

# LYTX, INC.

## RF Exposure Exhibit

**SCOPE OF WORK**

EMC TESTING – Drivecam Event Recorder Model: DC-7000-002

**REPORT NUMBER**

105146268MPK-009

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**RF Exposure Exhibit  
(mobile devices)**

**Report Number:** 105146268MPK-009

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**Report Date:** April 24, 2023

**Product Designation:** Drivecam Event Recorder

**Model Tested:** DC-7000-002

**FCC ID:** UO3-UN1CXC

**IC:** 6778A-UN1CXC

to

**47CFR 2.1091**

**RSS-102 Issue 5**

for

**Lytx, Inc**

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Report No. 105146268MPK-009	
<b>Equipment Under Test:</b>	Drivecam Event Recorder
<b>Model Number(s):</b>	DC-7000-002
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<b>Applicable Regulation:</b>	47CFR 2.1091 RSS-102 Issue 5
<b>Date of Test:</b>	December 04, 2022

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### 1.0 RF Exposure Summary

Test	Reference FCC	Reference Industry Canada	Result
Radio frequency Radiation Exposure Evaluation	47 CFR§2.1091	RSS-102 Issue 5	Complies

### 2.0 RF Exposure Limits

In this document, we evaluate the RF Exposure to human body due the intentional transmission from the transmitter (EUT). The limits for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 and RSS-102 are followed.

#### 2.1 FCC Limits

According to FCC 1.1310 table 1: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
<b>(A)Limits For Occupational / Control Exposures</b>				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300 - 1500	...	...	F/300	6
1500 - 100,000	...	...	5	6
<b>(B)Limits For General Population / Uncontrolled Exposure</b>				
0.3 – 1.34	614	1.63	*100	30
1.34 – 30	824/f	2.19/f	*180/f <sup>2</sup>	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

\* = plane wave equivalent density

## 2.2 Industry Canada Limits

According to RSS-102, Industry Canada has adopted the SAR and RF field strength limits established in Health Canada's RF exposure guideline, Safety Code 6.

<b>Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)</b>				
Frequency Range	Electric Field	Magnetic Field	Power Density	Reference Period
(MHz)	(V/m rms)	(A/m rms)	(W/m <sup>2</sup> )	(minutes)
0.003-10	83	90	-	Instantaneous*
0.1-10	-	$0.73/f$	-	6**
1.1-10	$87/f^{0.5}$	-	-	6**
10-20	27.46	0.0728	-2	6
20-48	$58.07/f^{0.25}$	$0.1540/f^{0.25}$	$8.944/f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142 f^{0.3417}$	$0.008335 f^{0.3417}$	$0.02619 f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158 f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$
Note: $f$ is frequency in MHz. * Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

### 3.0 Test Results (Mobile Configuration)

#### 3.1 Classification

Radio is installed inside a mobile host device. The antenna of the product, under normal use condition, is at least 20 cm away from the body of the user and accessible to the end user. Warning statement to the user for keeping at least 20 cm or more separation distance with the antenna should be included in user's manual.

#### 3.2 EIRP calculations

The Drivecam Event Recorder, Model: DC-7000-002 consists of five radios: Bluetooth Classic, BLE, 2.4 GHz Wifi, 5GHz WiFi and ISM band radio.

#### 3.3 Maximum RF Power

Frequency Range (MHz)	RF Output (dBm)	Antenna Gain <sup>1</sup> (dBi)	Note
2402-2480	9.9	2.7	Conducted power measurements were taken from Report # 105146268MPK-004.
2412-2462	20.1	2.9	Conducted power measurements were taken from Report # 105146268MPK-002.
1850.7-1914.3 <sup>2</sup>	25	4.4	Conducted power measurements were taken from Report # R1907A0407-M1.
2402-2480	5.02	2.7	Conducted power measurements were taken from Report # 105146268MPK-001.
5180-5825 <sup>5</sup>	16.5 <sup>3</sup>	4.8 <sup>4</sup>	Conducted power measurements were taken from Report # 105146268MPK-006.

<sup>1</sup> As declared by the manufacturer.

<sup>2</sup> Radios installed in host module with FCC ID XMR201909EG95NAX

<sup>3</sup> This is a sum of two antennas and would be considered the worst-case scenario.

<sup>4</sup> Worst case antenna gain.

<sup>5</sup> U-NII 2a: 5250 – 5350 MHz and U-NII 2c: 5470 – 5725 MHz test data is included in this report but will not be used in the field.

\*Per manufacture, all the radios do not transmit simultaneously. Calculations in this report assumed the worse-case with simultaneous transmission of all radios.

### 3.4 RF Exposure Calculation

#### 3.4.1 RF Exposure calculation for BLE, Bluetooth Classic, 2.4 GHz Wifi, 5GHz Wifi, and ISM band radio.

Calculations for this report are based on highest power measured for each band.

Frequency Range (MHz)	EIRP <sup>1</sup> (dBm)	EIRP <sup>1</sup> (mW)	Power Density (W/m <sup>2</sup> ) @22 cm	RSS Limit (W/m <sup>2</sup> )	MPE Ratio	Sum of MPE Ratios
2402-2480	12.6	18.197	0.0362	5.469	0.00662	0.4874
2412-2462	23.0	199.526	0.3971	5.442	0.07297	
1850.7-1914.3	29.4	870.963	1.7336	4.582	0.37835	
2402-2480	7.72	5.916	0.0117	5.469	0.00214	
5180-5825	21.3	134.896	0.2685	9.802	0.02739	

<sup>1</sup>Note: Antenna gains below 0 are considered as 0dBi.

Frequency Range (MHz)	EIRP <sup>1</sup> (dBm)	EIRP <sup>1</sup> (mW)	Power Density (mW/cm <sup>2</sup> ) @22 cm	FCC Limit (mW/cm <sup>2</sup> )	MPE Ratio	Sum of MPE Ratios
2402-2480	12.6	18.197	0.0036	1	0.0036	0.2445
2412-2462	23.0	199.526	0.0397	1	0.0397	
1850.7-1914.3	29.4	870.963	0.1733	1	0.1733	
2402-2480	7.72	5.916	0.0011	1	0.0011	
5180-5825	21.3	134.896	0.0268	1	0.0268	

<sup>1</sup>Note: Antenna gains below 0 are considered as 0dBi.

The summation of the MPE ratio is less than 1, therefore, the EUT complies for the MPE requirement of simultaneous transmission. Per manufacture, all the radios do not transmit simultaneously. Calculations in this report assumed the worse-case with simultaneous transmission of all radios.



## Appendix A: Power Density Calculation

The Power Density can be calculated using the formula

$$S = \text{EIRP} / 4\pi D^2$$

Where: S is Power Density in mW/cm<sup>2</sup>

D is the distance from the antenna in cm.

**4.0 Document History**

<b>Revision/ Job Number</b>	<b>Writer Initials</b>	<b>Reviewers Initials</b>	<b>Date</b>	<b>Change</b>
1.0/ G105146268	JAV	ML	December 12, 2022	Original document
1.1/ G105146268	AC	AS	April 24, 2023	Added note on page 7 stating U-NII 2a: 5250 – 5350 MHz and U-NII 2c: 5470 – 5725 MHz test data is included in this report but will not be used in the field.