrastructure - Timers Options:

LWIP_TIMERS (Use Support For sys_timeout)	Enabled
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### Infrastructure - Core Locking and MPU Options:

SYS_LIGHTWEIGHT_PROT (Memory Functions Protection)	Disabled
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### Infrastructure - Heap and Memory Pools Options:

MEM_SIZE (Heap Memory Size)	1600
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### 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
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### 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
<b>Network Interfaces Options:</b>	
LWIP_NETIF_STATUS_CALLBACK (Callback Function on Interface Status Changes)	Disabled
LWIP_NETIF_LINK_CALLBACK (Callback Function on Interface Link Changes)	Disabled
<b>NETIF - Loopback Interface Options:</b>	
LWIP_NETIF_LOOPBACK (NETIF Loopback)	Disabled
<b>Thread Safe APIs - Socket Options:</b>	
LWIP_SOCKET (Socket API)	Disabled

### 7.5.3. PPP:

<b>PPP Options:</b>	
PPP_SUPPORT (PPP Module)	Disabled

### 7.5.4. IPv6:

<b>IPv6 Options:</b>	
LWIP_IPV6 (IPv6 Protocol)	Disabled

### 7.5.5. HTTPD:

<b>HTTPD Options:</b>	
LWIP_HTTPD (LwIP HTTPD Support ** CubeMX specific **)	Enabled *

### 7.5.6. SNMP:

<b>SNMP Options:</b>	
LWIP_SNMP (LwIP SNMP Agent)	Disabled

### 7.5.7. SNTP:

<b>SNTP Options:</b>	
LWIP_SNTP (LWIP SNTP Support ** CubeMX specific **)	Disabled

### 7.5.8. MDNS/TFTP:

#### MDNS Options:

LWIP\_MDNS (Multicast DNS Support \*\* CubeMX specific \*\*) Disabled

#### TFTP Options:

LWIP\_TFTP (TFTP Support \*\* CubeMX specific \*\*) Disabled

### 7.5.9. 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

### 7.5.10. Statistics:

#### Debug - Statistics Options:

LWIP\_STATS (Statistics Collection) Disabled

### 7.5.11. 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

### 7.5.12. Debug:

#### LwIP Main Debugging Options:

LWIP\_DBG\_MIN\_LEVEL (Minimum Level) All

**\* User modified value**

## 8. System Configuration

### 8.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
ETH	PC1	ETH_MDC	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PA1	ETH_REF_CLK	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PA2	ETH_MDIO	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PA7	ETH_CRS_DV	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PC4	ETH_RXD0	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PC5	ETH_RXD1	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PB11	ETH_TX_EN	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PB12	ETH_TXD0	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
	PB13	ETH_TXD1	Alternate Function Push Pull	No pull-up and no pull-down	Very High *	
GPIO	PB0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PB14	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PB7	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	

### 8.2. DMA configuration

nothing configured in DMA service

### 8.3. 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
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	0	0
TIM6 global interrupt, DAC1 and DAC2 underrun error interrupts	true	8	0
Ethernet global interrupt	true	5	0
PVD interrupt through EXTI line 16	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
Ethernet wake-up interrupt through EXTI line 19	unused		
FPU global interrupt	unused		

\* User modified value

## ***9. Software Pack Report***