



## **MPE/RF EXPOSURE REPORT**

**FCC CFR 47 Part 1.1310**

**Report No.: LYFT08-U7 FCC MPE Draft**

**Company:** Lyft, Inc

**Model Name:** BIT-01-2

## MPE/RF EXPOSURE REPORT

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**Model Name:** BIT-01-2

**To:** FCC CFR 47 Part 1.1310

**Report Serial No.:** LYFT08-U7 Rev A FCC MPE

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:

$$1.34 - 30 \text{ MHz Plane Wave Power Density} = (180/f^2) \text{ mW/cm}^2$$

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

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

The calculations in the table below use the highest measured conducted power values together with the antenna gain specified for the EUT. These calculations represent worst case in terms of the exposure levels.

NFC Output Power is as declared by the manufacturer.

### 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)
NFC 13.56	0.0	1.00	23	199.53	0.040	0.98	4.027
LTE Band 12 699.7	1.1	1.29	22.59	181.55	0.047	0.47	6.317
LTE Band 13 779.5	1.1	1.29	22.84	192.31	0.049	0.52	6.16
LTE Band 26 814.7	1.3	1.35	22.77	190.55	0.051	0.54	6.14
LTE Band 5 824.7	1.3	1.35	22.85	192.75	0.052	0.55	6.13
LTE Band 4 1710.7	3.8	2.40	22.97	198.15	0.095	1.00	6.15
LTE Band 2 1909.2	3.7	2.34	22.93	196.34	0.092	1.00	6.05
LTE Band 25 1914.2	3.7	2.34	22.82	191.43	0.089	1.00	5.98

Note 1: for mobile or fixed location transmitters the minimum separation distance is 20cm, even if calculations indicate the MPE distance to be less.

### Worst Case Simultaneous Operation

These calculations represent worst case in terms of the exposure levels and assume all radio transmitters i.e. LTE Cellular, NFC 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>
13.56	0.0	1.00	23	199.53	20.00	0.98	0.03969	0.04055
1710.7	3.8	2.40	22.97	198.15	20.00	1	0.09456	0.09456
<b>Summation Pd<sub>Calc</sub>/ Pd<sub>Limit</sub> @ 20 cm distance:</b>								<b>0.135</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:

1.34 – 30 MHz Plane Wave Power Density =  $(180/f^2)$  mW/cm<sup>2</sup>  
 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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