1. Description

1.1. Project

Project Name	crowdWearableSystem
Board Name	custom
Generated with:	STM32CubeMX 5.2.0
Date	06/12/2019

1.2. MCU

MCU Series	STM32WB
MCU Line	STM32WBx5
MCU name	STM32WB55CGUx
MCU Package	UFQFPN48
MCU Pin number	48

2. Pinout Configuration
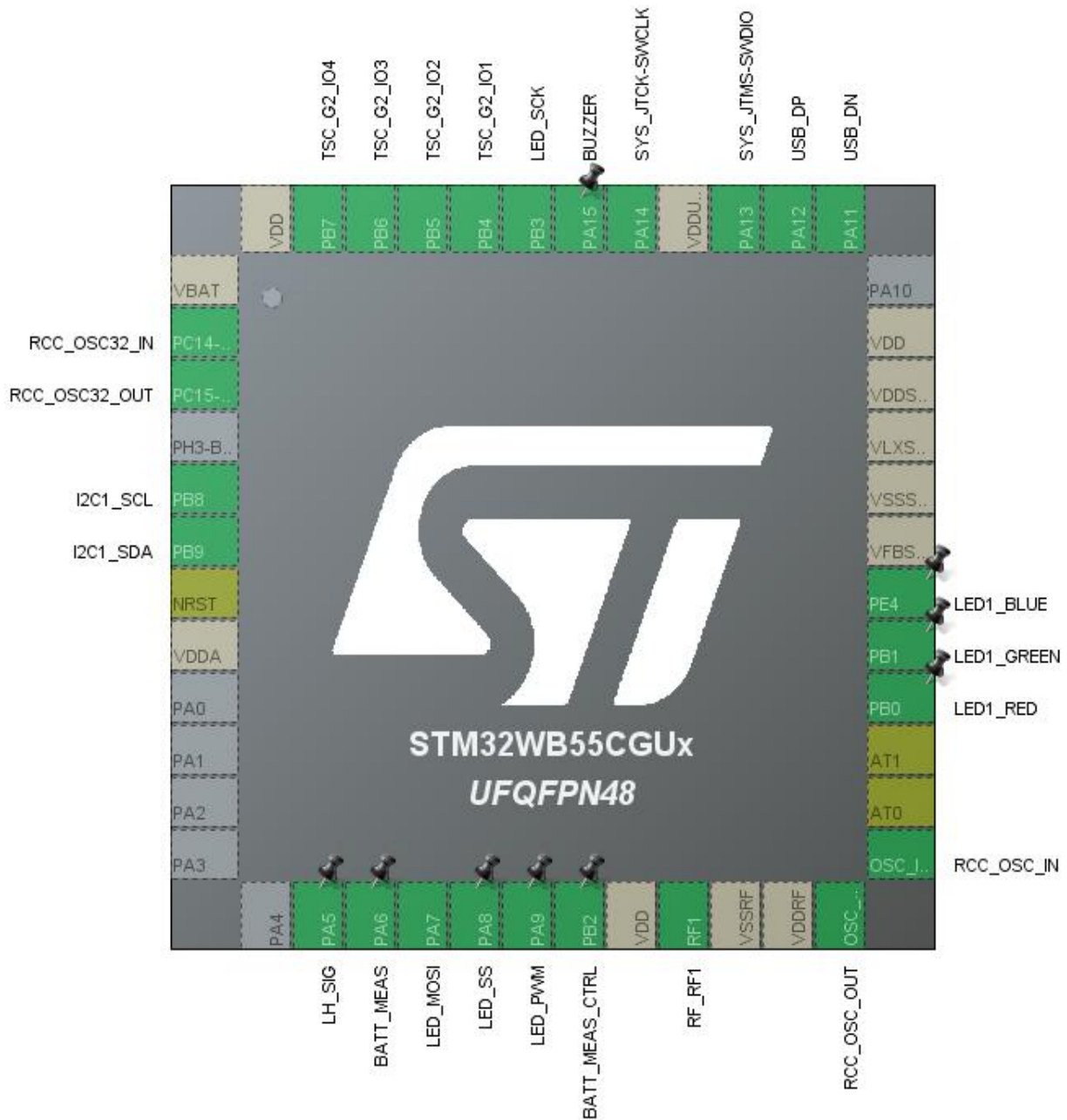
3. Pins Configuration

Pin Number UFQFPN48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
1	VBAT	Power		
2	PC14-OSC32_IN	I/O	RCC_OSC32_IN	
3	PC15-OSC32_OUT	I/O	RCC_OSC32_OUT	
5	PB8	I/O	I2C1_SCL	
6	PB9	I/O	I2C1_SDA	
7	NRST	Reset		
8	VDDA	Power		
14	PA5	I/O	GPIO_EXTI5	LH_SIG
15	PA6	I/O	ADC1_IN11	BATT_MEAS
16	PA7	I/O	SPI1_MOSI	LED_MOSI
17	PA8 *	I/O	GPIO_Output	LED_SS
18	PA9 *	I/O	GPIO_Output	LED_PWM
19	PB2 *	I/O	GPIO_Output	BATT_MEAS_CTRL
