



**Telecommunications & Telematics
for Transports Lab.**

TEST REPORT

Ref. No. ARSH00132/1

Date: 2007-09-25

According with:



**FCC Rules: Code of Federal Regulations (CFR) no. 47 –
PART 15 – UNLICENSED MODULAR TRANSMITTER APPROVAL
PUBLIC NOTICE: DA 00-1407**

PRODUCT : ZigBee module general purpose

TESTED MODEL : SPZB250

FCC ID : S9NZB250A

APPLICANT : STMicroelectronics – Centro Direzionale Colleoni – Palazzo
Andromeda 3 – I-20044 Agrate Brianza (MI) – ITALY

MANUFACTURER : STMicroelectronics – Centro Direzionale Colleoni – Palazzo
Andromeda 3 – I-20044 Agrate Brianza (MI) – ITALY

TRADEMARK : STMicroelectronics

OTHER INFORMATION : Testing dates : 2007-07-19 ÷ 2007-07-20

Tested samples No. : 1

Testing Laboratory : IMQ S.p.A. Via Quintiliano, 43 I-20138 MILANO

Prepared by: R. Colombo
(EMC and R&TTE Lab deputy)

Signature:

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	2007-09-25	First emission

NOTICE: The results of tests and checks reported in this Test Report refer exclusively to the samples tested and described in the Report itself. This report shall not be reproduced partially or in its entirety without the written approval of IMQ S.p.A.

IMQ S.p.A. - Via Quintiliano, 43 – I-20138 MILANO

REFERENCE STANDARDS

According to :

PUBLIC NOTICE :	DA 00-1407	Part 15 Unlicensed Modular Transmitter Approval
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Released	:	June 26, 2000
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MODULE-TYPE DEVICE APPROVAL OPTIONS:

- Modular Approval (MA)
- Limited Modular Approval (LMA)

REQUIREMENTS

The following requirements are fulfilled:

1) The modular transmitter must have its own RF shielding:

The RF module fulfils the emission requirements of the FCC rules without additional shielding.

2) The modular transmitter must have buffered modulation/data inputs:

The module has a memory management unit inside of the IC. The processor interfacing with the external application by means general purpose I/O (GPIO) , Uart, SPI. The processor interfaces also the RF part of the module exchanging data and command with it. Inside the processor a flash memory is available to download the customer application and the ZigBee profiles.

3) The modular transmitter must have its own power supply regulation:

The IC contains an own voltage regulation. In case of changes in the supply voltage VCC (for example caused by temperature changes or other effects), the internal voltage will be stabilized.

4) The modular transmitter must comply with the antenna requirements of Section 15.203 and 15.204:

The end-user product will be installed in such a manner that only the authorized antenna is used.

5) The modular transmitter must be tested in a stand-alone configuration:

The RF module was tested in a stand-alone configuration.

6) The modular transmitter must be labelled with its own FCC ID number:

The RF module will be labelled with its own FCC ID number. When the module is installed inside the end-product, the label is not visible. The end-user/integrator is instructed how to apply the exterior label.

7) The modular transmitter must comply with any specific rule or operating requirements applicable to the transmitter and the manufacturer must provide adequate instructions along with the module to explain any such requirements:

The EUT is compliant with all applicable FCC rules. Detail instructions are given in the product Users Guide.

8) The modular transmitter must comply with any applicable RF exposure requirements.

- Maximum measured power output: 3,08 mW (4,89 dBm)
- Maximum antenna gain: 0,6 dBi = numeric gain 1,148 (see also FCC test report)

Maximum permissible exposure defined in 47 CFR 1.1310: 1 mW/cm².

The distance from the EUT's transmitting antenna where the exposure level reaches the maximum permitted level is calculated using the general equation:

$$S = P \cdot G / 4\pi R^2$$

$$S_{\max} = 1 \text{ mW/cm}^2$$

$$P = 4,89 \text{ mW}$$

$$G = 0,6 \text{ dBi} = 1,148 \text{ (numeric gain)}$$

$$R = \text{distance in cm}$$

Solving for R, the 1 mW/cm² limit is reached in a distance of 0,53 cm to the transmitting antenna.

The RF module operates at low power level so it does not exceed the Commission's RF exposure guidelines limits; furthermore, Spread spectrum transmitters operate according to the Section 15.247 are categorically excluded from routine environmental evaluation.

Special requirement for Limited Modular Approval:

The customer retain control over the final installation of the RF module. The EUT is approved only for use when installed in device produced by the manufacturer (Grantee).