
STM32
CubeMX

1. Description

1.1. Project

Project Name	TMJData
Board Name	STM32WB5MM-DK
Generated with:	STM32CubeMX 6.15.0
Date	09/11/2025

1.2. MCU

MCU Series	STM32WB
MCU Line	STM32WBxM Modules
MCU name	STM32WB5MMGHx
MCU Package	LGA86
MCU Pin number	86

1.3. Core(s) information

Core(s)	ARM Cortex-M4

2. Pinout Configuration

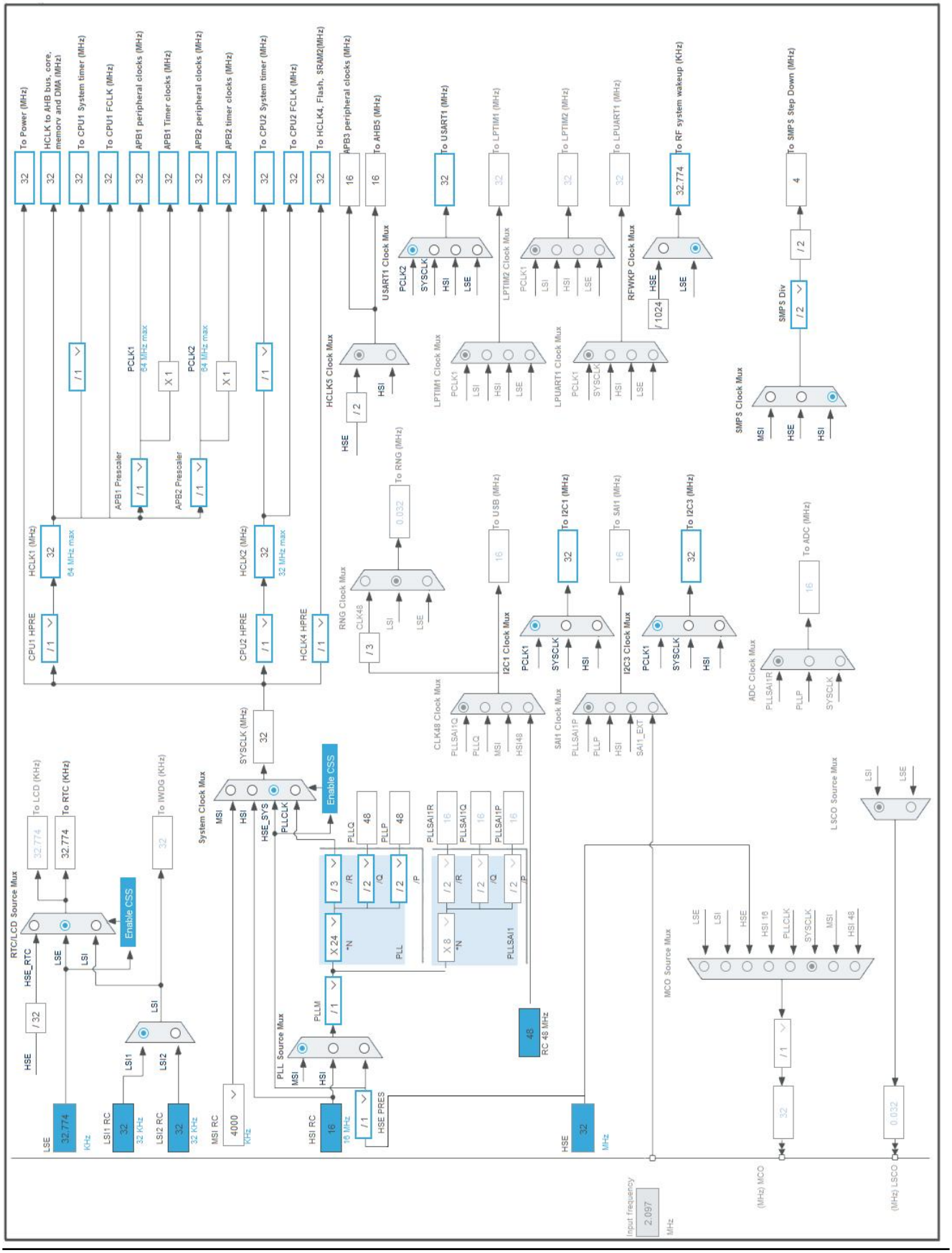
LGA86 (Top view)