20	VDD	Power		
21	RF1	MonoIO	RF_RF1	
22	VSSRF	Power		
23	VDDRF	Power		
24	OSC_OUT	MonoIO	RCC_OSC_OUT	
25	OSC_IN	MonoIO	RCC_OSC_IN	
26	AT0	NC		
27	AT1	NC		
28	PB0 *	I/O	GPIO_Output	LED1_RED
29	PB1 *	I/O	GPIO_Output	LED1_GREEN
30	PE4 *	I/O	GPIO_Output	LED1_BLUE
31	VFBSMPS	Power		
32	VSSSMPS	Power		
33	VLXSMPS	Power		
34	VDDSMPS	Power		
35	VDD	Power		
37	PA11	I/O	USB_DM	USB_DN
38	PA12	I/O	USB_DP	
39	PA13	I/O	SYS_JTMS-SWDIO	
40	VDDUSB	Power		
41	PA14	I/O	SYS_JTCK-SWCLK	
42	PA15 *	I/O	GPIO_Output	BUZZER
43	PB3	I/O	SPI1_SCK	LED_SCK

Pin Number UFQFPN48	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
44	PB4	I/O	TSC_G2_IO1	
45	PB5	I/O	TSC_G2_IO2	
46	PB6	I/O	TSC_G2_IO3	
47	PB7	I/O	TSC_G2_IO4	
48	VDD	Power		

