



# MPE Report

According to

## FCC CFR Title 47 Part 15 Subpart E (15.407)

Applicant	: Elo Touch Solutions, Inc
Address	: 670 N. McCarthy Blvd., Suite 100, Milpitas, CA95035
Manufacturer	: Elo Touch Solutions, Inc.
Address	: 670 N. McCarthy Blvd., Suite 100, Milpitas, CA95035
Equipment	: Touch All in one Computer
Model No.	: ESY2211B
FCC ID	: RBWESY2211B
IC ID	: 10757B-ESY2211B
Test Period	: Sept.03,2017~ Sept.18, 2017

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of **Cerpass Technology Corporation Test Laboratory**, the test report shall not be reproduced except in full.
- The test report must not be used by the clients to claim product certification approval by any agency of the Government.

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.10 – 2013&RSS-247, Issue 2&RSS-Gen&FCC Part15.407** and the energy emitted by this equipment was **passed**.

Approved by:

Laboratory Accreditation:

  
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 Mark Liao / Assistant Manager



Cerpass Technology Corporation Test Laboratory

TAF LAB Code:

1439



## Radio Frequency Exposure

### LIMIT

For 2.4G Band: According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.

For 5.0G Band: According to FCC §1.1310, The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in § 1.1307(b).

**EUT Specification**

<b>EUT</b>	Touch All in one Computer		
<b>Frequency band (Operating)</b>	<input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input checked="" type="checkbox"/> WLAN: 5.150GHz ~ 5.250GHz <input checked="" type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz		
<b>Device category</b>	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation)		
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )		
<b>Antenna diversity</b>	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity		
<b>Max. output power for 2.4G Band</b>	Mode	Power (dBm)	Power (mW)
	IEEE802.11b	19.11	81.470
	IEEE802.11g	22.72	187.068
	IEEE802.11n(20MHz)	22.47	176.604
<b>Max. output power for 5.150-5.250GHz</b>	IEEE802.11n(40MHz)	23.01	199.986
	IEEE802.11a	11.98	15.776
	IEEE802.11n(20MHz)	11.89	15.453
	IEEE802.11n(40MHz)	8.98	7.907
<b>Max. output power for 5.745-5.850GHz</b>	IEEE802.11ac(80MHz)	8.04	6.368
	IEEE802.11a	10.98	12.531
	IEEE802.11n(20MHz)	10.86	12.190
	IEEE802.11n(40MHz)	9.99	9.977
<b>Antenna gain (Max)</b>	IEEE802.11ac(80MHz)		
	7.28 5.346		
<b>Antenna gain (Max)</b>	2.92dBi for 2.4G Band		
	5.2G: 2.67dBi ,5.8G: 2.64dBi		
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation* <input type="checkbox"/> SAR Evaluation <input type="checkbox"/> N/A		
<b>Remark:</b>			
1. The maximum output power is <u>23.01dBm (0.20W)</u> at <u>2412MHz</u> (with <u>numeric 4.093antenna gain.</u> ) for 2.4G band The maximum output power is <u>11.98dBm (0.0158W)</u> at <u>5240MHz</u> (with <u>numeric 1.919antenna gain.</u> ) The maximum output power is <u>10.98dBm (0.0125W)</u> at <u>5825MHz</u> (with <u>numeric 2.065antenna gain.</u> ) 2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance. 3. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm <sup>2</sup> even if the calculation indicates that the power density would be larger.			

\*Note: Simultaneous transmission is not applicable for this EUT.

**TEST RESULTS**

No non-compliance noted.

**Calculation**

Given  $E = \frac{\sqrt{30 \times P \times G}}{d}$  &  $S = \frac{E^2}{3770}$

Where  $E$  = Field strength in Volts / meter  
 $P$  = Power in Watts  
 $G$  = Numeric antenna gain  
 $d$  = Distance in meters  
 $S$  = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$
$$d \text{ (cm)} = d \text{ (m)} / 100$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where  $d$  = Distance in cm  
 $P$  = Power in mW  
 $G$  = Numeric antenna gain  
 $S$  = Power density in mW / cm<sup>2</sup>

**Maximum Permissible Exposure**

Modulation Mode	Frequency band (MHz)	Max. Conducted output power(dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
IEEE802.11b	2412-2462	19.11	2.92	20	0.0317	1
IEEE802.11g	2412-2462	22.72	2.92	20	0.0729	1
IEEE802.11n20	2412-2462	22.47	2.92	20	0.0688	1
IEEE802.11n40	2422-2452	23.01	2.92	20	0.0779	1

Modulation Mode	Frequency band (MHz)	Max. Conducted output power(dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
IEEE802.11a	5180-5240	11.98	2.67	20	0.0058	1
IEEE802.11n(20MHz)	5180-5240	11.89	2.67	20	0.0057	1
IEEE802.11n(40MHz)	5190-5230	8.98	2.67	20	0.0029	1
IEEE802.11ac(80MHz)	5210	8.04	2.67	20	0.0023	1

Modulation Mode	Frequency band (MHz)	Max. Conducted output power(dBm)	Antenna gain (dBi)	Distance (cm)	Power density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
IEEE802.11a	5745-5825	10.98	2.64	20	0.0046	1
IEEE802.11n(20MHz)	5745-5825	10.86	2.64	20	0.0045	1
IEEE802.11n(40MHz)	5755-5795	9.99	2.64	20	0.0036	1
IEEE802.11ac(80MHz)	5775	7.28	2.64	20	0.0020	1

Note: The 2.4GHz & 5GHz can not transmit at same time.