



Certification Exhibit

FCC ID: 2A93G-PCH-CHC-001

FCC Rule Part: 47 CFR Part 2.1091

Project Number: 72183357

Manufacturer: Waters Corporation
Model Name: Alliance iS Column Heater Cooler, (CHC)

RF Exposure

General Information:

Applicant: Waters Corporation
Device Category: Mobile
Environment: General Population/Uncontrolled Exposure

Technical Information (RFID Radio – FCC 15.225):

Detail	Description
Frequency Range	13.56 MHz
Operating Voltage	100 -240 Vac
Antenna Type / Description:	PCB Antenna / 0 dBi

*Maximum RF Conducted Power: 10dBm, 10mW

*Note: Maximum RF conducted Power declared by the client.

** Maximum Measured EIRP: -33dBm, 0mW

** Note: EIRP calculated from field strength using $EIRP (dBm) = E (dBuV/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.

FCC Standalone SAR Test Exclusion Considerations (KDB 447498 D01) Section 4.3.1 c

<100 MHz – Separation Distance ≤ 50 mm or Separation Distance > 50 mm and < 200 mm

The 1g head or body SAR test exclusion thresholds for <100 MHz are determined by the following steps:

Step a) Threshold result from Formula in Section 4.3.1 a);

$$\left[\frac{(\text{max power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] \sqrt{f(\text{GHz})} \leq 3.0 \text{ for 1g SAR.}$$

- f (GHz) is the RF channel transmit frequency in GHz.
- Power and distance are rounded to the nearest mW and mm before calculation.
- The result is rounded to one decimal place for comparison
- When the maximum test separation distance is < 5 mm, a distance of 5 mm is applied.

Step b) requires formula to be re-arranged to give power allowed at numeric threshold at 50 mm test separation distance and Step c) requires f (GHz) to be set to 100 MHz (0.1 GHz) giving:

Step a) Power threshold = $(3 * 50) / (\sqrt{0.1}) = 474.3 \text{ mW}$

Step b) Threshold result from Formula in Section 4.3.1 b) 1);

$$\{[\text{Power allowed at numeric threshold for 50 mm \{Formula Step A\}}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]\} \text{ mW}$$

- fMHz is the RF channel transmit frequency in MHz.
- Power and distance are rounded to the nearest mW and mm before calculation.
- The result is rounded to one decimal place for comparison

Power threshold = $474.3 \text{ mW} + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)]$

mW Step c) requires f (MHz) to be set to 100 MHz giving:

Step b) Power threshold = $474.3 \text{ mW} + [(\text{test separation distance} - 50 \text{ mm}) \cdot (100/150)] \text{ mW}$

Step c) 1) Threshold result from Formula in Section 4.3.1 c) 1); >50 mm and <200 mm

Threshold result from Formula in Section 4.3.1 b) 1) is multiplied by $[1 + \log(100/\text{fMHz})]$

Power threshold = $[474.3 \text{ mW} + (\text{test separation distance} - 50 \text{ mm}) \cdot (100/150)] \cdot [1 + \log(100/\text{fMHz})] \text{ mW}$

- fMHz is the RF channel transmit frequency in MHz.
- Power and distance are rounded to the nearest mW and mm before calculation.
- The result is rounded to one decimal place for comparison Step

c) 2) Threshold result from Formula in Section 4.3.1 c) 2); ≤50 mm

Threshold result from the formula in 4.3.1 c) 1) above for >50 mm and <200 mm for 50 mm and 100 MHz is multiplied by 0.5.

Power threshold = $[474.3 \text{ mW} + (50 \text{ mm} - 50 \text{ mm}) \cdot (100/150)] \cdot [1 + \log(100/\text{fMHz})] \cdot 0.5$

mW Which simplifies to:

Power threshold = $474.3 \text{ mW} \cdot [1 + \log(100/\text{fMHz})] \cdot 0.5 \text{ mW}$

- fMHz is the RF channel transmit frequency in MHz.
- Power and distance are rounded to the nearest mW and mm before calculation.
- The result is rounded to one decimal place for comparison

SAR Exclusion Result (1 g Head or Body)

Frequency (MHz)	Maximum Power (Tune up Value) * (mW)	Test Separation Distance (mm)	SAR Exclusion Power Threshold <u>Section 4.3.1 c)</u> (mW)	SAR Test Exclusion (Yes/No)
13.56	10	199	1071	Yes

*Tune-up value is the maximum declared conducted output power of the device.

The SAR exclusion threshold has been evaluated using the formula described above from information supplied by the manufacturer below. Based on the calculation above, the EUT is categorically excluded from SAR testing.