



Radio Frequency Exposure Evaluation Report

Brand:

APTIV Services US LLC

Model Number:

WCPMA-TX

Marketing Name:

N/A

Product Description:

Vehicle wireless charger

FCC ID: L2C0093TR

Per:

FCC KDB 680106 D01 Wireless Power Transfer v04

Report number: EMC_APTIV_006_23001_FCC_RF_Exposure

DATE: 2024-03-11



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

1 Assessment

This RF Exposure evaluation report provides evidence for compliance of the below identified device with the RF Exposure limits for wireless power transfer devices as defined in FCC KDB 680106 D01 Wireless Power Transfer v04.

The device meets the limits as stipulated by the above given FCC rule parts based on available specifications.

Company	Description	Model #
APTIV Services US LLC	Vehicle wireless charger	WCPMA-TX

Report Reviewer:

Guangcheng Huang
(Senior EMC Test Engineer /
Technical Consultant)

2024-03-11 Compliance

Date	Section	Name	Signature
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Responsible for the Report:

Cheng Song
(EMC Engineer)

2024-03-11 Compliance

Date	Section	Name	Signature
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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
Senior EMC Test Engineer / Technical Consultant:	Guangcheng Huang
Responsible Project Leader:	Rami Saman

2.2 Identification of the Client / Manufacturer

Client's Name:	APTIV Services US LLC
Street Address:	13085 Hamilton Crossing Blvd
City/Zip Code	Carmel IN 46032
Country	USA

Identification of the Manufacturer

Manufacturer's Name:	Aptiv / Luke Berry
Manufacturers Address:	5725 Innovation Drive
City/Zip Code	Troy MI 48098
Country	USA

3 Equipment under Assessment

Brand	APTIV Services US LLC
FCC ID	L2C0093TR
Model Number	WCPMA-TX
Marketing Name	N/A
HW Version	PV1
SW Version	A3.0.2
Product Description	Vehicle wireless charger
Radio Information as declared	Qi
Antenna Information as declared	N/A
Max. declared Output Power:	15W
Modulation:	FSK
Frequency Range / number of channels (All Radios)	115-205 KHz Fixed 127.7 kHz
Power Supply/ Rated Operating Voltage Range	9 VDC – 16 VDC
Operating Temperature Range	Charging temp: -40°C – 55°C, Operating temp: -40°C – 85°C
Sample Revision	<input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-production
EUT Diameter	n < 60cm
Note: Details about the Equipment Under Test (EUT) are provided by the client or applicant.	

4 RF Exposure Requirement

4.1 FCC KDB 680106 D01 Wireless Power Transfer v04, section 3.1

Mobile Device and Portable Device Configurations

Wireless power transfer devices must comply with RF exposure requirements for all design configurations in which they can operate. At a minimum, RF exposure must be evaluated for the worst-case scenario, typically when the transmitter, while delivering energy to a client device, is operating at maximum output power.

RF exposure compliance for equipment authorization must be determined following the guidance of KDB 447498, which includes consideration of the different test requirements for Mobile Device and Portable Device exposure categories, as defined in §§ 2.1091 and 2.1093 of the Rules.

Sometimes, a device may meet the RF exposure compliance requirements for a specified minimum distance for all but the most unlikely use conditions. For example, some typical desktop applications, such as wireless charging pads connected to household power, operate only when the active coil is covered and coupled with the target, and are characterized by a form factor that would discourage any on-body use because of size and/or weight. Thus, these devices may be considered to meet the § 2.1091-Mobile conditions (“generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the RF source’s radiating structure(s) and [the nearest person]”), and may be tested for compliance according to the applicable procedures for Mobile devices that are less onerous than those for Portable devices. In other analogous cases, still for a Mobile device, RF Exposure compliance may be ensured only for a minimum separation distance that is greater than 20 cm, while use conditions at smaller distances can still be considered unlikely.

For these scenarios, the equipment authorization of the device may be allowed, on a case-by-case basis, only after receiving FCC concurrence. This procedure requires the submittal of a KDB Inquiry selecting “Equipment Compliance Review” (ECR) as the first category, and “Minimum RF Exposure Compliance Distance” as the second category.

4.2 FCC KDB 680106 D01 Wireless Power Transfer v04, section 3.2

Equipment Authorization Procedures for Devices Operating at Frequencies Below 4 MHz

The RF exposure limits, as set forth in § 1.1310, do not cover the frequency range below 100 kHz for Specific Absorption Rate (SAR) and below 300 kHz for Maximum Permitted Exposure (MPE). In addition, present limitations of RF exposure evaluation systems prevent an accurate evaluation of SAR below 4 MHz. For these reasons, a specific MPE-based RF Exposure compliance procedure for devices operating in the aforementioned low-frequency ranges has been set in place. This procedure is applicable to Equipment Authorization of all RF devices, thus including, but not limited to, Part 18 and WPT devices.

Accordingly, for § 2.1091-Mobile devices, the MPE limits between 100 kHz to 300 kHz are to be considered the same as those at 300 kHz in Table 1 of § 1.1310, that is, 614 V/m and 1.63 A/m, for the electric field and magnetic field, respectively. For § 2.1093-Portable devices below 4 MHz and down to 100 kHz, the MPE limits in § 1.1310 (with the 300 kHz limit applicable all the way down to 100 kHz) can be used for the purpose of equipment authorization in lieu of SAR evaluations.