3. Pins Configuration

Pin Number LGA86	Pin Name (function after reset)	Pin Type	Alternate Function(s)	Label
5	VSS	Power		
6	VDDA	Power		
10	NRST	Reset		
14	PB8	I/O	I2C1_SCL	
15	VBAT	Power		
16	VSSSMPS	Power		
17	VDDSMPS	Power		
18	PB7	I/O	USART1_RX	VCP_RX
25	PA13	I/O	SYS_JTMS-SWDIO	T_SWDIO
26	PA14	I/O	SYS_JTCK-SWCLK	T_SWCLK
28	PA10	I/O	I2C1_SDA	
31	VSS	Power		
32	VDDUSB	Power		
37	PB14	I/O	I2C3_SDA	I2C3_SDA
39	PB6	I/O	USART1_TX	VCP_TX
47	PB10	I/O	I2C3_SCL	I2C3_SCL
57	VSS	Power		
60	VSS	Power		
63	PD14	I/O	GPIO_EXTI14	
65	PD13 *	I/O	GPIO_Output	
66	PD12 *	I/O	GPIO_Output	
84	VSS	Power		
86	VSS	Power		

* The pin is affected with an I/O function

4. Clock Tree Configuration



1. Power Consumption Calculator report

1.1. Microcontroller Selection

Series	STM32WB
Line	STM32WBxM Modules
MCU	STM32WB5MMGHx
Datasheet	DS13252_Rev3

1.2. Parameter Selection

Temperature	25
Vdd	3.3

1.3. Battery Selection

Battery	Li-SOCL2(AAA700)
Capacity	700.0 mAh
Self Discharge	0.08 %/month
Nominal Voltage	3.6 V
Max Cont Current	10.0 mA
Max Pulse Current	30.0 mA
Cells in series	1
Cells in parallel	1

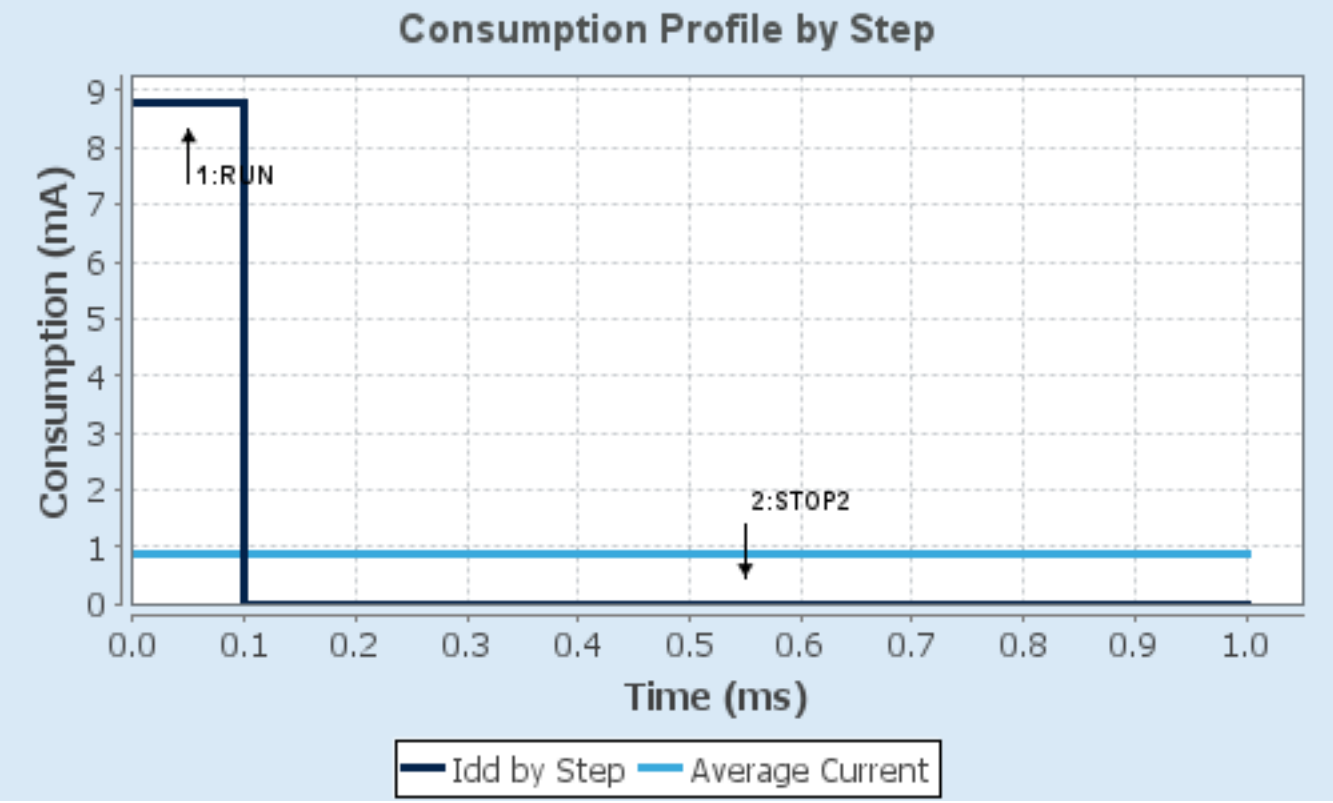
1.4. Sequence

Step	Step1	Step2
Mode	RUN	STOP2
Vdd	3.3	3.3
Voltage Source	Battery	Battery
Range	Range1-High	NoRange
Fetch Type	SRAM1/Flash-PowerDown	FLASH/ART/CACHE
CPU Frequency	64 MHz	0 Hz
Clock Configuration	HSI PLL Regulator_ON	HSI LPUART1 Regulator_ON
Clock Source Frequency	16 MHz	16 MHz
Peripherals		
Additional Cons.	0 mA	0 mA
Average Current	8.8 mA	1.9 µA
Duration	0.1 ms	0.9 ms
DMIPS	80.0	0.0
Ta Max	103.9	105
Category	In DS Table	In DS Table

