To: Joe Dichoso
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FCC Application Processing Branch

From: Robert Rood
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Intersil Corporation

Re: FCC ID OSZ3163B1
Applicant: Intersil Corporation
Correspondence Reference Number: 13392
731 Confirmation Number: EA96035

Dear Sir,

Please find the attached plots showing the dimensions and location of the antenna from the Prism I Celestica (FCC ID MRF13316C2) and Prism II HWB3163 (FCC ID OSZ3163B1) designs. The two radios use the same antenna design with the following differences:

1) The addition of a second antenna and a RF switch to implement diversity. This involved increasing the PCB tab width from 1.4 inches to 1.9 inches. The antennas are mirror images of each other. The antennas were positioned for maximum separation.
The radio only uses one antenna at a time and the mutual coupling of the antennas are minimal. Therefore the performance of each antenna is not significantly changed from the single antenna version.

2) The feed trace to the antenna has a right angle bend to provide for a dual layout and the feed trace widths have changed. The trace width change is to accommodate the RF diversity switch (NEC UPG152TA). The switch is optimized for a 30 ohm environment. Maintaining this 30 ohm impedance to the antenna reduced the need for additional matching.

3) The feed structures for the two antennas are on opposite sides of the PCB with a Ground plane on an internal layer for maximum isolation.

4) The Prism I Celestica antenna utilizes copper on the bottom side only. The Prism II antenna has copper on both sides of the PCB at the radiating element connected with through vias. This extra copper is intended to reduce the loss of radiating through the FR4 dielectric. Peak radiation in directions not passing through the dielectric are not affected.

5) Due to slight changes in the coverset, the length of the end segment of the radiating element was reduced from 5.5mm to 1.93mm to center the impedance match in the 2.412GHz to 2.462GHz band.

Preliminary testing in an Open Air Test Site (OATS) using an EMCO Model 3147 log periodic EMC test antenna at a spacing of 1 meter from the DUT indicates a peak antenna gain of 2.0dBi in the most favorable direction for each antenna. This indicates good agreement with peak performance data of the Prism I Celestica antenna of 2.5dBi. Overall these minor differences do not significantly contribute to peak gain or directivity of radiated energy from the Prism II HWB3163 antenna when compared to the Prism I Celestica antenna.

The similarity with the previously approved antenna design along with significantly lower output and radiated power (Peak Output Power of 153mW for Prism I Celestica versus 52mW for Prism II HWB3163), and the margin with which the Prism I Celestica radio passed the SAR test (0.29W/kg to a specified limit of 1.6W/kg) is good indicator that the Prism II HWB3163 complies with the RF energy exposure guidelines. Combining these two factors, Output Power and SAR, gives a predicted SAR performance for the Prism II HWB3163 radio of (52mW/153mW) x 0.29W/kg = 0.098W/kg . This value is more than an order of magnitude below the 1.6W/kg RF energy exposure limit.

Sincerely,

Robert Rood
Intersil Corporation
April 18, 2000