



IMQ S.p.A. – Società con Socio Unico  
Via Quintiliano, 43 I-20138 MILANO  
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# COVER LETTER

## Request For Transmitter Module Equipment Authorization

### No. ARSO00038/1

performed in accordance with

FCC Rules: Code of Federal Regulations (CFR) no. 47  
Part 15 Subpart C Section 15.212

|                        |                                                 |
|------------------------|-------------------------------------------------|
| <b>PRODUCT</b>         | WIRELESS MODULE REMOTE CONTROL FOR ENDOGRAPH DC |
| <b>MODEL(s) TESTED</b> | RTX MID 3V                                      |
| <b>FCC ID</b>          | 2ABYS76593030                                   |
| <b>TRADE MARK(s)</b>   | VILLA SISTEMI MEDICALI                          |

|                  |                                                                          |
|------------------|--------------------------------------------------------------------------|
| <b>APPLICANT</b> | VILLA SISTEMI MEDICALI S.p.A. – Via delle Azalee, 3 – I-20090 Buccinasco |
|------------------|--------------------------------------------------------------------------|

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*[Test Firm Laboratory Manager]*

#### Revision Sheet

| Release No. | Date       | Revision Description |
|-------------|------------|----------------------|
| Rev. 0      | 2014-03-29 | First edition        |

The results of tests and checks reported in this Test Report refer exclusively to the samples tested and described in the Report itself.  
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## 1. REFERENCE DOCUMENT

| DOCUMENT                                                       | DATE | TITLE                                            |
|----------------------------------------------------------------|------|--------------------------------------------------|
| <input checked="" type="checkbox"/> 47 CFR Part 15             | 2014 | Radio Frequency Device                           |
| <input checked="" type="checkbox"/> Publication Number: 996369 | 2013 | Transmitter Module Equipment Authorization Guide |
| <input checked="" type="checkbox"/> PUBLIC NOTE DA 00-1407     | 2000 | Part 15 Unlicensed Modular Transmitter Approval  |

## 2. MODULE-TYPE DEVICE APPROVAL OPTIONS

|                                     |                                           |                                                                                                                                                                                                                                               |
|-------------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <input type="checkbox"/>            | <b>Single-modular transmitter</b>         | complete RF transmission sub-assembly, designed to be incorporated into another device, that must demonstrate compliance with FCC rules and policies independent of any host                                                                  |
| <input checked="" type="checkbox"/> | <b>Limited single-modular transmitter</b> | single-modular transmitter that complies with the Section 15.212(a)(1) modular rules, only when constrained to specific operating host(s) and/or associated grants condition(s)                                                               |
| <input type="checkbox"/>            | <b>Split-modular transmitter</b>          | RF transmission system that complies with the requirements for a single-modular transmitter, that is separated into a radio front-end section and a control-element section, and can demonstrate compliance for a range of similar type hosts |
| <input type="checkbox"/>            | <b>Limited split-modular transmitter</b>  | split-modular transmitter that complies with the definition and technical rules for split modules only when constrained to specific operating host(s), and/or associated grant condition(s)                                                   |



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### 3. REQUIREMENTS

| POSSIBLE TEST CASE VERDICTS                 |      |
|---------------------------------------------|------|
| Test object does meet the requirement       | PASS |
| Test object does not meet the requirement   | FAIL |
| Test case does not apply to the test object | N.A. |

| OPTION: Limited single-modular transmitter |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                     |
|--------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Requirement                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                          | Result              |
| (i)                                        | The radio elements of the modular transmitter must have their own shielding. The physical crystal and tuning capacitors may be located external to the shielded radio elements.                                                                                                                                                                                                                                                                                      | The radio module does not meet the requirement of having its own shielding.                                                                                                                                                                                                                                                                                                                                                          | FAIL <sup>(1)</sup> |
| (ii)                                       | The modular transmitter must have buffered modulation/data inputs (if such inputs are provided) to ensure that the module will comply with part 15 requirements under conditions of excessive data rates or over-modulation.                                                                                                                                                                                                                                         | The radio transmitter is buffered by a microprocessor 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. | PASS                |
| (iii)                                      | The modular transmitter must have its own power supply regulation.                                                                                                                                                                                                                                                                                                                                                                                                   | The radio module contains an own voltage regulation.<br>(The module is supplied by 3 V DC)                                                                                                                                                                                                                                                                                                                                           | PASS                |
| (iv)                                       | The modular transmitter must comply with the antenna and transmission system requirements of §§15.203, 15.204(b) and 15.204(c). The antenna must either be permanently attached or employ a “unique” antenna coupler (at all connections between the module and the antenna, including the cable). The “professional installation” provision of §15.203 is not applicable to modules but can apply to limited modular approvals under paragraph (b) of this section. | Permanently attached antenna. The radio module is for OEM (Original Equipment Manufacturer) integration only                                                                                                                                                                                                                                                                                                                         | PASS                |