1.5. Results

Sequence Time	1 ms	Average Current	881.71 µA
Battery Life	1 month, 2 days, 15 hours	Average DMIPS	8.0 DMIPS

1.6. Chart


Consumption Profile by Step
Consumption (mA)
9
8
7
6
5
4
3
2
1
0
1:RUN
2:STOP2
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

2. Software Project

2.1. Project Settings

Name	Value
Project Name	TMJData
Project Folder	C:\Users\Sarah
Toolchain / IDE	STM32CubeIDE
Firmware Package Name and Version	STM32Cube FW_WB V1.23.0
Application Structure	Advanced
Generate Under Root	Yes
Do not generate the main()	No
Minimum Heap Size	0x200
Minimum Stack Size	0x400

2.2. 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

2.3. Advanced Settings - Generated Function Calls

Rank	Function Name	Peripheral Instance Name
1	SystemClock_Config	RCC
2	MX_GPIO_Init	GPIO
3	MX_DMA_Init	DMA
4	MX_I2C1_Init	I2C1
5	MX_I2C3_Init	I2C3
6	MX_IPCC_Init	IPCC
7	MX_RTC_Init	RTC
8	MX_USART1_UART_Init	USART1
9	APPE_Init	STM32_WPAN
10	MX_RF_Init	RF

3. Peripherals and Middlewares Configuration

3.1. HSEM

mode: Activated

3.2. I2C1

I2C: I2C

3.2.1. Parameter Settings:

Timing configuration:

Custom Timing	Disabled
I2C Speed Mode	**Fast Mode ***
I2C Speed Frequency (KHz)	400
Rise Time (ns)	100
Fall Time (ns)	100
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x0060112F ***

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

3.3. I2C3

I2C: I2C

3.3.1. Parameter Settings:

Timing configuration:

Custom Timing	Disabled
I2C Speed Mode	Standard Mode
I2C Speed Frequency (KHz)	100
Rise Time (ns)	100
Fall Time (ns)	100
Coefficient of Digital Filter	0
Analog Filter	Enabled
Timing	**0x00B07CB4 ***

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

3.4. IPCC

mode: Activated

3.5. MEMORYMAP

mode: Activated

3.6. RCC

mode: High Speed Clock (HSE)

mode: Low Speed Clock (LSE)

3.6.1. Parameter Settings:

System Parameters:

VDD voltage (V)	3.3
Instruction Cache	Enabled
Prefetch Buffer	Enabled
Data Cache	Enabled
Flash Latency(WS)	1 WS (2 CPU cycle)

RCC Parameters:

HSI Calibration Value	16
MSI Calibration Value	0
MSI Auto Calibration	Disabled
MSI State	Enabled
HSI State	Enabled
HSE Startup Timout Value (ms)	100
LSE Startup Timout Value (ms)	5000
LSE Drive Capability	LSE oscillator medium high drive capability

Power Parameters:

Power Regulator Voltage Scale	Power Regulator Voltage Scale 1

Peripherals Clock Configuration:

Generate the peripherals clock configuration	TRUE

3.7. RF
mode: Activate RF

3.8. RTC
mode: Activate Clock Source
WakeUp: Internal WakeUp

3.8.1. Parameter Settings:

General:

Hour Format	Hourformat 24
Asynchronous Predivider value	CFG_RTC_ASYNCH_PRESCALER
Synchronous Predivider value	CFG_RTC_SYNCH_PRESCALER

Wake UP:

Wake Up Clock	RTCCLK / 16
Wake Up Counter	0

3.9. SEQUENCER
mode: Enabled

3.10. SYS
Debug: Serial Wire
Timebase Source: SysTick

3.11. TINY_LPM
mode: Enabled

3.12. USART1
Mode: Asynchronous

3.12.1. 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	8 Samples
Single Sample	Disable
ClockPrescaler	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

3.13. STM32_WPAN

mode: BLE

3.13.1. BLE Applications and Services:

BLE Wireless Stack:

BLE Wireless Stack	Full

BLE Application Type:

BLE Application Type	Server profile

Server Mode:

BT SIG Beacon	Disabled
BT SIG Blood Pressure Sensor	Disabled
BT SIG Health Thermometer Sensor	Disabled
BT SIG Heart Rate Sensor	Disabled
Custom P2P Server	Enabled
Custom Template	Disabled

