



**FCC Part 1 Subpart I  
FCC Part 2 Subpart J  
RSS 102 ISSUE 5**

**RF EXPOSURE REPORT**

**FOR**

**Wifi Thermostat**

**MODEL NUMBER: TH6220WF2006**

**FCC ID: HS9-TH6220WF01  
IC: 573R-TH6220WF01**

**REPORT NUMBER: R13708588-E4**

**ISSUE DATE: 2021-10-26**

**Prepared for  
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## Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2021-06-29	Initial Issue	Haley Ackun
V2	2021-10-01	Updated FCC/IC IDs	Haley Ackun
V3	2021-10-26	Updated antenna gain and power data for calculations.	Haley Ackun

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Ademco Inc.  
251 Little Falls Dr.  
Wilmington, DE, 19808, U.S.A

**EUT DESCRIPTION:** Wifi Thermostat

**MODEL:** TH6220WF2006

**SAMPLE RECEIPT DATE:** 2021-03-26

**DATE TESTED:** 2021-06-14

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 1 SUBPART I	Complies
FCC PART 2 SUBPART J	Complies
RSS 102 ISSUE 5	Complies

UL LLC. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC. will constitute fraud and shall nullify the document.

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## 2. TEST METHODOLOGY

All calculations were made in accordance with FCC Parts 1.1310, 2.1093, KDB 447498 D01 v06, IC Safety Code 6 and RSS 102 Issue 5.

## 3. REFERENCES

All measurements were made as documented in test reports UL LLC Document R13708588-E2 and UL LLC Document R13708588-E3 for operation in the 2.4 GHz band.

Duty Cycle and Output power data is excerpted from the applicable test reports.

Antenna gain data is excerpted from product documentation provided by the applicant.

## 4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, Certificate Number 0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	703469
<input checked="" type="checkbox"/>	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560	US0067	27265	703469

## 5. MAXIMUM PERMISSIBLE EXPOSURE (LIMITS AND EQUATIONS)

### 5.1. FCC RULES

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

**TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz

\* = Plane-wave equivalent power density

**Notes:**

- (1) Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when a person is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
- (2) General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

## 5.2. ISED RULES

For the purpose of this standard, Innovation, Science and Economic Development (ISED) has adopted the SAR and RF field strength limits established in Health Canada’s RF exposure guideline, Safety Code 6.

**Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)**

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m <sup>2</sup> )	Reference Period (minutes)
0.003-10 <sup>21</sup>	83	90	-	Instantaneous*
0.1-10	-	0.73/ <i>f</i>	-	6**
1.1-10	87/ <i>f</i> <sup>0.5</sup>	-	-	6**
10-20	27.46	0.0728	-2	6
20-48	58.07/ <i>f</i> <sup>0.25</sup>	0.1540/ <i>f</i> <sup>0.25</sup>	8.944/ <i>f</i> <sup>0.5</sup>	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 <i>f</i> <sup>0.3417</sup>	0.008335 <i>f</i> <sup>0.3417</sup>	0.02619 <i>f</i> <sup>0.6834</sup>	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ <i>f</i> <sup>1.2</sup>
150000-300000	0.158 <i>f</i> <sup>0.5</sup>	4.21 x 10 <sup>-4</sup> <i>f</i> <sup>0.5</sup>	6.67 x 10 <sup>-5</sup> <i>f</i>	616000/ <i>f</i> <sup>1.2</sup>

**Note:** *f* is frequency in MHz.

\* Based on nerve stimulation (NS).

\*\* Based on specific absorption rate (SAR).

### **5.3. EQUATIONS**

#### **POWER DENSITY**

Power density is given by:

$$S = \text{EIRP} / (4 * \text{Pi} * D^2)$$

Where

S = Power density in mW/cm<sup>2</sup>  
EIRP = Equivalent Isotropic Radiated Power in mW  
D = Separation distance in cm

Power density in units of mW/cm<sup>2</sup> is converted to units of W/m<sup>2</sup> by multiplying by 10.

#### **DISTANCE**

Distance is given by:

$$D = \text{SQRT} (\text{EIRP} / (4 * \text{Pi} * S))$$

Where

D = Separation distance in cm  
EIRP = Equivalent Isotropic Radiated Power in mW  
S = Power density in mW/cm<sup>2</sup>

#### **SOURCE-BASED DUTY CYCLE**

Where applicable (for example, multi-slot cell phone applications) a duty cycle factor may be applied.

$$\text{Source-based time-averaged EIRP} = (\text{DC} / 100) * \text{EIRP}$$

Where

DC = Duty Cycle in %, as applicable  
EIRP = Equivalent Isotropic Radiated Power in mW



## 6. RF EXPOSURE RESULTS

This report contains data provided by the customer which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

In the table(s) below, Power and Gain are entered in units of dBm and dBi respectively and conversions to linear forms are used for the calculations.

(Single chain transmitters, no colocation, 20 cm MPE distance)

Band	Mode	Separ. Distance (cm)	Output AVG Power (dBm)	Ant. Gain (dBi)	Duty Cycle (%)	EIRP (mW)	FCC PD (mW/cm <sup>2</sup> )	ISED PD (W/m <sup>2</sup> )	FCC PD Limit (mW/cm <sup>2</sup> )	ISED PD Limit (W/m <sup>2</sup> )
2.4GHz	Bluetooth	20	8.02	1.80	100.00	9.59	0.002	0.02	1.00	5.35
2.4GHz	WLAN	20	18.99	1.80	100.00	119.95	0.024	0.24	1.00	5.35

### Notes:

- 1) For MPE the new KDB 447498 requires the calculations to use the maximum rated power; that power should be declared by the manufacturer and should not be lower than the measured power.
- 2) The manufacturer configures output power so that the maximum power, after accounting for manufacturing tolerances, will never exceed the maximum power level measured.
- 3) The output power in the tables above is the maximum power per chain among various channels and various modes within the specific band. BLE output power value was taken from the applicable test report. 2.4 WLAN output power was taken from the previous module grant.
- 4) The antenna gain in the tables above is the maximum antenna gain among various channels within the specified band.
- 5) There are 2 antennas for BLE and 2.4 WLAN. The antennas support diversity and therefore, the worst-case antenna was used for each technology in the MPE calculations.
- 6) Bluetooth and WLAN do not simultaneously transmit.

**END OF TEST REPORT**