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|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| (v)    | <p>The modular transmitter must be tested in a stand-alone configuration, i.e., the module must not be inside another device during testing for compliance with part 15 requirements. Unless the transmitter module will be battery powered, it must comply with the AC line conducted requirements found in §15.207. AC or DC power lines and data input/output lines connected to the module must not contain ferrites, unless they will be marketed with the module (see §15.27(a)). The length of these lines shall be the length typical of actual use or, if that length is unknown, at least 10 centimeters to insure that there is no coupling between the case of the module and supporting equipment. Any accessories, peripherals, or support equipment connected to the module during testing shall be unmodified and commercially available (see §15.31(i)).</p> | <p>The radio module meet the requirements under the operating conditions in which the transmitter will be use.</p> <p>The radio module has been tested inside the host products and in both the possible configuration:</p> <ol style="list-style-type: none"> <li>1) TLC (portable unit)</li> <li>2) BRIDGE (fixed unit)</li> </ol>                                                                                                                                                                                                                                                                                                                                   | PASS |
| (vi)   | <p>The modular transmitter must be equipped with either a permanently affixed label or must be capable of electronically displaying its FCC identification number.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>The radio module is labelled with its own FCC ID number.</p> <p>(When the radio module is installed inside the end-product, the label is not visible. The OEM manufacturer is instructed how to apply the exterior label)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                       | PASS |
| (vii)  | <p>The modular transmitter must comply with any specific rules or operating requirements that ordinarily apply to a complete transmitter and the manufacturer must provide adequate instructions along with the module to explain any such requirements. A copy of these instructions must be included in the application for equipment authorization.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p>The radio module is compliant with all applicable FCC rules.</p> <p>(The radio module is integral part of Endograph DC intra-oral X-ray unit, wireless remote control radiological units composed by two PCB boards:</p> <ol style="list-style-type: none"> <li>1) Fixed unit (called BRIDGE) linked to the CPU board of the radiological unit;</li> <li>2) Handled unit (called TLC) that works as remote controller for the radiological unit.</li> </ol> <p>The customer retain control over the final installation of the RF module. Detailed instruction are stated in the instructions manual of all the equipment in which the module can be integrated)</p> | PASS |
| (viii) | <p>The modular transmitter must comply with any applicable RF exposure requirements in its final configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>The radio module meet all the requirements listed in the applicable published RF exposure KDB procedures and the equipment approval policy documents:</p> <ul style="list-style-type: none"> <li>• Max Measured EIRP: 0,9 mW</li> <li>• Distance : 0,5 cm*</li> <li>• Power Density : 0,3 mW/cm<sup>2</sup></li> </ul> <p>*For portable unit test separation distance is considered &lt; 5 mm.</p>                                                                                                                                                                                                                                                                  | PASS |



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|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| (b) | <p>Limited modular approval may be granted for single or split modular transmitters that do not comply with all of the above requirements, e.g., shielding, minimum signaling amplitude, buffered modulation/data inputs, or power supply regulation, if the manufacturer can demonstrate by alternative means in the application for equipment authorization that the modular transmitter meets all the applicable part 15 requirements under the operating conditions in which the transmitter will be used. Limited modular approval also may be granted in those instances where compliance with RF exposure rules is demonstrated only for particular product configurations. The applicant for certification must state how control of the end product into which the module will be installed will be maintained such that full compliance of the end product is always ensured.</p> | <p>The radio module is integral part of Endograph DC intra-oral X-ray wireless remote control radiological units 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).</p> |  |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

- (1) The radio module meet the requirement only when placed inside the Host Equipment