BLE Services Configuration:

The device needs to support the Peripheral Role	1
The device needs to support the Central Role	0
BLE_CFG_SVC_MAX_NBR_CB	7
BLE_CFG_CLT_MAX_NBR_CB	0

P2P Service:

P2P_SERVER_NUMBER	P2P_SERVER1

Local Name:

LOCAL_NAME	**TMJData ***

3.13.2. Configuration:

HW Timer Server:

CFG_HW_TS_MAX_NBR_CONCURRENT_TIMER	6
CFG_HW_TS_NVIC_RTC_WAKEUP_IT_PREEMPTPRIO	3
CFG_HW_TS_NVIC_RTC_WAKEUP_IT_SUBPRIO	0
CFG_HW_TS_USE_PRIMASK_AS_CRITICAL_SECTION	1
CFG_HW_TS_RTC_HANDLER_MAX_DELAY	(10 * (LSI_VALUE/1000))
CFG_HW_TS_RTC_WAKEUP_HANDLER_ID	RTC_WKUP_IRQn

HW UART:

CFG_HW_LPUART1_ENABLED	Disabled
CFG_HW_LPUART1_DMA_TX_SUPPORTED	Disabled
CFG_HW_USART1_ENABLED	**Enabled ***
CFG_HW_USART1_DMA_TX_SUPPORTED	Enabled

Generic parameters:

CFG_HW_RESET_BY_FW	Disabled
CFG_USE_SMPS	Disabled
CFG_LPM_SUPPORTED	Disabled
CFG_DEBUGGER_SUPPORTED	Enabled
CFG_DEBUG_BLE_TRACE	**Enabled ***
CFG_DEBUG_APP_TRACE	**Enabled ***
CFG_DEBUG_TRACE_LIGHT	**Enabled ***
CFG_DEBUG_TRACE_FULL	Disabled
DBG_TRACE_USE_CIRCULAR_QUEUE	Enabled
DBG_TRACE_MSG_QUEUE_SIZE	4096
MAX_DBG_TRACE_MSG_SIZE	1024

Application parameters:

CFG_TX_POWER	-0.15dBm (0x18)
CFG_DEBUG_TRACE_UART	**hw_uart1 ***
CFG_CONSOLE_MENU	No UART selected. You need to activate LPUART1 (if available)
CFG_ADV_BD_ADDRESS	**0x11aabbccddee ***
CFG_IDENTITY_ADDRESS	GAP_PUBLIC_ADDR
CFG_PRIVACY	Disabled
CFG_FAST_CONN_ADV_INTERVAL_MIN	80

CFG_FAST_CONN_ADV_INTERVAL_MAX	100
CFG_LP_CONN_ADV_INTERVAL_MIN	1000
CFG_LP_CONN_ADV_INTERVAL_MAX	2500
CFG_IO_CAPABILITY	Display Yes No (0x01)
CFG_MITM_PROTECTION	MITM protection required (0x01)
L2CAP_REQUEST_NEW_CONN_PARAM	0
CFG_RTCCLK_DIVIDER_CONF	0
CFG_RTCCLK_DIV	16
CFG_RTC_WUCKSEL_DIVIDER	0
CFG_RTC_ASYNCH_PRESCALER	**0x0F ***
CFG_RTC_SYNCH_PRESCALER	**0x7FFF ***
CFG_BLE_NUM_LINK	2
CFG_BLE_NUM_GATT_SERVICES	8
CFG_BLE_NUM_GATT_ATTRIBUTES	68
CFG_BLE_MAX_ATT_MTU	156
CFG_BLE_ATT_VALUE_ARRAY_SIZE	1344
CFG_BLE_DATA_LENGTH_EXTENSION	Enabled
CFG_BLE_PERIPHERAL_SCA	500
CFG_BLE_CENTRAL_SCA	0
CFG_BLE_HSE_STARTUP_TIME	**0x148 ***
CFG_BLE_MAX_CONN_EVENT_LENGTH	**0xFFFFFFFF ***
CFG_BLE_VITERBI_MODE	Enabled
CFG_BLE_OPTIONS	BLE stack Options flags:
- CFG_BLE_OPTIONS_LL	SHCI_C2_BLE_INIT_OPTIONS_LL_HOST
- CFG_BLE_OPTIONS_SVC	SHCI_C2_BLE_INIT_OPTIONS_WITH_SVC_CHANGE_DESC
- CFG_BLE_OPTIONS_DEVICE_NAME	SHCI_C2_BLE_INIT_OPTIONS_DEVICE_NAME_RW
- CFG_BLE_OPTIONS_EXT_ADV	SHCI_C2_BLE_INIT_OPTIONS_NO_EXT_ADV
- CFG_BLE_OPTIONS_CS_ALGO	SHCI_C2_BLE_INIT_OPTIONS_NO_CS_ALGO2
- CFG_BLE_OPTIONS_GATTDB_NVM	SHCI_C2_BLE_INIT_OPTIONS_FULL_GATTDB_NVM
- CFG_BLE_OPTIONS_GATT_CACHING	SHCI_C2_BLE_INIT_OPTIONS_GATT_CACHING_NOTUSED
- CFG_BLE_OPTIONS_POWER_CLASS	SHCI_C2_BLE_INIT_OPTIONS_POWER_CLASS_2_3
- CFG_BLE_OPTIONS_APPEARANCE	SHCI_C2_BLE_INIT_OPTIONS_APPEARANCE_READONLY
- CFG_BLE_OPTIONS_ENHANCED_ATT	SHCI_C2_BLE_INIT_OPTIONS_ENHANCED_ATT_NOTSUPPORTED
CFG_BLE_MAX_COC_INITIATOR_NBR	32