Furthermore, consistent with FCC's equipment authorization RF exposure guidance, any device (both portable and mobile) operating at frequencies below 100 kHz is considered compliant for the purpose of equipment authorization when the external (unperturbed) temporal peak field strengths do not exceed the following reference levels:

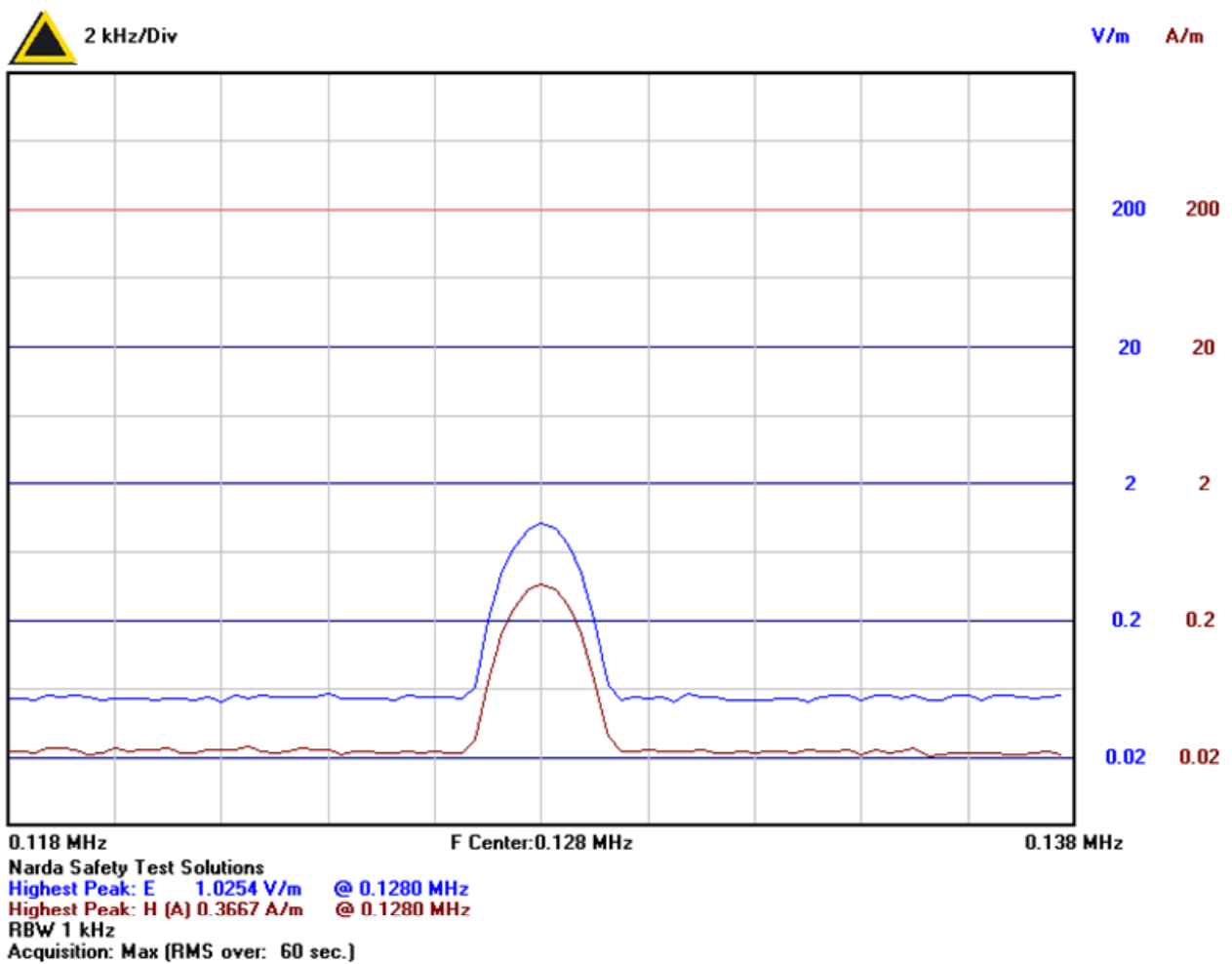
83 V/m for the electric field strength (E) and 90 A/m for the magnetic field strength (H).

5 Evaluations

5.1 Analysis of RF Exposure

The EUT is classified as an automotive wireless charging pad, categorized as a mobile device necessitating a minimum separation distance exceeding 20 cm. In compliance with section 3.2 of FCC KDB 680106 D01 v04, the EUT must adhere to the stipulated limits of 614 V/m for the electric field and 1.63 A/m for the magnetic field, applicable to devices operating with a fundamental radio frequency range between 100 kHz and 300 kHz.

The field strength measurements were carried out using a field probe, which was placed 20 cm from the device's edge.



The EUT meets the RF exposure limits of 614 V/m for the electric field and 1.63 A/m for the magnetic field, as outlined in Table 1 of Section 1.1310.

6 Revision History

Date	Report Name	Changes to report	Prepared by
2024-03-11	EMC_APTIV_006_23001_FCC_RF_Exposure	Initial Release	Cheng Song

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