



**Telecommunications & Telematics
for Transports Lab.**

TEST REPORT

Ref. No. ARSG00176/1

Date: 2007-02-07

According with:



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

PRODUCT : Radio module for Emergency lighting equipment
 APPLICANT : BEGHELLI S.p.A. – Via Mozzeghine, 13-15 – I-40050 Monteveglio
 MANUFACTURER : BEGHELLI S.p.A. – Via Mozzeghine, 13-15 – I-40050 Monteveglio
 TRADEMARK : BEGHELLI CANADA
 TESTED MODEL : 8976
 FCC ID : TAE8976
 RATING : DC 3.3 V
 OTHER INFORMATION: Samples received on: 2006-08-30
 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	2006-12-21	First emission
Rev. 1	2007-02-07	RF exposure requirements.

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
Released	: June 26, 2000	

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 radio transmitter is buffered by a microprocessor (PIC18LF452) embedded in the RF module that manages the modulation data inputs of the transmitter itself; the microprocessor manages completely the radio modulation with a proprietary protocol, compliant with the requirements of the FCC rules; the interface between the module and the host system is via dedicated inputs and outputs that do not affect directly the radio signals.

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

The RF module contains an own voltage regulation. The module is provided with two 3.3 V DC regulator to stabilize the input 5.0 V DC supply voltage provided by the host equipment.

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

The RF module is for OEM (Original Equipment Manufacturer) integration only. The end-user product will be professionally 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. The module was connected to the electronic control board of an emergency light unit via extended flat-cable. Only the AC conducted emission measurement are performed with the RF module connected inside an host equipment (typical emergency lighting equipment).

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 OEM manufacturer 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 RF module is compliant with all applicable FCC rules.

The EUT is integral part of Central Test Radio Frequency System for emergency light equipment (CTRF System) and the customer retain control over the final installation of the RF module. Detailed instruction are stated in the instructions manual of all the emergency equipment in which the module can be integrated.

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

- Maximum measured power output: 19,91 mW (12,99 dBm)
- Maximum antenna gain: 2,14 dBi = numeric gain 1,637 (see also FCC test report)

Maximum permissible exposure defined in 47 CFR 1.1310: 0,6 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:

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

$$S_{\max} = 0,6 \text{ mW/cm}^2$$

$$P = 19,91 \text{ mW}$$

$$G = 2,14 \text{ dBi} = 1,637 \text{ (numeric gain)}$$

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

Solving for R, the 0,6 mW/cm² limit is reached in a distance of 2,08 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 RF module is integral part of Central Test Radio Frequency System for emergency light equipment (CTRF System) and 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).