



**LCIE SUD EST**  
Laboratoire de Moirans  
Z.I. Centr'Alp  
170, Rue de Chatagnon  
38430 MOIRANS - FRANCE

## GENERAL INFORMATION

FCCID: YCP-32WBA5MMG01

### 1.1. Product description

#### Description

The STM32WBA5MMG is an ultra-low-power, small form factor, certified 2.4 GHz wireless module. It supports Bluetooth® LE, Zigbee® 3.0, OpenThread, dynamic and static concurrent modes, and IEEE 802.15.4 proprietary protocols. Based on the STM32WBA55UG wireless microcontroller, it provides best-in-class RF performance thanks to its good receiver sensitivity and a high output power signal. Its low-power features enable extended battery life time, small coin-cell batteries.

The STM32WBA5MMG requires no RF expertise. It is the best way to speed up application development and to reduce the associated costs. The module is completely protocol stack royalty-free.

#### Electrical characteristics

#### Operating conditions

Table 2. STM32WBA5MMG operating conditions

Parameter	Min	Typ	Max	Unit
V <sub>DD</sub>	1.71	3.3	3.6	V
Operating ambient temperature range	-40	-	85	°C
Storage temperature range	-40	-	125	°C

#### Power consumption

The power consumption is identical to the regular STM32WBA55. For details, refer to datasheet DS14127.

#### RF characteristics

For details, refer to datasheet DS14127.

#### Schematics and layout for PCB

For examples of schematics and layout using this device, refer to the description of B-WBA5M-WPAN on [st.com](https://www.st.com).

In particular, the board designer must respect the distances indicated in Figure 4. No metal layers must be used in the clearance area.



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## 1.2. Tested System Details

### Equipment information (declaration of provider):

<b>Bluetooth Low Energy:</b>	<b>V6.0</b>
Chipset / RF Module	STM32WBA5MMG
Frequency band:	[2400 – 2483.5] MHz
Spectrum Modulation:	DSSS (Tested like it – international agreements)
Number of Channel:	40
Spacing channel:	2MHz
Channel bandwidth:	1MHz / 2MHz
Antenna Type:	Internal
Antenna connector:	Permanent external
Antenna requirements §15.203	The transmitter uses an integral antenna and it permanently connected
Transmit chains:	1
Receiver chains	1

Hardware information				
Highest internal frequency (PLL, Quartz, Clock, Microprocessor...):		F <sub>Highest</sub> :	2500	MHz
Firmware (if applicable):		V:	Device : stm32wbax Firmware version : 1.4.0	
Software (if applicable):		V:		
<u>Equipment intended:</u>		<u>Fixed</u>		
<u>Type of equipment:</u>		<u>Stand-alone</u>		
<u>Equipment sample:</u>		Production model		
<u>Duty cycle:</u>		<u>Continuous duty</u>		
Operating temperature range:		<u>T<sub>min</sub></u> :	-40 °C	
		<u>T<sub>nom</sub></u> :	+20°C	
		<u>T<sub>max</sub></u> :	+85 °C	
Operating voltage:		<u>V<sub>nom</sub></u> :	1.71 to 3.6 VDC	

### Equipment information (declaration of provider):



<b>802.15.4:</b>	<b><u>ZigBee</u></b>
Chipset / RF Module	STM32WBA5MMG
Frequency band:	[2400 – 2483.5] MHz
Spectrum Modulation:	DSSS
Number of Channel:	16
Spacing channel:	5MHz
Channel bandwidth:	2MHz
Antenna Type:	Internal
Antenna connector:	Permanent external
Antenna requirements §15.203	The transmitter uses an integral antenna and it permanently connected
Transmit chains:	1
Receiver chains	1



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Hardware information			
Highest internal frequency (PLL, Quartz, Clock, Microprocessor...):		<u>F<sub>Highest</sub></u> :	2500 MHz
Firmware (if applicable):		<u>V</u> :	Device : STM32WBA55 PHY valid CLI version : v1.5.0
Software (if applicable):		<u>V</u> :	
Equipment intended:	<u>Fixed</u>		
Type of <u>equipment</u> :	<u>Stand-alone</u>		
Equipment <u>sample</u> :	Production model		
Duty cycle:	<u>Continuous duty</u>		
Operating temperature range:	<u>T<sub>min</sub></u> :	-40 °C	
	<u>T<sub>nom</sub></u> :	20°C	
	<u>T<sub>max</sub></u> :	85 °C	
Operating voltage:	<u>V<sub>nom</sub></u> :	1.71 to 3.6 VDC	

### 1.3. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 or/and ANSI C63.10, FCC Part 15 SubPart 15C.

Radiated testing was performed at an antenna to EUT distance of 10 meters. During testing, all equipment's and cables were moved relative to each other in order to identify the worst case set-up.

### 1.4. Test facility

Tests have been performed: **February 13, 2023 to February 14, 2023**

This test facility has been fully described in a report and accepted by FCC as compliant with the radiated and AC line conducted test site criteria in ANSI C63.4 or/and ANSI C63.10.

This test facility has also been accredited by COFRAC (French accreditation authority for European Union test lab accreditation organization) according to NF EN ISO/IEC 17025, as compliant with test site criteria and competence in 47 CFR Part 15/ANSI C63.4 and EN55032/CISPR32 norms for 89/336/EEC European EMC Directive application. All pertinent data for this test facility remains unchanged.