



Radio Frequency Exposure Evaluation Report

FOR:
Axon Enterprise, Inc.

Brand:
Axon

Model Name:
AX1014

Marketing Name:
Axon Fleet 2, Front Camera

Product Description:
In-car Camera System

FCC ID: X4GS00947C

Per:
CFR Part1 (1.1307 & 1.1310), Part 2 (2.1091),
FCC KDB 447498 D01 General RF Exposure Guidance v06

Report number: EMC_AXONN_010_20001_FCC_MPE_Rev2

DATE: 2/10/2022



CETECOM Inc.

411 Dixon Landing Road ♦ Milpitas, CA 95035 ♦ U.S.A.

Phone: + 1 (408) 586 6200 ♦ Fax: + 1 (408) 586 6299 ♦ E-mail: Contact@cetecom.com ♦ <http://www.cetecom.com>
CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

TABLE OF CONTENTS

1	Assessment.....	3
2	Administrative Data	4
2.1	Identification of the Testing Laboratory Issuing the Test Report.....	4
2.2	Identification of the Client / Manufacturer	4
2.3	Identification of the Manufacturer	4
3	Equipment under Assessment.....	5
4	RF Exposure Limits and FCC and IC Basic Rules	6
4.1	Power Density Limits acc. to FCC 1.1310(e)/ RSS-102 i5, cl. 4:	6
4.2	Routine Environmental Evaluation Categorical Exclusion Limits acc. to FCC 2.1091(c) / RSS-102, cl. 2.5 (rounded to 1 decimal point):	6
4.3	RF Exposure Estimation (MPE Estimation)	6
5	Evaluation	7
5.1	Analysis to Exclude Routine RF Exposure evaluation for Stand Alone Operation.....	7
6	Revision History	8

1 Assessment

This RF Exposure evaluation report, provides evidence for compliance of the below identified device, with the RF Exposure limits for mobile devices, as defined in FCC CFR Part1 (1.1307 &1.1310), Part 2 (2.1091), under worst case conditions (measured or rated RF output power, antenna gain, distance towards human body. Multiple transmitter information as presented by the applicant).

In addition, maximum antenna gain, or minimum distance towards the human body calculated respectively where relevant.

The device meets the limits as stipulated by the above given FCC and IC rule parts based on available specifications for worst case conditions at 20cm distance to the body.

Company	Description	Model Name
Axon Enterprise, Inc.	In-car Camera System	AX1014

Report reviewed by: TCB Evaluator

2/10/2022	Compliance	Wang, Kevin (Lab Manager)	
Date	Section	Name	Signature

Responsible for the Report:

2/10/2022	Compliance	Ghanma, Issa (EMC Engineer)	
Date	Section	Name	Signature

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Lab Manager:	Wang, Kevin
Responsible Project Leader:	Sivaraman, Sangeetha

2.2 Identification of the Client / Manufacturer

Applicant's Name:	Axon Enterprise, Inc.
Street Address:	17800 N. 85th St
City/Zip Code	Scottsdale, AZ 85255
Country	USA

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as client.
Manufacturers Address:	-----
City/Zip Code	-----
Country	-----

3 Equipment under Assessment

Model No:	AX1014
FCC ID:	X4GS00947C
HW Version :	Rev B
SW Version :	Skytest_ab2_v2_mfgtest
Power Supply/ Rated Operating Voltage Range:	- The Axon Fleet 2 Front Camera is powered by the vehicle's 12V power supply. The power is regulated from a separate battery box, mounted elsewhere in the vehicle, which supplies temporary power to the camera if the vehicle ignition is shut off. - Constant Power Voltage: 9V - 18V Nominal 12V
Integrated Module Info:	Chipset: Cypress/CYW43340XKUBG
Regulatory Band:	❖ Bluetooth 4.0 LE: ▪ GFSK modulation • 2.402 GHz to 2.480 GHz: Channel 0 – 39 ❖ WLAN (Wi-Fi) 2.4: ▪ 2.4 GHz: 802.11 b/g/n • 2.412 GHz to 2.462 GHz: Channel 1 – 11 ❖ WLAN (Wi-Fi) UNII-1: ▪ 5 GHz: 802.11 a/n • 5.15 GHz to 5.25 GHz: Channel 36 – 48
Antenna Type and Peak gain:	❖ Internal, Chip antenna • Gain [dBi]: ○ 2400 – 2500 MHz : 5.80 ○ 5150 – 5240 MHz : 4.98 ○ 5725 – 5850 MHz : 1.88
Maximum Conducted Output Power (dBm):	❖ Bluetooth 4.0 LE: +9.25 ❖ WLAN (Wi-Fi) 2.4: +12.51 ❖ WLAN (Wi-Fi) UNII-1: +16.49 ❖ WLAN (Wi-Fi) UNII-3: +10.18
Sample Revision:	☐ Prototype Unit; ☒ Production Unit; ☐ Pre-Production

4 RF Exposure Limits and FCC Basic Rules

For the specific described radio apparatus the following basic limits and rules apply for FCC.

4.1 Power Density Limits acc. to FCC 1.1310(e):

FCC

Frequency Range (MHz)	Power density (mW/cm ²)	Averaging time (minutes)
300 – 1500	$f \text{ (MHz)} / 1500$	30
1500 – 100.000	1.0	30

4.2 Routine Environmental Evaluation Categorical Exclusion Limits acc. to FCC 2.1091(c) (rounded to 1 decimal point):

FCC

$$P_{th}(\text{mW}) = ERP_{20\text{ cm}}(\text{mW}) = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

4.3 RF Exposure Estimation (MPE Estimation)

Having available the source, based average output power, and peak antenna gain, or the ERP/EIRP of the specified device, and for a known minimum distance of its radiating structures from the body of persons. According to its use cases (at least 20cm) the power density at that distance can be estimated by the following formula for plane-wave equivalent conditions (far-field conditions), when ground reflection is neglected.

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (mW/cm² or W/m²)

P = power input to the antenna (mW or W)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (cm or m)

5 Evaluation

5.1 Analysis to Exclude Routine RF Exposure evaluation for Stand Alone Operation

Band	Lowest frequency [MHz]	Max.Power [W]	EIRP [W]	Max.Power [dBm]	EIRP [dBm]	FCC EIRP limit [dBm / W]	Actual [W/m ²]	FCC [W/m ²]	Verdict
BT LE	2402	0.008	0.032	9.25	15.05	37.01 / 5.02	0.06	10.0	Complies
WLAN 2.4	2412	0.018	0.068	12.51	18.31	37.01 / 5.02	0.13	10.0	Complies
UNII-1	5150	0.045	0.140	16.49	21.47	37.01 / 5.02	0.28	10.0	Complies
UNII-3	5725	0.010	0.016	10.18	12.05	37.01 / 5.02	0.03	10.0	Complies

The single radios are exempt from routine environmental evaluation.

Conclusion:

- The worst-case transmission mode Wi-Fi 5 GHz 802.11a UNII-1 is passing RF exposure requirements for 20cm distance.

6 Revision History

Date	Report Name	Changes to report	Report prepared by
4/2/2021	EMC_AXONN_010_20001_FCC_MPE	Initial Version	Issa Ghanma
1/10/2022	EMC_AXONN_010_20001_FCC_MPE_Rev1	• Correction to the FCC ID • Correction to the product description	Issa Ghanma
2/10/2022	EMC_AXONN_010_20001_FCC_MPE_Rev2	• Correction to the FCC ID • Correction to the Marketing name. • Add WLAN 2.4, UNII-3 and BT LE to section 5.1	Issa Ghanma

<<< The End >>>
