



RF EXPOSURE EVALUATION

FCC CFR 47 Part 1.1307

Report No.: CATA18-U8 Rev A RF Exposure Evaluation

Company: Catapult Sports Pty Ltd

Model: WD-S8-08-V1

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To: FCC CFR 47 Part 1.1307

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The **Catapult Sports WD-S8-08-V1** has 2 transmitters comprising; -

- 1) A 2.4 GHz MHz radio; and
- 2) A UWB radio operating at 6489.6 MHz and 7987.2 MHz.

The **Catapult Sports WD-S8-08-V1** is a Portable device used within 20 cm of the body of the user.

1) 2.4 GHz radio assessment.

Calculation:

The manufacturer declared a Duty Cycle of 10% during normal operation for the 2.4GHz radio; Time averaged Duty Cycle correction factor (DCCF) = $10 * \log(10/100) = -10$ dB.

The following calculations take into account the time average duty cycle correction factor for the 2.4 GHz radio during normal operation.

The highest power level measured during testing is used in the following calculations; -

| Frequency (MHz) | Maximum Power (dBm) | Maximum Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | Time Averaged Power (mW) |
|-----------------|---------------------|----------------------------|------------|-----------|--------------------------|
| 2400.0 - 2483.5 | 4.63 | 2.72 | 7.35 | 5.43 | 0.543 |

Note Only Worst Cases have been recorded

Reference - FCC KDB 447498 D01 General RF Exposure Guidance v06 Appendix A

The EUT meets the SAR exemption limits operating in the 2.4GHz band as grayed out in the table below for ≤ 5 mm distance.

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table.

Reference - FCC KDB 447498 D01 General RF Exposure Guidance v06 Appendix A

| MHz | 5 | 10 | 15 | 20 | 25 | mm |
|-------------|----|----|-----|-----|-----|-----------------------------------|
| 150 | 39 | 77 | 116 | 155 | 194 | SAR Test Exclusion Threshold (mW) |
| 300 | 27 | 55 | 82 | 110 | 137 | |
| 450 | 22 | 45 | 67 | 89 | 112 | |
| 835 | 16 | 33 | 49 | 66 | 82 | |
| 900 | 16 | 32 | 47 | 63 | 79 | |
| 1500 | 12 | 24 | 37 | 49 | 61 | |
| 1900 | 11 | 22 | 33 | 44 | 54 | |
| 2450 | 10 | 19 | 29 | 38 | 48 | |
| 3600 | 8 | 16 | 24 | 32 | 40 | |
| 5200 | 7 | 13 | 20 | 26 | 33 | |
| 5400 | 6 | 13 | 19 | 26 | 32 | |
| 5800 | 6 | 12 | 19 | 25 | 31 | |

2) SAR Exemption for UWB Radio

The **Catapult Sports WD-S8-08-V1** contains a UWB low power transmitter operating at 6489.6 MHz and 7987.2 MHz in the frequency range 4750.0 to 10600.0 MHz.

The **Catapult Sports WD-S8-08-V1** is a Portable device used within 20 cm of the body of the user.

For the purpose of this section, the definition in **1.1307(b) (2)** of this chapter shall apply. A portable device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that the RF source's radiating structure(s) is/are within 20cm of the body of the user.

Part 1.1307(b) (3) Determination of Exemption

(ii), For multiple RF sources: Multiple RF sources are exempt if:

(A) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those in paragraph **(b)(3)(i)(A)** of this section. Medical implant devices may only use this exemption and that in paragraph **(b)(3)(i)(A)**.

The EUT radiated EIRP was measured at a distance of 1 meter.

The exemption limit of 1 mW EIRP is 104.77 dBuV/m measured at distance of 1m.

The maximum field strength measured the UWB device (operating on 99 % duty cycle) at 1 meter is 60.88 dBuV/m.

Conclusion

From above calculations we can see that even without considering the time-averaged power of the UWB radio in normal operation (taking into account the transmitters Duty Cycle) the Catapult Sports WD-S8-08-V1 UWB transmitter complies with the 1 mW exemption limits of FCC Part 1.1307(b) (3).



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