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June 3, 2008

Dear ATCB Reviewer,

Please note that the Roku PCB Media Module will be placed inside the Kohler FHB and DTV-II media controllers (host units). The following letter requests a Limited Modular Approval for the Roku Media Module. Only the FHB media controller is included with this filing as a host unit. The DTV-II media controller will not be included on this application. It will be added as an additional host unit for the Roku PCB Media Module at a later date as a Class II Permissive Change.

Thank you for your attention to this matter.

Sincerely,

A handwritten signature in black ink that reads "William Stumpf". The signature is written in a cursive, flowing style.

William Stumpf
OATS Manager
D.L.S. Electronic Systems, Inc.
Phone: (262) 279-0210
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KOHLER.

May 28, 2008

Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046-1609

To Whom It May Concern:

In reference to the application for FCC ID: N82-KOHLER004 (2.4 GHz WiFi radio module), this device is being submitted for Limited MODULAR TRANSMITTER APPROVAL based on the guidelines in FCC Publication DA 00-1407. This transmitter does not meet all 8 criteria listed in DA 00-1407. Where there is a non-conformance, an explanation is provided that allows for a Limited Modular Approval.

Note that the radio module being certified will be used exclusively within products made by Kohler Company, specifically the FHB and DTV-II media controllers.

1. The modular transmitter must have its own RF shielding. This is intended to ensure that the module does not have to rely upon the shielding provided by the device into which it is installed in order for all modular transmitter emissions to comply with Part 15 limits. It is also intended to prevent coupling between the RF circuitry of the module and any wires or circuits in the device into which the module is installed. Such coupling may result in non-compliant operation.

Kohler:

The Roku module does not have its own shielding. The unintentional emissions are tested in each product.

2. 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.

Kohler:

The Roku module uses standard Ethernet 802.11b protocol. The data is buffered and transmitted per the protocol by the WiFi hardware and controlling firmware. Normal data transmission is TO this module from remote computers.

3. The modular transmitter must have its own power supply regulation. This is intended to ensure that the module will comply with Part 15 requirements regardless of the design of the power supplying circuitry in the device into which the module is installed.

Kohler:

The Roku module is supplied with 5 volts from the host board. This voltage is regulated to 3.3 V, 2.85 V and 1.8 V for use by the WiFi hardware. The module has its own power supply regulation.

4. The modular transmitter must comply with the antenna requirements of Section 15.203 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). Any antenna used with the module must be approved with the module, either at the time of initial authorization or through a Class II permissive change. The “professional installation” provision of Section 15.203 may not be applied to modules.

Kohler:

The antenna on the Roku module is permanently soldered on the board and is not accessible by the system user.

5. The modular transmitter must be tested in a stand-alone configuration, *i.e.*, the module must not be inside another device during testing. This is intended to demonstrate that the module is capable of complying with Part 15 emission limits regardless of the device into which it is eventually installed. Unless the transmitter module will be battery powered, it must comply with the AC line conducted requirements found in Section 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 Section 15.27(a)). The length of these lines shall be a length typical of actual use or, if that length is unknown, at least 10 centimeters to ensure that there is no coupling between the case of the module and any supporting equipment. Any accessories, peripherals, or support equipment connected to the module during testing shall be unmodified or commercially available (see Section 15.31(i)).

Kohler:

The Roku module is marketed for use within Kohler controllers. The module is not useable without the supporting hardware on the main board of the controllers.

6. The modular transmitter must be labeled with its own FCC ID number, and, if the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: XYZMODEL1” or “Contains FCC ID: XYZMODEL1.” Any similar wording that expresses the same meaning may be used. The grantee may either provide such a label, an example of which must be included in the application for equipment authorization, or must provide adequate instructions along with the module which explain this requirement. In the latter case, a copy of these instructions must be included in the application for equipment authorization.

Kohler:

The Roku module has a label with the Kohler company name, the model number assigned to the Roku module, the FCC ID number and the IC ID number. The outside of the enclosure includes this information and the required declaration wording.

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. A copy of these instructions must be included in the application for equipment authorization. For example, there are very strict operational and timing requirements that must be met before a transmitter is authorized for operation under Section 15.231. For instance, data transmission is prohibited, except for operation under Section 15.231(e), in which case there are separate field strength level and timing requirements. Compliance with these requirements must be assured.

Kohler:

The Roku module is self-contained in the operation of the WiFi system. The module controls all transmit related operations and requires no outside restrictions on its use.

8. The modular transmitter must comply with any applicable RF exposure requirements. For example, FCC Rules in Sections 2.1091, 2.1093 and specific Sections of Part 15, including 15.319(i), 15.407(f), 15.253(f), 15.255(g) and 15.257(g) require that applicants for authorization of Unlicensed PCS, U-NII and millimeter wave devices perform a routine environmental evaluation for RF exposure to demonstrate compliance. In addition, applicants for authorization of spread spectrum transmitters operating under Section 15.247 are required to address RF exposure compliance in accordance with Section 15.247(i). Applicants for authorization of modular transmitters approved under other Sections of Part 15, when necessary, may also need to address certain RF exposure concerns, typically by providing specific installation and operating instructions for users, installer and other interested parties to ensure compliance.

Kohler:

Section 2.1091 – na – the Roku module is not a mobile device

Section 2.1093 – na – the Roku module is not a portable device

Section 15.319(i) – na – Not a 1900 MHz PCS device

Section 15.407(f) – na – Not a 5 GHz U-NII device

Section 15.253(f) – na – Not a 46.7-46.9 / 76.0-77.0 GHz device

Section 15.255(g) – na – Not a 57-64 GHz device

Section 15.257(g) – na – Not a 92-95 GHz device

Section 15.247(i) – Per 1.1310 the module must emit less than $P_{den} = 1.0 \text{ mW/cm}^2$.

$P_{out} = 16.5 \text{ dBm}$

Antenna Gain = 2 dBi (max)

$P_{tot} = 18.5 \text{ dBm} = 70.8 \text{ mW} = P_i$

$P_{lim} = 1.0 \text{ mW/cm}^2 = P_{tot} / A$

$A = 78.8 \text{ cm}^2$

$A = 4(\pi)r^2$

$r = 2.4 \text{ cm}$

At 2.4 cm (less than 1 inch), the P_i is less than 1.0 mW/cm^2 . The enclosure around the Roku module guarantees this spacing.

The RF compliance information will be included with the filing information provided by DLS Electronics, Inc.

To the best of my knowledge, the above information is true and correct. Thanks for your attention.

Sincerely,

A handwritten signature in black ink, appearing to read "Tim Stessman", with a long horizontal flourish extending to the right.

Tim Stessman
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