RF Exposure Evaluation

1. Based on 47 CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47 CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term “fixed location” means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

General Population/Uncontrolled Exposure:

The general population/uncontrolled exposure limits are applicable to 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 made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz

Friis transmission formula: **Pd = (Pout*G)/(4*pi*r^2)**

Where

Pd = power density in mW/cm^2, **Pout** = output power to antenna in mW;

G = gain of antenna in linear scale, **Pi** = 3.1416;

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm^2. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

Test Procedure

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

2.EUT Specification

FCC ID	2AB2Q14A800STQ1QM
PRODUCT:	LED Lamp
MODEL NO.:	14aSA-A800ST-Q1QM-02
Listed Models:	14ySA-A800ST-Q1QM-xx, 14A19060M6CCTxx Where “y” may be “A” to “Z”, which designates for different enclosure pattern design; “xx” may be “00” to “99”, which designates for different beam angle, color of eyelet contact, different package of style and CCT.
ST ANDARDS:	KDB 447498 D01 V06 47 CFR Part 2(2.1091)
Antenna type:	PCB antenna
Antenna gain (Max)	3.0 dBi
Evaluation applied	☐ MPE Evaluation ☒ SAR Evaluation

3. RF Exposure Assessment

Frequency	Field strength	RF Output power	Tolerance	Max Tune Up power		Antenna Gain	min. test separation distance	Power Density at R=20cm	Limit
(MHz)	(dBuV/m@3)	(dBm)	(dBm)	(dBm)	(mW)	(dBi)	(mm)	(mW/cm^2)	(mW/cm^2)
5824.75	98.56	3.40	3±1	4	2.51	3.0	20	0.001	1.0

$EIRP=E_{Meas}+20\log(d_{Meas})-104.7$
EIRP is the equivalent isotropically radiated power, in dBm
E_{Meas} is the field strength of the emission at the measurement distance, in dBuV/m
d_{Meas} is the measurement distance, in m
EIRP=E+20log(d)-104.7

Remark: The best case gain of the antenna is 3.0dBi.
3.0dBi logarithmic terms convert to numeric result is nearly 2.0

Conclusion: The RF exposure assessment evaluation results does compliance with the requirement.