

Co-located, co-transmitting RF exposure evaluation No. 803102

The purpose of this permissive change filing is to demonstrate that general population RF exposure compliance requirements are met for a specific configuration of the manufacturer's WLAN module FCC ID: RYK-WL850R and a Bluetooth radio module FCC ID: QOQWT11, as installed in the PowerGrade mobile display system manufactured by Leica Geosystems AG or Mikrofyn A/S.

CALCULATIONS

The PowerGrade mobile display contains two integrated radio modules, WLAN type Elcard RA8 and Bluetooth Bluegiga WT11-E. The radio modules have both been modified with new antennas, Elcard ELAP08RP-S2 with an maximum antenna gain of +2 dBi for the WLAN module and Elcard ELRUB09A-2 with an maximum antenna gain of +0 dBi for the Bluetooth module. The manual specifies that the operator shall not be closer than (r) 0,2 m to the transmitting antennas.

A worst case calculation is as follows:

$$S = \frac{EIRP}{4 \times \pi \times r^2}$$

$$S_{WLAN} = 126,7 \text{ mW} / (4 \times \pi \times 20^2) = 0.025 \text{ mW/cm}^2$$

$$S_{BT} = 22,0 \text{ mW} / (4 \times \pi \times 20^2) = 0.0044 \text{ mW/cm}^2$$

The limit for General Population/Uncontrolled Exposure according to Supplement C to OET Bulletin 65 for power density at 2450 MHz is 1.0 mW/cm².

The sum of these power densities relative to the respective MPE limits is:
 $0.025 \text{ mW/cm}^2 / 1 \text{ mW/cm}^2 + 0.0044 \text{ mW/cm}^2 / 1 \text{ mW/cm}^2 = 0.0294$, which is well below the relative MPE limit of 1.

Therefore, this configuration of radio modules, as installed in the PowerGrade mobile display, meets the relevant MPE exposure limits when the final system is installed and used in accordance with the manufacturer's instructions.

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