CFG_BLE_MIN_TX_POWER	0
CFG_BLE_MAX_TX_POWER	0
CFG_BLE_MAX_ADD_EATT_BEARERS	4
CFG_BLE_RX_MODEL_CONFIG	SHCI_C2_BLE_INIT_RX_MODEL_AGC_RSSI_LEGACY
CFG_BLE_MAX_ADV_SET_NBR	3
CFG_BLE_MAX_ADV_DATA_LEN	1650
CFG_BLE_TX_PATH_COMPENS	0
CFG_BLE_RX_PATH_COMPENS	0
CFG_BLE_CORE_VERSION	SHCI_C2_BLE_INIT_BLE_CORE_5_4
CFG_TLBLE_EVT_QUEUE_LENGTH	5
CFG_TLBLE_MOST_EVENT_PAYLOAD_SIZE	255

Pairing parameters:

CFG_BONDING_MODE	No-bonding mode(0x00)
CFG_USED_FIXED_PIN	Use a fixed pin (0x00)
CFG_FIXED_PIN	111111
CFG_ENCRYPTION_KEY_SIZE_MAX	16
CFG_ENCRYPTION_KEY_SIZE_MIN	8
CFG_SC_SUPPORT	Secure Connections Paring supported but optional (0x01)
CFG_BLE_IR	12, 34, 56, 78, 9A, BC, DE, F0, 12, 34, 56, 78, 9A, BC, DE, F0
CFG_BLE_ER	FE, DC, BA, 09, 87, 65, 43, 21, FE, DC, BA, 09, 87, 65, 43, 21
CFG_KEYPRESS_NOTIFICATION_SUPPORT	Keypress notification not supported (0x00)

Debug options:

BLE_DBG_APP_EN	**Enabled ***
BLE_DBG_P2P_STM_EN	Disabled

*** User modified value**

4. System Configuration

4.1. GPIO configuration

IP	Pin	Signal	GPIO mode	GPIO pull/up pull down	Max Speed	User Label
I2C1	PB8	I2C1_SCL	Alternate Function Open Drain	**Pull-up ***	**Very High ***	
	PA10	I2C1_SDA	Alternate Function Open Drain	**Pull-up ***	**Very High ***	
I2C3	PB14	I2C3_SDA	Alternate Function Open Drain	**Pull-up ***	**High ***	I2C3_SDA
	PB10	I2C3_SCL	Alternate Function Open Drain	**Pull-up ***	**High ***	I2C3_SCL
SYS	PA13	SYS_JTMS-SWDIO	n/a	n/a	n/a	T_SWDIO
	PA14	SYS_JTCK-SWCLK	n/a	n/a	n/a	T_SWCLK
USART1	PB7	USART1_RX	Alternate Function Push Pull	No pull-up and no pull-down	Low	VCP_RX
	PB6	USART1_TX	Alternate Function Push Pull	No pull-up and no pull-down	Low	VCP_TX
GPIO	PD14	GPIO_EXTI14	External Interrupt Mode with Rising edge trigger detection	**Pull-down ***	n/a	
	PD13	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	
	PD12	GPIO_Output	Output Push Pull	No pull-up and no pull-down	Low	

4.2. DMA configuration

DMA request	Stream	Direction	Priority
I2C1_RX	DMA1_Channel1	Peripheral To Memory	Low
I2C1_TX	DMA1_Channel2	Memory To Peripheral	Low
I2C3_RX	DMA1_Channel3	Peripheral To Memory	Low
I2C3_TX	DMA1_Channel4	Memory To Peripheral	Low
USART1_RX	DMA1_Channel5	Peripheral To Memory	Low
USART1_TX	DMA1_Channel6	Memory To Peripheral	Low

I2C1_RX: DMA1_Channel1 DMA request Settings:

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

I2C1_TX: DMA1_Channel2 DMA request Settings:

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

I2C3_RX: DMA1_Channel3 DMA request Settings:

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

I2C3_TX: DMA1_Channel4 DMA request Settings:

