

To: Federal Communications Commission
Office of Engineering and Technology
7435 Oakland Mills Road
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From: Russell Anderson
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Date: November 14, 2013

Subject: RF Module Equivalency between CVRx IPG Model 2101 and Models 2100/ 2102

Dear Sir or Madam:

CVRx submits this memo in response to item #3 of Correspondence Reference Number: 44623, cited in part below, for reference:

“The exhibit titled "Report Summary", submitted as part of the exposure evaluation, indicates that models 2100 and 2102 are identical to the 2101 except for a RF difference. This RF difference between the 2101 and the other two models is described as an updated telemetry module. Please submit updated documentation further discussing this difference.”

Response:

The Model 2101 IPG contains a commercially available RF module, and the Model 2100 and 2102 IPG's contain an updated version of this module (which is specified by name as U4 in the Parts List submitted with the original application). The items below identify changes between these RF modules.

1. The new RF module has improved on-chip matching capacitor banks to allow more antenna match settings to the user.
2. The new RF module has reduced spurious emissions outside the MedRadio band.
3. The new RF module has improved receive sensitivity and dynamic range of the 2.4GHz receiver.
4. The new RF module is backward compatible with the previous module used in the Model 2101 IPG. It is a drop in replacement from a hardware point of view (identical physical size, pad positions and functions).

In all other ways, the RF modules are identical.

Although the on-chip capacitor banks can improve efficiency and allow for a better antenna match, the module power output remains the same. There is no impact to the module RF output frequency, or RF output power ratings. The out-of band performance with the newer module is improved. The new RF module has identical circuitry for the 400MHz transmitter section in terms of the output circuit, frequency generation circuit, and overall topology compared to the previous module. The package size and material are identical for both modules.