

Certification Exhibit

**FCC ID: P2SBELTCLIPT
IC: 4171B-BELTCLIPT**

**FCC Rule Part: 15.247
IC Radio Standards Specification: RSS-210**

ACS Project Number: 14-0066

**Manufacturer: Neptune Technology Group Inc.
Model: BCT**

RF Exposure

General Information:

Applicant: Neptune Technology Group Inc.
Device Category: Mobile
Environment: General Population/Uncontrolled Exposure

Technical Information:

Antenna Type: PCB Dipole Antenna
Antenna Gain: -2 dBi
Maximum Transmitter Conducted Power: 18.76 dBm, 75.16 mW
Maximum System EIRP: 16.76 dBm, 47.42 mW
Exposure Conditions: Portable (Body Worn)

Justification for SAR Test Exclusion:

The BCT transceiver is a body-worn, battery powered, 910-920MHz transceiver that is used in walk-by mode to read RF-communicating water meters manufactured by Neptune Technology Group. It stores readings on an SD card, and, upon command via Bluetooth from the handheld computer, transmits the readings to another computing device via Bluetooth. The BCT has a 900 MHz transmitter called the R900 Transmitter that can command one of Neptune's water meters to perform maintenance functions, such as retrieving the stored readings log.

Based on the device's typical mode of operation, the justification for SAR test exclusion is provided below:

Minimum Test Separation Distance: 5 mm
Highest Operating Frequency: 919.0769 MHz
Maximum Measured Conducted Power: 18.76 dBm, 75.16 mW
Duty Factor: 2.728% (See Duty Factor Determination below)
Source-based Time-averaged Maximum Conducted Power: **3.12 dBm, 2.05 mW**
* Meets the thresholds of draft IC RSS-102 Issue 5, section 2.5.1 Table 1.

Per KDB 447498 D01 General RF Exposure Guidance v05r02, the 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\begin{aligned} &[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot \\ &[\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR} \\ &= (2.05 / 5) * (\sqrt{0.919}) \\ &= 0.41 * 0.959 \\ &= 0.4 \end{aligned}$$

Based on the results above, the unit meets SAR test exclusion requirements.

Duty Factor Determination

The R900 Transmitter is activated by the user pushing a button on the Handheld Computer, which is tethered to the Belt Clip Transceiver via Bluetooth link.

The transmission sequence is limited by software to a maximum of ONCE every 20 seconds. The software will not allow the user to initiate the sequence more often than that, even if the user aborts the sequence and attempts to re-try.

When activated, the R900 Transmitter transmits for 366.4 mS. After a wait of a minimum of 5 seconds, the R900 Transmitter transmits again for 179.2 ms.

Timing sequence:

Action	Transmission Time, S	Idle Time, S
Transmit after user activates	0.366400	7.191000
Wait time	0.000000	5.000000
Transmit again	0.179200	0.000000
Software-enforced idle time	0.000000	7.263396
TOTAL TX / IDLE TIME	0.545604	19.454390
GRAND TOTAL TIME	20.000000	

For human specific absorption rate (SAR) and maximum permissible RF exposure (MPE) purposes, the transmitter is active for 0.545604 seconds (on both channels) out of a possible 20-second software-enforced time period, yielding a duty cycle of 2.728%.