Mode:	Normal
Peripheral Increment:	Disable
Memory Increment:	**Enable ***

Peripheral Data Width:	Byte
Memory Data Width:	Byte

USART1_RX: DMA1_Channel5 DMA request Settings:

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

USART1_TX: DMA1_Channel6 DMA request Settings:

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

4.3. NVIC configuration

4.3.1. 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
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
RTC wake-up interrupt through EXTI line 19	true	0	0
DMA1 channel1 global interrupt	true	2	0
DMA1 channel2 global interrupt	true	2	0
DMA1 channel3 global interrupt	true	2	0
DMA1 channel4 global interrupt	true	2	0
DMA1 channel5 global interrupt	true	0	0
DMA1 channel6 global interrupt	true	0	0
I2C1 event interrupt	true	1	0
I2C1 error interrupt	true	0	0
I2C3 event interrupt	true	0	0
I2C3 error interrupt	true	0	0
USART1 global interrupt	true	0	0
EXTI line[15:10] interrupts	true	4	0
IPCC RX occupied interrupt	true	0	0
IPCC TX free interrupt	true	0	0
HSEM global interrupt	true	0	0
PVD/PVM0/PVM2 interrupts through EXTI lines 16/31/33	unused		
Flash global interrupt	unused		
RCC global interrupt	unused		
CPU2 SEV interrupt through EXTI line 40 and PWR CPU2 HOLD wake-up interrupt	unused		
PWR switching on the fly, end of BLE activity, end of 802.15.4 activity, end of critical radio phase interrupt	unused		
FPU global interrupt	unused		

4.3.2. NVIC Code generation

Enabled interrupt Table	Select for init	Generate IRQ	Call HAL handler

Enabled interrupt Table	Select for init sequence ordering	Generate IRQ handler	Call HAL handler
Non maskable interrupt	false	true	false
Hard fault interrupt	false	true	false
Memory management fault	false	true	false
Prefetch fault, memory access fault	false	true	false
Undefined instruction or illegal state	false	true	false
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
RTC wake-up interrupt through EXTI line 19	false	true	true
DMA1 channel1 global interrupt	false	true	true
DMA1 channel2 global interrupt	false	true	true
DMA1 channel3 global interrupt	false	true	true
DMA1 channel4 global interrupt	false	true	true
DMA1 channel5 global interrupt	false	true	true
DMA1 channel6 global interrupt	false	true	true
I2C1 event interrupt	false	true	true
I2C1 error interrupt	false	true	true
I2C3 event interrupt	false	true	true
I2C3 error interrupt	false	true	true
USART1 global interrupt	false	true	true
EXTI line[15:10] interrupts	false	true	true
IPCC RX occupied interrupt	false	true	true
IPCC TX free interrupt	false	true	true
HSEM global interrupt	false	true	true

*** User modified value**

5. System Views

5.1. Category view

5.1.1. Current

6. Docs & Resources

Type	Link
BSDL files	https://www.st.com/resource/en/bsdl_model/stm32wb_bsdl.zip
IBIS models	https://www.st.com/resource/en/ibis_model/stm32wb_ibis.zip
System View Description	https://www.st.com/resource/en/svd/stm32wb_svd.zip
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_embedded_software_solutions.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_eval-tools_portfolio.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32_stm8_functional-safety-packages.pdf
Presentations	https://www.st.com/resource/en/product_presentation/stm32-stm8_software_development_tools.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers_stm32wbxm_wireless-modules_product_overview.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-family-overview.pdf
Presentations	https://www.st.com/resource/en/product_presentation/microcontrollers-stm32-entry-level-graphics.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32nucleo.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32wb.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32trust.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32wbvl.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32matter.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32wbxm.pdf
Flyers	https://www.st.com/resource/en/flyer/flstm32zigbee.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb-rf-certificates.pdf
Product	https://www.st.com/resource/en/certification_document/stm32wb5mxx-

Certifications	ble-rf-phy-5-3.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/eu-declaration-of-conformity-stm32wb5mmg.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb5mmd-srrc-certificate.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb5mmg-ce-test-reports.zip
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb5mmg-fcc-ised-certificates-and-test-reports.zip
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb5mmg-japan-certificate-and-test-report.zip
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb5mmg-kc-certificate-and-test-report.zip
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb5mmg-nnc-test-reports.zip
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb5mmg-reach-and-rohs-test-reports.zip
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb5mmg-ukca-declaration-of-conformity.zip
Product Certifications	https://www.st.com/resource/en/certification_document/ble-thread-ftd-dynamic-thread-device-interoperability-certificate.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/full-thread-device-interoperability-certification.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/minimal-thread-device-interoperability-certification.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb5mmg-india-eta.pdf
Product Certifications	https://www.st.com/resource/en/certification_document/stm32wb5mmg-thailand-declaration-conformity.zip
Security Advisory	https://www.st.com/resource/en/security_advisory/sa0024-potential-isolation-issue-between-cpu1-and-cpu2-on-stm32wb5x-stm32wb3x-stm32wb1x-and-stm32wl5x-stmicroelectronics.pdf
Security Bulletin	https://www.st.com/resource/en/technical_note/tn1489-security-bulletin-

