

FCC RF Exposure Information Per KDB 447498

Operational Description

The Podimetrics PMHS100U is an in-home foot temperature monitoring device in the form of a floor mat. To start a scan, the patient stands on the device and it collects 20 seconds of data. If the patient moves their feet during the scan, a retry may be required, collecting up to an additional 20 seconds of data (worst case 40 seconds). After the scan is complete, the patient may step off the device while it transmits to a remote server via onboard cellular module (AnyData DTW200D). After transmission, the device returns to standby mode. The data packet for a complete scan is 33 kB (up to 66 kB if a retry is required). Based on a worst case CDMA200 1xRTT data rate of 80 kbps, it should take approximately 3.3 seconds to complete the transmission (6.6 worst case with retry). Including setup, scanning, data storage, user interface, and transmission, there is a minimum of 101 seconds between successive transmissions (166 worst case with retry).

Based on this transmission duration and total cycle time, the duty cycle is 3.3% for a normal scan (transmits for 3.3 seconds, no transmission for 101 seconds) and 3.98% for a scan with a retry (transmits for 6.6 seconds, no transmission for 166 seconds).

RF Exposure Conditions

The Podimetrics PMHS100U is intended for operation in the general population / uncontrolled RF exposure environment. The device is intended to have contact with extremities (the bottom of the feet) and the module and antenna are a minimum of 5 mm distance from the body due to the device enclosure.

Antenna Separation Distances

~5 mm to Feet

Transmission Mode

The device utilizes an internal CDMA cellular transmitter module (FCCID: P4M-DTW200D).

Duty Cycle

The device supports a worst case transmission rate of once every 166 seconds. The on-air transmission time is 6.6 seconds. This leads to a worst case on-air duty cycle of 3.98%.

Information regarding the worst case duty cycle was provided by the host manufacture Podimetrics.

Worst Case Duty Cycle

Duty Cycle = Transmission Time / TOTAL Time = 6.6s/166s = 0.0397

Duty Cycle = 3.98%



SAR Exclusion Threshold for Low Duty Factor Device

The rated output power of the DTW-200D cellular module is 23.8 dBm at 849 MHz and 23.6 dBm at 1910 MHz. The DTW-200D is tuned by the manufacturer (AnyData) with a tolerance of 0.7 dBm at 849 MHz and 0.6 dBm at 1910 MHz. In addition, the antenna that the mat uses includes a gain of 2.4 dBi at 849 MHz and 2.0 dBi at 1910 MHz. Therefore, the worst case output power of the module is 26.9 dBm (489.8 mW) at 849 MHz and 26.2 dBm (416.9 mW) at 1910 MHz.

Multiplied by the time averaged duty cycle of 3.98%, the time averaged worst case output power of the module is 19.47 mW at 849 MHz and 16.57 mW at 1910 MHz.

The Exclusion Threshold Calculation from KDB 447498 is:

$$\frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min test separation distance, mm})} \times \sqrt{f(\text{GHz})}$$

CDMA Mode – Cellular 850 Band:

Calculation for Worst Case Duty Cycle = 19.47 mW / 5 mm * 0.921 = 3.6

CDMA Mode – PCS 1900 Band:

Calculation for Worst Case Duty Cycle = 16.57 mW / 5 mm * 1.382 = 4.6

The 10-g extremity exclusion threshold is ≤ 7.5 for both frequencies so the PMHS100U meets the requirements for the SAR Exclusion Threshold for Low Duty Factor Device.

	849 MHz	1910 MHz
Target output power	23.8 dBm	23.6 dBm
Tune-up tolerance	0.7 dBm	0.6 dBm
Maximum antenna gain	2.4 dBi	2.0 dBi
Worst case output power	26.9 dBm	26.2 dBm
	489.8 mW	416.9 mW
Time averaged duty cycle	3.98%	3.98%
Time averaged worst case output power	19.47 mW	16.57 mW
Minimum separation distance	5 mm	5 mm
$\sqrt{f(\text{GHz})}$	0.921	1.382
Calculation of Exclusion Threshold	3.6	4.6
Exclusion Threshold Limit	7.5	7.5
Result	Exempt	Exempt



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Simultaneous Transmission Consideration

The mat is not co-located with any other transmitters and the user is instructed to keep the mat away from other transmitters in order to maintain RF exposure compliance.

