

# **FCC RF EXPOSURE REPORT**

**FCC ID: 2AJCX-BOSS**

**Project No. : 1605209**  
**Equipment : Computer**  
**Model : boss, bossXXXXXXXXXXXXXXXXXX, (where “X” may**  
**be any alphanumeric character, “-” or blank for**  
**marketing purpose and no impact safety related**  
**critical components and constructions)**  
**Applicant : Carel Industries s.p.a.**  
**Address : Via dell Industria 11 35020 Brugine (PD) Italy**  
**According: : FCC Guidelines for Human Exposure IEEE C95.1**

**B T L I N C .**

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## MPE CALCULATION METHOD:

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi^2} = \frac{EIRP}{4\pi^2}$$

where:

S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

Table for Filed Antenna

### 2.4G:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Invax	R-AN2450-5701RS	Dipole	R-SMA	1.74
2	Invax	R-AN2450-5701RS	Dipole	R-SMA	1.74

Note:

The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers (2T2R).

Operating Mode TX Mode	2TX
802.11b	V (ANT 1 + ANT 2)
802.11g	V (ANT 1 + ANT 2)
802.11n(20MHz)	V (ANT 1 + ANT 2)
802.11n(40MHz)	V (ANT 1 + ANT 2)

# 5G:

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Invax	R-AN2450-5701RS	Dipole	R-SMA	5.21
2	Invax	R-AN2450-5701RS	Dipole	R-SMA	5.21

## Note:

Antenna Gain=5.21 dBi. This EUT supports MIMO 2X2, any transmit signals are correlated with each other, so Directional gain =  $G_{ANT}+10\log(N)$ dBi, that is Directional gain=5.21+10log(2)dBi=7.21; Directional gain=7.21 dBi.

So, the UNII-1,UNII-2A,UNII-2C power density limit is 11-7.21+6=9.79, the UNII-3 power density limit is 30-7.21+6=28.79.

the UNII-1,UNII-2A,UNII-2C out power limit is 24-7.21+6=22.79, the UNII-3 output power limit is 30-7.21+6=28.79.

Operating Mode	2TX
TX Mode	
802.11a	V (Ant 1 or Ant 2)
802.11n (20MHz)	V (Ant 1+Ant 2)
802.11n (40MHz)	V (Ant 1+Ant 2)

# TEST RESULTS

## 2.4G WIFI

EUT:	Computer	Model Name :	boss
Temperature:	25 °C	Relative Humidity:	55 %
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX G Mode_CH01/06/11 - Ant1+Ant2		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
1.74	1.4928	24.05	254.0973	0.07550059	1	Complies
1.74	1.4928	25.92	390.8409	0.11613159	1	Complies
1.74	1.4928	23.85	242.6610	0.07210251	1	Complies

## UNII-1

EUT:	Computer	Model Name :	boss
Temperature:	25 °C	Relative Humidity:	60 %
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX A Mode / CH36, CH40, CH48 - Ant1+Ant2		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
5.21	3.3189	12.87	19.3642	0.01279235	1	Complies
5.21	3.3189	12.74	18.7932	0.01241510	1	Complies
5.21	3.3189	13.20	20.8930	0.01380227	1	Complies

## UNII-2A

EUT:	Computer	Model Name :	boss
Temperature:	25 °C	Relative Humidity:	60 %
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX A Mode / CH52, CH60, CH64 - Ant1+Ant2		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
5.21	3.3189	13.79	23.9332	0.01581067	1	Complies
5.21	3.3189	13.65	23.1739	0.01530913	1	Complies
5.21	3.3189	13.57	22.7510	0.01502970	1	Complies

## UNII-2C

EUT:	Computer	Model Name :	boss
Temperature:	25 °C	Relative Humidity:	60 %
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX A Mode / CH100, CH116, CH140 - Ant1+Ant2		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
5.21	3.3189	13.60	22.9087	0.01513388	1	Complies
5.21	3.3189	13.36	21.6770	0.01432024	1	Complies
5.21	3.3189	12.73	18.7499	0.01238655	1	Complies

## UNII-3

EUT:	Computer	Model Name :	boss
Temperature:	25 °C	Relative Humidity:	60 %
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX A Mode / CH149, CH157, CH161 - Ant1+Ant2		

Antenna Gain (dBi)	Antenna Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm <sup>2</sup> )	Limit of Power Density (S) (mW/cm <sup>2</sup> )	Test Result
5.21	3.3189	13.88	24.4343	0.01614174	1	Complies
5.21	3.3189	13.78	23.8781	0.01577431	1	Complies
5.21	3.3189	13.82	24.0991	0.01592027	1	Complies

Note: the calculated distance is 20 cm.