	tn1489stpsirt-physical-attacks-on-stm32-and-stm32cube-firmware-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an1709-emc-design-guide-for-stm8-stm32-and-legacy-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3126-audio-and-waveform-generation-using-the-dac-in-stm32-products-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3155-usart-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3156-usb-dfu-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4221-i2c-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4286-spi-protocol-used-in-the-stm32-bootloader-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4655-virtually-increasing-the-number-of-serial-communication-peripherals-in-stm32-applications-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4750-handling-of-soft-errors-in-stm32-applications-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4776-generalpurpose-timer-cookbook-for-stm32-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4803-highspeed-si-simulations-using-ibis-and-boardlevel-simulations-using-hyperlynx-si-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5027-interfacing-pdm-digital-microphones-using-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5071-stm32wb-series-microcontrollers-ultralowpower-features-overview-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5155-stm32cube-mcu-package-examples-for-stm32wb-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5247-overtheair-application-and-wireless-firmware-update-for-stm32wb-series-

	microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5378-stm32wb-series-microcontrollers-bringup-procedure-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5379-examples-of-at-commands-on-stm32wb-series-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5395-stm32wb-series-mcus-with-an-external-power-amplifier-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5434-onboard-antennas-reference-design-for-the-stm32wb-series-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5491-creating-manufacture-specific-clusters-on-stm32wb-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5492-persistent-data-management-zigbee-and-nonvolatile-memory-in-stm32wb-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5498-how-to-use-zigbee-clusters-templates-on-stm32wb-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5500-zsdk-api-implementation-for-zigbee-on-stm32wb-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5506-getting-started-with-zigbee-on-stm32wb-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5604-stm32wb-series-ble-interoperability-report-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5609-developing-zigbee-smart-energy-applications-on-stm32wb-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5613-getting-started-with-dynamicconcurrent-mode-ble--zigbee-on-stm32wb-series-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5627-stm32wb-series-zigbee-commissioning-guide-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5707-st-bluetooth-mesh-sensor-model-stmicroelectronics.pdf

Application Notes	https://www.st.com/resource/en/application_note/an5745-st-bluetooth-mesh-light-lc-server-model-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5732-developing-zigbee-sleepy-end-devices-on-stm32wb-series-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4899-stm32-microcontroller-gpio-hardware-settings-and-lowpower-consumption-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5612-esd-protection-of-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5292-how-to-build-a-bluetooth-low-energy-mesh-application-for-stm32wb-series-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4991-how-to-wake-up-an-stm32-microcontroller-from-lowpower-mode-with-the-usart-or-the-lpuart-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4838-introduction-to-memory-protection-unit-management-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5165-how-to-develop-rf-hardware-using-stm32wb-microcontrollers-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5290-getting-started-with-stm32wb-mcu-hardware-development-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4879-introduction-to-usb-hardware-and-pcb-guidelines-using-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5042-how-to-calibrate-the-hse-clock-for-rf-applications-on-stm32-wireless-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5246-how-to-use-smps-to-improve-power-efficiency-on-stm32wb-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5225-introduction-to-usb-typec-power-delivery-for-stm32-mcus-and-mpus-stmicroelectronics.pdf

Application Notes	https://www.st.com/resource/en/application_note/an4894-how-to-use-eeprom-emulation-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5289-how-to-build-wireless-applications-with-stm32wb-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5886-guidelines-for-design-and-board-assembly-of-land-grid-array-packages-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5537-how-to-use-adc-oversampling-techniques-to-improve-signaltonoise-ratio-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5036-guidelines-for-thermal-management-on-stm32-applications-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4230-introduction-to-random-number-generation-validation-using-the-nist-statistical-test-suite-for-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2867-guidelines-for-oscillator-design-on-stm8afals-and-stm32-mcusmpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3236-how-to-increase-the-number-of-touchkeys-for-touch-sensing-applications-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an3960-guidelines-for-esd-for-touch-sensing-applications-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4013-introduction-to-timers-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4277-how-to-use-pwm-shutdown-for-motor-control-and-digital-power-conversion-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4299-how-to-improve-conducted-noise-robustness-for-touch-sensing-applications-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4310-how-to-choose-the-sampling-capacitor-for-touch-sensing-applications-on-stm32-mcus-stmicroelectronics.pdf

