

# RF Exposure Evaluation

## FCC ID: Y9E-IAD18005

### 1. Client Information

<b>Applicant</b>	:	IAdea Corporation
<b>Address</b>	:	3F, No. 21 Lane 168, Xingshan Road, Neihu Dist., Taipei, Taiwan
<b>Manufacturer</b>	:	IAdea Corporation
<b>Address</b>	:	3F, No. 21 Lane 168, Xingshan Road, Neihu Dist., Taipei, Taiwan

### 2. General Description of EUT

<b>EUT Name</b>	:	Smart Signboard	
<b>Models No.</b>	:	XDS-1588, XDS-1588-A, XDS-1588-H, XDS-158X-Y (Note: X is "0~9", and Y is "A~Z", represents the appearance color or customer models)	
<b>Model Difference</b>	:	All these models are the same PCB, layout and electrical circuit, the only different is appearance color or customer models.	
<b>Product Description</b>	:	Operation Frequency:	Bluetooth V4.0: 2402MHz~2480MHz 802.11b/g/n(HT20): 2412MHz~2462MHz
		RF Output Power:	802.11b: 16.56dBm 802.11g: 15.65dBm 802.11n (HT20): 15.74dBm BLE: 8.155dBm
		Antenna Gain:	1.14dBi FPC Antenna
<b>Power Supply</b>	:	AC Adapter(FJ-SW1202000N): Input: AC 100-240V, 50/60Hz, 0.6A Output: DC 12V, 2.0A	
<b>Software Version</b>	:	N/A	
<b>Hardware Version</b>	:	R35	
<b>Connecting I/O Port(S)</b>	:	Please refer to the User's Manual	

**Note:** More test information about the EUT please refer the RF Test Report.



## MPE Calculations for WIFI

### 1. Antenna Gain:

FPC Antenna: 1.14dBi.

### 2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

### 3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

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

### 4. Test Result:

Mode	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm <sup>2</sup> ) [S]	Limit of Power Density (mW/ cm <sup>2</sup> ) (S)
BLE	8.155	8±1	9	1.14	20	0.00205	1
802.11B	16.56	16±1	17	1.14	20	0.01296	1
802.11G	15.65	15±1	16	1.14	20	0.01030	1
802.11N(HT20)	15.74	15±1	16	1.14	20	0.01030	1

The worst RF Exposure Evaluation			
Worst Calculation Value		Total Calculation Value	Threshold Value
WiFi Mode	Bluetooth Mode		
0. 01296	0. 00205	0. 01501	1.0

**5. Conclusion:**

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

**Limits for General Population/ Uncontrolled Exposure**

Frequency Range (MHz)	Power density (mW/ cm <sup>2</sup> )
300-1,500	F/1500
1,500-100,000	1.0

For BT:2402~2480 MHz

For WIFI:2412~2462 MHz

MPE limit S: 1mW/ cm<sup>2</sup>

The MPE is calculated as  $0.01501\text{mW} / \text{cm}^2 < \text{limit } 1\text{mW} / \text{cm}^2$ . So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b).

The RF Exposure Information page from the manual is included here for reference.

**Note**

For a more detailed features description, please refer to the RF Test Report.

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