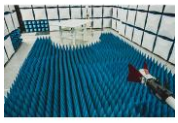
ELEMENT WASHINGTON DC LLC
7185 Oakland Mills Road, Columbia, MD 21046 USA
Tel. 410.290.6652 / Fax 410.290.6654
http://www.element.com



RF EXPOSURE EVALUATION
Maximum Permissible Exposure (MPE)

Applicant Name:
Pivotal Commware
22215 26th Ave SE #100
Bothell WA 98021
UNITED STATES

Date of Testing:
08/09/2023-10/02/2023
Test Report Issue Date:
10/09/2023
Test Site/Location:
Element lab., Columbia, MD, USA
Test Report Serial No.:
1M2308080091-03.2AUVU

FCC ID:	**2AUVU-5620-23-39**
APPLICANT:	**Pivotal Commware**

Application Type:	Certification
Model:	5620-23-39
EUT Type:	5G mmWave Repeater
FCC Classifications:	Part 20 Industrial Booster (CMRS) (B2I)
FCC Rule Parts:	FCC Part 1 (§1.1310) and Part 2 (§2.1091)
Test Procedure(s):	KDB 447498 D01 v06

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 v06. 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

ACCREDITED
CERT #2041.01

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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(e)(1), 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^2)	Average Time (Minutes)
(A) Limits For Occupational / Control Exposures (f = frequency)				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*($900/f^2$)	6
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)				
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

* = Plane-wave equivalent power density

Table 1-1. Limits for Maximum Permissible Exposure (MPE)

1.2 EUT Description

The **Pivotal Commware Device FCC ID: 2AUVU-5620-23-39** is a bidirectional, two-unit repeater system consisting of a Donor Unit (DU) and a Service Unit (SU). Both units are required for operation as neither can be operated in a standalone configuration. This RF exposure analysis is for the SU.

1.3 Procedure

This RF exposure analysis aims to achieve two things:

1) Exemption from routine environmental evaluation where the criteria is outlined in §1.1307(b)(3)(i)(C) and
2) Compliance with the MPE limits based on calculations for worst-case operation

The Service Unit (SU) operates at a maximum single antenna polarization EIRP of 36dBm +/- 1.5dB.

The ERP Threshold is calculated per 1.1307(b)(3)(i)(C) Table 1 for 5G NR FR2 ($19.2R^2$).

Service Unit	**5G NR FR2**	
Frequency	39975	MHz
λ	0.0075	m
λ/2π	0.0012	m
R	0.6	m
Threshold ERP	6.912	W
Threshold ERP	38.40	dBm
Threshold EIRP	**40.55**	dBm

Table 1-2. Threshold ERP/EIRP Levels Per 1.1307(b)(3)(i)(C) for Service Unit

A determination of exemption of routine environmental evaluation to demonstrate compliance with the RF exposure limits is allowed for multiple RF sources per 1.1307(b)(3)(ii)(B):

$$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

The SU transmits simultaneously from two orthogonally polarized antennas, each transmitting at 37.5dBm EIRP.

Based on these EIRP levels and the above calculated threshold levels, the summations are determined as follows:

	Service Unit	
EIRP_H	37.5	dBm
EIRP_H	5.623	W
EIRP_th,H	11.336	W
EIRP_H/EIRP_th,H	0.496	
EIRP_V	37.5	dBm
EIRP_V	5.623	W
EIRP_th,V	11.336	W
EIRP_V/EIRP_th,V	0.496	
Summation	0.992	

Table 1-3. RF Exposure Compliance for Simultaneous Transmissions

These calculations demonstrate that the SU, operating at a distance of 0.6m, is exempt from routine environmental evaluation for RF exposure compliance.

2.0 CONCLUSION

The device meets the mobile RF exposure limit at a 0.6m separation distance as specified in §2.1091 of the FCC Rules and Regulations. An appropriate RF exposure compliance statement will be placed in the user's manual.