 * The pin is affected with an I/O function

4. Clock Tree Configuration
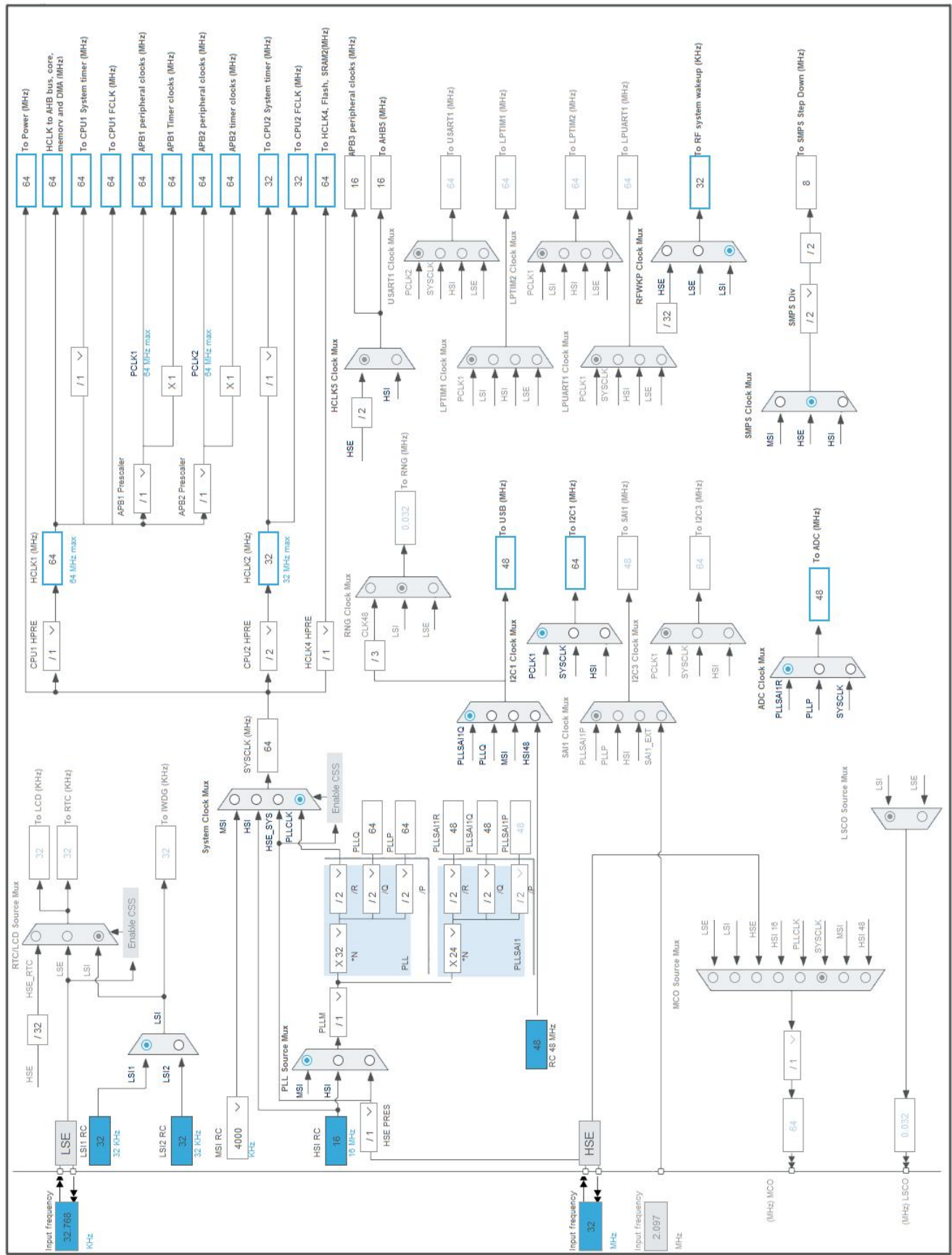
5. Software Project

5.1. Project Settings

Name	Value
Project Name	crowdWearableSystem
Project Folder	C:\dev\attentionDevBoard\stm32_masterCode
Toolchain / IDE	TrueSTUDIO
Firmware Package Name and Version	STM32Cube FW_WB V1.1.1

5.2. 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)	Yes

6. Power Consumption Calculator report

6.1. Microcontroller Selection

Series	STM32WB
Line	STM32WBx5
MCU	STM32WB55CGUx
Datasheet	DS11929_Rev3

6.2. Parameter Selection

Temperature	25
Vdd	3.0

7. IPs and Middleware Configuration

7.1. ADC1

IN11: IN11 Single-ended

7.1.1. Parameter Settings:

	Asynchronous clock mode divided by 1
	ADC 12-bit resolution
	Right alignment
ode	Disabled
ion Mode	Disabled
ersion Mode	Disabled
quests	Disabled
Selection	End of single conversion
	Overrun data preserved
it	Disabled
ConversionMode:	
versions	Enable
rsampling	Disable
on	1
onversion Source	Regular Conversion launched by software
onversion Edge	None
	1
	Channel 11
	2.5 Cycles
	No offset
ConversionMode:	
versions	Disable
og 1:	
hDog1 Mode	false
og 2:	
hDog2 Mode	false
og 3:	
hDog3 Mode	false

7.2. I2C1

I2C: I2C
7.2.1. Parameter Settings:

ration:

	Disabled
	Standard Mode
y (KHz)	100
	0
	0
Filter	0
	Enabled
	0x10707DBC *

de	Disabled
s Detection	Disabled
gth selection	7-bit
wledged	Disabled
ss	0

7.3. RCC

High Speed Clock (HSE): Crystal/Ceramic Resonator
Low Speed Clock (LSE) : Crystal/Ceramic Resonator
7.3.1. Parameter Settings:

eters:

	3.3
	Enabled
	Disabled
	Enabled
	3 WS (4 CPU cycle)

s:

e	16
e	0
	Enabled
	Enabled
	Enabled
Value (ms)	100
Value (ms)	5000
	LSE oscillator low drive capability

ers:

tage Scale   Power Regulator Voltage Scale 1

ck Configuration:

erals clock configuration   TRUE

7.4. RF

mode: Activate RF1

7.5. SPI1

Mode: Half-Duplex Master
7.5.1. Parameter Settings:

ers:

                                                   Motorola
                                                   8 Bits *
                                                   MSB First

ers:

Rate)   **64 ***

                                                   1000.0 KBits/s *
L)   **High ***
)   **2 Edge ***

meters:

                                                   Disabled
                                                   Software

7.6. SYS

Debug: Serial Wire
Timebase Source: TIM1

7.7. TSC

Sampling: G2_IO1
mode: G2_IO2
mode: G2_IO3

mode: G2_IO4
7.7.1. Parameter Settings:

h Pulse Length   **1 Cycle ***
v Pulse Length   **1 Cycle ***
                                                 Disable
scaler   Synchronous clock mode divided by 4
ue   **511 charge transfer cycles ***
                                                 Output push-pull low
                                                 Normal acquisition mode
rrupt   Disable

7.8. USB

mode: Device (FS)
7.8.1. Parameter Settings:

ers:

                                                 Full Speed 12MBit/s
                                                 Internal Phy
                                                 Disabled

ers:

                                                 Disabled
ment   Disabled
                                                 Disabled

7.9. FREERTOS

Interface: CMSIS_V1
7.9.1. Config parameters:

                                                 CMSIS v1

                                                 10.0.1
on   1.02

:

	Enabled
	SystemCoreClock
	1000
	7
SIZE	128
LEN	16
S	Disabled
LD	Enabled
	Enabled
MUTEXES	Disabled
EMAPHORES	Disabled
_SIZE	8
TASK_TAG	Disabled
RD_COMPATIBILITY	Enabled
ISED_TASK_SELECTION	Enabled
LE	Disabled
CATIONS	Enabled
HIGH_ADDRESS	Disabled

ement settings:

	Dynamic
E	**6072 ***
nt scheme	heap_4

related definitions:

	Disabled
	Disabled
LED_HOOK	Disabled
SK_STARTUP_HOOK	Disabled
CK_OVERFLOW	Disabled

ask stats gathering related definitions:

TIME_STATS	Disabled
LITY	Disabled
MATTING_FUNCTIONS	Disabled

ted definitions:

S	Disabled
E_PRIORITIES	2

definitions:

	Disabled

g behaviour configuration:

_INTERRUPT_PRIORITY	15
SCALL_INTERRUPT_PRIORITY	5

7.9.2. Include parameters:

ons:

	Enabled
	Enabled
	Enabled
urces	Disabled
	Enabled
	Disabled
	Enabled
State	Enabled
SR	Enabled
lder	Disabled
exHolder	Disabled
e	Disabled
nWaterMark	Disabled
skHandle	Disabled
	Disabled
romISR	Disabled
Call	Disabled
	Disabled
	Disabled

7.10. TOUCHSENSING

mode: Enabled

7.10.1. Sensors selection:

BJECTS	1
NNELS = max(TSLPRM_TOTAL_CHANNELS)	3
HANNELS	3
ensors used:	
NROTS	0
NROTS_B	1
LIN_M1	**Used ***
LIN_M1_NBR	0
LIN_M1_B_NBR	**1 ***
B_NBR1_CH1	G2_IO2

_B_NBR1_CH2	**G2_IO3 ***
_B_NBR1_CH3	**G2_IO4 ***
_LIN_M2	Not Used
_LIN_H	Not Used
_ROT_M	Not Used
_LIN_M1	Not Used
_LIN_M2	Not Used
_LIN_H	Not Used
_ROT_M	Not Used
_LIN_M1	Not Used
_LIN_M2	Not Used
_LIN_H	Not Used
_ROT_M	Not Used
_ROT_D	Not Used
_LIN_M1	Not Used
_LIN_M2	Not Used
_LIN_H	Not Used
_ROT_M	Not Used

sors:

OUCHKEYS	0
OUCHKEYS_B	0

7.10.2. Config parameters:

odes:

on	2.2.0

es:

AS	1
OX	1

its:

	10
X	TSC_MCV_511
AMPLES	4
ELAY	0

TouchKey sensors:

OX_IN_TH	10
OX_OUT_TH	5
TECT_IN_TH	120
TECT_OUT_TH	110
LIB_TH	120

TH	0
Linear and Rotary sensors:	
PROX_IN_TH	10
PROX_OUT_TH	5
DETECT_IN_TH	80
DETECT_OUT_TH	75
CALIB_TH	80
USE_NORMDELTA	0
ensors position:	
RESOLUTION	4
DIR_CHG_POS	10
DIR_CHG_DEB	1
ters:	
CE_PROX	2
CE_DETECT	2
CE_RELEASE	2
CE_CALIB	3
CE_ERROR	3
hange System (ECS):	
LOW	10
AST	20
AY	500
Out (DTO):	
	0
usion System (DXS):	
S	0
parameters:	
EQ	1000
ISCHARGE_ALL	1000
	TSC_IODEF_OUT_PP_LOW

* User modified value

8. System Configuration
8.1. GPIO configuration

in	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	
A6	ADC1_IN11	Analog mode	No pull-up and no pull-down	n/a	
B8	I2C1_SCL	Alternate Function Open Drain	Pull-up	Low	
B9	I2C1_SDA	Alternate Function Open Drain	Pull-up	Low	
SC32_IN	RCC_OSC32_IN	n/a	n/a	n/a	
C32_OUT	RCC_OSC32_OUT	n/a	n/a	n/a	
_OUT	RCC_OSC_OUT	n/a	n/a	n/a	
C_IN	RCC_OSC_IN	n/a	n/a	n/a	
F1	RF_RF1	n/a	n/a	n/a	
A7	SPI1_MOSI	Alternate Function Push Pull	No pull-up and no pull-down	Low	
B3	SPI1_SCK	Alternate Function Push Pull	No pull-up and no pull-down	Low	
A13	SYS_JTMS-SWDIO	n/a	n/a	n/a	
A14	SYS_JTCK-SWCLK	n/a	n/a	n/a	
B4	TSC_G2_IO1	Alternate Function Open Drain	No pull-up and no pull-down	Low	
B5	TSC_G2_IO2	Alternate Function Push Pull	No pull-up and no pull-down	Low	
B6	TSC_G2_IO3	Alternate Function Push Pull	No pull-up and no pull-down	Low	
B7	TSC_G2_IO4	Alternate Function Push Pull	No pull-up and no pull-down	Low	
A11	USB_DM	Alternate Function Push Pull	No pull-up and no pull-down	Low	
A12	USB_DP	Alternate Function Push Pull	No pull-up and no pull-down	Low	
A5	GPIO_EXTI5	External Interrupt Mode with Rising edge trigger detection	No pull-up and no pull-down	n/a	
A8	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
A9	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
B2	GPIO_Output	**Output Open Drain ***	No pull-up and no pull-down	Low	
B0	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
B1	GPIO_Output	**Output Open Drain ***	No pull-up and no pull-down	Low	
E4	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
A15	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	SubPriori
Non maskable interrupt	true	0	0
Hard fault interrupt	true	0	0
Memory management fault	true	0	0
refetch fault, memory access fault	true	0	0
ndefined instruction or illegal state	true	0	0
stem service call via SWI instruction	true	0	0
Debug monitor	true	0	0
endable request for system service	true	15	0
System tick timer	true	15	0
date interrupt and TIM16 global interrupt	true	0	0
I2C1 event interrupt	true	5	0
TSC global interrupt	true	5	0
PVM2 interrupts through EXTI lines 16/31/33	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
ADC1 global interrupt	unused		
USB high priority interrupt	unused		
errupt, USB wake-up interrupt through EXTI line 28	unused		
through EXTI line 40 and PWR CPU2 HOLD wake-up interrupt	unused		
EXTI line[9:5] interrupts	unused		
I2C1 error interrupt	unused		
SPI1 global interrupt	unused		
the fly, end of BLE activity, end of 802.15.4 activity, nd of critical radio phase interrupt	unused		
FPU global interrupt	unused		

* User modified value

9. Software Pack Report