Application Notes	https://www.st.com/resource/en/application_note/an4312-how-to-design-surface-sensors-for-touch-sensing-applications-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4316-how-to-tune-touch-sensing-applications-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4635-how-to-optimize-lpuart-power-consumption-on-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4759-introduction-to-using-the-hardware-realtime-clock-rtc-and-the-tamper-management-unit-tamp-with-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an4908-getting-started-with-usart-automatic-baud-rater-detection-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5156-introduction-to-security-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5224-introduction-to-dmamux-for-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5129-guidelines-for-meander-design-using-lowcost-pcb-antennae-with-24-ghz-radio-for-stm32wbwb0-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5543-guidelines-for-enhanced-spi-communication-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5185-how-to-use-stmicroelectronics-firmware-upgrade-services-for-stm32wb-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an5270-introduction-to-stm32wb-bluetooth-low-energy-wireless-interface-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/cd00211314-how-to-optimize-the-adc-accuracy-in-the-stm32-mcus-stmicroelectronics.pdf
Application Notes	https://www.st.com/resource/en/application_note/an2639-soldering-recommendations-and-package-information-for-leadfree-ecopack2-mcus-and-mpus-stmicroelectronics.pdf

Application Notes	https://www.st.com/resource/en/application_note/an5105-getting-started-with-touch-sensing-control-on-stm32-mcus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4435-guidelines-for-obtaining-ulcsaiec-607301603351-class-b-certification-in-any-stm32-application-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4657-stm32-inapplication-programming-iap-using-the-usart-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4841-digital-signal-processing-for-stm32-microcontrollers-using-cmsis-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5056-integration-guide-for-the-xcubesbsfu-stm32cube-expansion-package-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5155-stm32cube-mcu-package-examples-for-stm32wb-series-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5360-getting-started-with-projects-based-on-the-stm32mp1-series-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5361-getting-started-with-projects-based-on-dualcore-stm32h7-microcontrollers-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5394-getting-started-with-projects-based-on-the-stm32l5-series-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5418-how-to-build-a-simple-usbpd-sink-application-with-stm32cubemx-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5426-migrating-graphics-middleware-projects-from-stm32cubemx-540-to-stm32cubemx-550-stmicroelectronics.pdf
Application Notes for related Tools	https://www.st.com/resource/en/application_note/an5564-getting-started-with-projects-based-on-dualcore-stm32wl-microcontrollers-in-

& Software	stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4865-lowpower-timer-lptim-applicative-use-cases-on-stm32-mcus-and-mpus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5731-stm32cubemx-and-stm32cubeide-threadsafe-solution-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4502-stm32-smbuspmbus-expansion-package-for-stm32cube-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5042-how-to-calibrate-the-hse-clock-for-rf-applications-on-stm32-wireless-mcus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5952-how-to-use-cmake-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6019-how-the-stdesisv002v1-augments-the-stevalastra1b-with-energy-harvesting-features-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an4635-how-to-optimize-lpuart-power-consumption-on-stm32-mcus-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an5054-how-to-perform-secure-programming-using-stm32cubeprogrammer-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6044-ultralow-power-system-design-guidelines-and-stevalastra1b-power-management-characterization-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6127-getting-started-with-stm32h7rx7sx-mcus-in-stm32cubeide-stmicroelectronics.pdf
Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6236-overcurrent-protection-stmicroelectronics.pdf

Application Notes for related Tools & Software	https://www.st.com/resource/en/application_note/an6223-integrating-regression-models-on-industrial-embedded-system-stmicroelectronics.pdf
Errata Sheets	https://www.st.com/resource/en/errata_sheet/es0525-stm32wb5mmg-module-product-errata-stmicroelectronics.pdf
Datasheet	https://www.st.com/resource/en/datasheet/dm00686226.pdf
Programming Manuals	https://www.st.com/resource/en/programming_manual/pm0214-stm32-cortexm4-mcus-and-mpus-programming-manual-stmicroelectronics.pdf
Programming Manuals	https://www.st.com/resource/en/programming_manual/pm0223-stm32-cortexm0-mcus-programming-manual-stmicroelectronics.pdf
Programming Manuals	https://www.st.com/resource/en/programming_manual/pm0271-guidelines-for-bluetooth-low-energy-stack-programming-on-stm32wbstm32wba-mcus-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1163-description-of-wlcsp-for-microcontrollers-and-recommendations-for-its-use-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1204-tape-and-reel-shipping-media-for-stm32-microcontrollers-in-bga-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1205-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-fpn-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1206-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-qfp-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1207-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-so-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1208-tape-and-reel-shipping-media-for-stm8-and-stm32-microcontrollers-in-tssop-and-ssop-packages-stmicroelectronics.pdf
Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1433-reference-device-marking-schematics-for-stm32-microcontrollers-and-microprocessors-stmicroelectronics.pdf

Technical Notes & Articles	https://www.st.com/resource/en/technical_note/tn1526-antenna-radiation-patterns-of-module-stm32wb5mmg-stmicroelectronics.pdf
User Manuals	https://www.st.com/resource/en/user_manual/um2804-stm32wb-series-ble-low-level-driver-lld-stmicroelectronics.pdf
User Manuals	https://www.st.com/resource/en/user_manual/um2977-stm32wb-series-zigbee-cluster-library-api-stmicroelectronics.pdf