



## ELEMENT WASHINGTON DC LLC

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### RF EXPOSURE EVALUATION Maximum Permissible Exposure (MPE)

**Applicant Name:**

Applied Information, Inc.  
3000 Summit PI suite 150  
Alpharetta, GA 30009  
United States

**Date of Testing:**

04/22/2024 - 05/10/2024

**Test Report Issue Date:**

7/2/2024

**Test Site/Location:**

Element lab., Columbia, MD, USA

**Test Report Serial No.:**

1M2404190036-02.2BHCM

**FCC ID:**

**2BHCM-500-095**

**APPLICANT:**

**Applied Information, Inc.**

**EUT Type:**

C-V2X Roadside Unit

**Model:**

500-095

**FCC Classification:**

Part 90M Road Side Unit (ITR)

**FCC Rule Part:**

FCC Part 1 (§1.1310) and Part 2 (§2.1091)

**Test Procedure(s):**

KDB 447498 D01

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in FCC KDB 447498 D01. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

**RJ Ortanez**  
**Executive Vice President**



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## 1.0 RF EXPOSURE EVALUATION – MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### 1.1 Introduction

This document is prepared to show compliance with the RF Exposure requirements as required in §1.1310 of the FCC Rules and Regulations.

The limit for Maximum Permissible Exposure (MPE), specified in FCC §1.1310, is listed in Table 1-1. According to FCC §1.1310 : 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).

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
(A) Limits For Occupational / Control Exposures (f = frequency)				
30-300	61.4	0.163	1.0	6
300-1500	...	...	f/300	6
1500-100,000	...	...	5.0	6
(B) Limits For General Population / Uncontrolled Exposure (f = frequency)				
30-300	27.5	0.073	0.2	30
300-1500	...	...	f/1500	30
1500-100,000	...	...	1.0	30

**Table 1-1. FCC limits for Maximum Permissible Exposure (MPE)**

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## 1.2 EUT Description

The **Applied Information C-V2X Roadside Unit FCC ID: 2BHCM-500-095** is an enclosed roadside unit used for intelligent transportation services. The unit is powered by 48VDC power supply.

## 1.3 Antenna Description

The manufacturer has declared that the following antenna will be used with this device:

Antenna Part No: OBM.5900.B10F21

Antenna Description: Barracuda 5.9GHz DSRC 10dBi Omnidirectional Outdoor Antenna

Antenna Type: Collinear Dipole Array

Antenna Gain: 10.2dBi

## 1.4 Procedure

The procedure used to determine the RF power density was based upon a calculation for determining compliance with the MPE requirements.

The power generated by the transmitter used in this product was initially measured with a spectrum analyzer and the powers were recorded. The antenna gain used in the MPE analysis is declared by the manufacturer.

### Friis Transmission Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4\pi r^2)$

Where,

$P_d$  = Power Density (mW/cm<sup>2</sup>)

$\pi$  = 3.1416

$P_{out}$  = output power to antenna (mW)

$r$  = distance between observation point and center of the radiator (cm)

$G$  = gain of antenna in linear scale

### Calculated MPE

The power density limit for General Population/Uncontrolled Exposure at each frequency is determined based on the information in Table 1-1.

Through use of the Friis formula and operation at 20cm distance, the power density is calculated by determining the highest allowed antenna gain that still shows compliance to the RF Exposure limits.

Frequency	5915	MHz
FCC Limit	1.000	mW/cm <sup>2</sup>
Distance	20	cm
Max Power	15.50	dBm
Max FCC Tx Ant Gain	10.20	dBi
FCC Power Density	0.074	mW/cm <sup>2</sup>

**Table 1-2. Calculated MPE Data for C-V2X RSU**

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## 1.5 Summary of Results

Technology	Frequency [MHz]	Maximum Antenna Gain [dBi]	MPE @ 20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Test Result
C-V2X	5915	10.2	0.074	1	PASS

**Table 1-3. FCC Maximum Permissible Exposure Summary Table**

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## 2.0 CONCLUSION

The device meets the mobile RF exposure limit at a 20cm separation distance as specified in §2.1091 of the FCC Rules and Regulations and Health Canada Safety Code 6. An appropriate RF exposure compliance statement will be placed in the user's manual.

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