RICOH
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July 16, 2010

FCC ID : BBP-RFSPL01
Model : RFID:RW:ZU-P1
Applicant : Ricoh Company, Ltd.

Request for Limited Modular Approval

This RFID Split Module (Model: RFID:RW:ZU-P1) is designed by Ricoh Company, Ltd..
This modular transmitter will be equipped in only the mobile printer and the equivalents manufactured by Ricoh.
The modular transmitter complies the module basic requirements in FCC Part 15 Subpart C Section 15.212 as indicated below:

[Module basic requirement]

15.212 (a) (1)

(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.:
Split Modular transmitter is excluded.

(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.:
Data input to the modular transmitter is controlled as not to generate excessive data speed and abnormal modulation.

(iii) The modular transmitter must have its own power supply regulation.:
This modular transmitter doesn't have own power supply regulation, however this module is constantly provided with voltage (DC5V) regardless of input voltage through regulator installed in the end product. Therefore, this modular transmitter will be equipped in only the mobile printer and the equivalents, and complies with this requirement.

(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.:
The EUT has a unique Print pattern antenna. Therefore, this modular transmitter complies with this requirement.

(v) 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)).:
Split Modular transmitter is excluded.

(vi) The modular transmitter must be equipped with either a permanently affixed label or must be capable of electronically displaying its FCC identification number..:
"Contains FCC ID: BBP-RFSPL01" will be indicated on outside of end product.

(vii) 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.:
The necessary explanation to comply with this requirement is contained in the manual.

(VII) The modular transmitter must comply with any applicable RF exposure requirements in its final configuration.:
The modular transmitter complies with FCC radiation exposure requirement.

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15.212 (a) (2)

(i) Only the radio front end must be shielded. The physical crystal and tuning capacitors may be located external to the shielded radio elements. The interface between the split sections of the modular system must be digital with a minimum signaling amplitude of 150 mV peak-to-peak.:
The radio front end of this modular transmitter doesn't have its own RF shielding. A solid ground plane of PCB circuit can be the alternate of shield. The signal level of interface between the split sections of the modular system is digital signal with 5V fixed voltage, complies with this requirement.

(ii) Control information and other data may be exchanged between the transmitter control elements and radio front end.:
This modular transmitter complies with this requirement. Please refer to Block Diagram.

(iii) The sections of a split modular transmitter must be tested installed in a host device(s) similar to that which is representative of the platform(s) intended for use.:
The modular transmitter was tested with the printer. Please refer to the FCC Test reports. And this modular transmitter will be equipped in only the mobile printer and the equivalents manufactured by Ricoh.

(iv) Manufacturers must ensure that only transmitter control elements and radio front end components that have been approved together are capable of operating together. The transmitter module must not operate unless it has verified that the installed transmitter control elements and radio front end have been authorized together. Manufacturers may use means including, but not limited to, coding in hardware and electronic signatures in software to meet these requirements, and must describe the methods in their application for equipment authorization.:
Connector pin assign between the split sections of the modular system is unique design of Ricoh in hardware and confidential. Also each IC of RF parts (RN5K501) have chip address terminal, these terminals control RF part.

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