



## **MPE/RF EXPOSURE REPORT**

**FCC CFR 47 Part 1.1310**

**Report No.: LYFT06-U9 FCC MPE Rev A**

**Company:** Lyft, Inc

**Model Name:** BIT040B

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**Model Name:** BIT040B

**To:** FCC CFR 47 Part 1.1310

**Report Serial No.:** LYFT06-U9 FCC MPE Rev A

This report supersedes: NONE

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## 1. MAXIMUM PERMISSIBLE EXPOSURE

### Calculations for Maximum Permissible Exposure Levels

$$\text{Power Density} = P_d \text{ (mW/cm}^2\text{)} = \text{EIRP}/(4*\pi*d^2)$$

$$\text{EIRP} = P * G$$

P = Peak output power (mW)

G = Antenna numeric gain (numeric)

d = Separation distance (cm)

$$\text{Numeric Gain} = 10 \wedge (G \text{ (dBi)}/10)$$

### FCC CFR 47 Part 1.1310 Power Density Limits for General Population/Uncontrolled Exposure:

$$300\text{-}1,500 \text{ MHz; Power Density} = f/1500 \text{ mW/cm}^2$$

$$1,500\text{-}100,000 \text{ MHz; Power Density} = 1.0 \text{ mW/cm}^2$$

### 3<sup>rd</sup> party Reference reports.

The Lyft BIT040B product contains 2 pre-certified Radio modules. The following MPE assessment reports were referenced in performing this assessment of MPE Exposure

LTE Module EG21-G MINIPCIE; Tested by SGS- CSTC Shenzhen; Report number HR/2019/10016E-0102 issued on 7<sup>th</sup> May 2019.

Wi-Fi Module ESP32-S2-MINI-1; Tested by TA Technology Co., Ltd Shanghai; Report number R2009A0623-M1 issued on the 29<sup>th</sup> October 2020.

The calculations in the table below use the highest measured conducted power values together with the antenna gain specified for the EUT.

### Specification - Maximum Permissible Exposure Limits.

The Limit is defined in Table 1 of FCC §1.1310.

Freq. Band (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Power Density (mW/cm <sup>2</sup> ) @ 20cm	Power Density Limit (mW/cm <sup>2</sup> )	Min Calculated safe distance for Limit (cm)
LTE 779.50	-0.21	0.95	27.30	537.03	0.102	0.5197	8.9
2.4 DTS	3.71	2.35	19.10	81.28	0.038	1	4.0
2.4 BLE	2.5	1.78	6.87	4.86	0.002	1	0.9

### Worst Case Simultaneous Operation

These calculations represent worst case in terms of the exposure levels and assume all radio transmitters i.e. LTE Cellular, 2.4GHz Wi-Fi; BLE radios are operating simultaneously.

Freq. Band (MHz)	Ant Gain (dBi)	Numeric Gain (numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Calculated Safe Distance for Summation (cm)	Power Density Limit (mW/cm <sup>2</sup> ) @ 20cm Pd <sub>Limit</sub>	Calculated Power Density (mW/cm <sup>2</sup> ) Pd <sub>Calc</sub>	Pd <sub>Calc</sub> / Pd <sub>Limit</sub>
LTE 779.50	-0.21	0.95	27.30	537.03	20	0.5197	0.102	0.196
2.4 DTS	3.71	2.35	19.10	81.28	20	1	0.038	0.038
2.4 BLE	2.5	1.78	6.87	4.86	20	1	0.002	0.002
<b>Summation Pd<sub>Calc</sub>/ Pd<sub>Limit</sub> @ 20 cm distance:</b>								<b>0.236</b>

Evaluation for compliance of simultaneous transmission where the power density limits are different is performed by the summation of ratios;

Calculated Power Density/Power Density Limit

$$Pd_{Calc1}/Pd_{Limit1} + Pd_{Calc2}/Pd_{Limit2} + Pd_{Calc3}/Pd_{Limit3} + \text{etc.} < 1.$$

**SUMMARY;** Minimum safe distance to meet the RF exposure requirements = 20cm

Note: for mobile or fixed location transmitters the minimum separation distance is 20cm, even if calculations indicate the MPE distance to be less.

### Specification

#### Maximum Permissible Exposure Limits

#### FCC CFR 47 Part 1.1310 Power Density Limits for General Population/Uncontrolled Exposure:

300-1,500 MHz; Power Density =  $f/1500$  mW/cm<sup>2</sup>  
 1,500-100,000 MHz; Power Density = 1.0 mW/cm<sup>2</sup>



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