

Test report No:
NIE: 76719RAN.002A1

Assessment report

RF EXPOSURE REPORT ACCORDING TO FCC 47 CFR Part 2.1091; FCC 47 CFR Part 1.1307 FCC 47 CFR Part 1.1310

(*) Identification of item under evaluation	Central In-Vehicle Infotainment Computer CIVIC Gen20xi.3
(*) Trademark	BOSCH
(*) Model and /or type reference	BCI3L3N1
(*) Other identification of the product	FCC ID: 2AUXS-BCI3L3N1 IC ID: 25847-BCI3L3N1 HW version: D5 SW Version: E064.4
(*) Features	AM/FM/DAB, W-LAN 2.4GHz /5GHz MIMO / SISO - no DFS Bands, AP / Client, Bluetooth 5.2 LE& EDR and GNSS multiple Two different vehicular architectures: Star3.0 /3.5
(*) Manufacturer	Robert Bosch GmbH Robert-Bosch-Platz, 170639 Gerlingen, Germany
Test method requested, standard	FCC 47 CFR Part 2.1091 Radiofrequency radiation exposure evaluation: mobile devices. FCC 47 CFR Part 1.1307: Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared. FCC 47 CFR Part 1.1310: Radiofrequency radiation exposure limits.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Manuel García Antennas Lab Technical Responsible
Date of issue	2025-06-13
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Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item under evaluation", "Trademark", "Model and/or type reference", "General description of the device", "Other identification of the product").
2. Maximum output power, maximum antenna gain and use distance information.
3. The device under evaluation consists of a Central In-Vehicle Infotainment Computer CIVIC Gen20xi.3.

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Identification of the client

Robert Bosch GmbH
Robert-Bosch-Platz 1, 70639 Gerlingen, Germany

Document history

Report number	Date	Description
76719RAN.002	2025-06-04	First release
76719RAN.002A1	2025-06-13	802.11ax mode added to the evaluation (see Appendix A). This report cancels and replaces test report 76719RAN.002

Appendix A: FCC RF Exposure assessment result

General description of the device under evaluation

Table 1 provides details for the RF Evaluation, based on the following declared device specifications:

Description and technologies: the device under evaluation consists of a Central In-Vehicle Infotainment Computer CIVIC Gen20xi.3 and supports the following radios technologies: Bluetooth 5.2 LE & EDR, 2.4GHz WLAN 802.11bgnax and 5GHz WLAN. The RF Exposure evaluation applies only to all transmission technologies supported by the device.

Evaluation Distance: according to the manufacturer, during normal use, the device's radiating structures will maintain a separation distance greater than 20 cm from nearby users. For assessment purposes, a conservative evaluation distance of 20 cm has been applied.

Maximum output power:

Values corresponding to maximum output power have been declared by the device manufacturer. These values are stated in module manufacturer's datasheet.

The device manufacturer has declared the maximum output power values, as documented in the official manufacturer's datasheet.

Antennas: the device uses the same antenna connected to two antenna ports for the following transmission technologies:

- BT WLAN ANTENNA PART NUMBER 920-584-003 for BT LE/EDR, Wi-Fi 2.4 GHz and 5GHz transmissions.

The manufacturer has declared the maximum peak gain values, as stated in the antenna manufacturer's datasheet.

The following table shows the information provided above:

Technology / Mode	Operating Band	Frequency under evaluation (MHz)	Maximum Conducted Output Power (Incl. Tune-Up) (dBm)	Duty Cycle (%)	Time Averaged Conducted Power (dBm)	Antenna peak gain (dBi)	Maximum Averaged E.R.P (dBm)	Maximum Averaged E.R.P (mW)	Maximum Averaged E.I.R.P (dBm)	Maximum Averaged E.I.R.P (mW)
802.11b/g/n	2.4 GHz	2412 - 2484	20.00	100.00	20.00	0.10	17.95	62.37	20.10	102.33
802.11b/g/n	2.4 GHz	2412 - 2484	23.00	100.00	23.00	0.10	20.95	124.45	23.10	204.17
802.11a/n/ac/ax	5 GHz	5150 - 5850	18.00	100.00	18.00	5.10	20.95	124.45	23.10	204.17
802.11a/n/ac/ax	5 GHz	5150 - 5850	21.00	100.00	21.00	5.10	23.95	248.31	26.10	407.38
BTLE	2.4 GHz	2400 - 2483.5	4.00	100.00	4.00	0.10	1.95	1.57	4.10	2.57
BT EDR	2.4 GHz	2400 - 2483.5	8.00	100.00	8.00	0.10	5.95	3.94	8.10	6.46

Table 1: Equipment specifications

Simultaneous Transmission Conditions:

The device supports the following simultaneous transmissions modes:

Simultaneous technologies and modes
BTLE + 2.4GHz WLAN SISO + 5GHz WLAN MIMO
BT EDR + 2.4GHz WLAN SISO + 5GHz WLAN MIMO
BTLE + 2.4GHz WLAN MIMO
BT EDR + 2.4GHz WLAN MIMO

Evaluation Results

RF Exposure Exemption evaluation:

Technology / Mode	Operating Band	Frequency under evaluation (MHz)	Distance (cm)	Maximum Averaged E.R.P (mW)	§1.1307(b)(3).i.(C) Exposure Limit (mW)	Verdict for exemption § 1.1307(b)(3).i
802.11b/g/n	2.4 GHz	2412 - 2484	20.00	62.37	768.00	Pass
802.11b/g/n	2.4 GHz	2412 - 2484	20.00	124.45	768.00	Pass
802.11a/n/ac/ax	5 GHz	5150 - 5850	20.00	124.45	768.00	Pass
802.11a/n/ac/ax	5 GHz	5150 - 5850	20.00	248.31	768.00	Pass
BTLE	2.4 GHz	2400 - 2483.5	20.00	1.57	768.00	Pass
BT EDR	2.4 GHz	2400 - 2483.5	20.00	3.94	768.00	Pass

Table 2: FCC Exemption Evaluation Results

The computed value(s) are below the exemption limit(s), so these modes meet the requirements stated in FCC 47 CFR Part 1.1307.

Simultaneous transmission assessment:

The device under evaluation is able to transmit simultaneously using Bluetooth 5.2 LE & EDR, 2.4GHz W-LAN 802.11bgnax and 5GHz WLAN transmitters, therefore the most conservative approach for the evaluation of the simultaneous transmission will be:

Simultaneous technologies and modes	Result ($\sum$ of Pout/Pmax ratios)	Verdict ($\sum \leq 1$)
802.11b/g/n 2.4 GHz + 802.11a/n/ac/ax (UL MIMO) 5 GHz + BTLE 2.4 GHz	0.41	Pass
802.11b/g/n 2.4 GHz + 802.11a/n/ac/ax (UL MIMO) 5 GHz + BT EDR 2.4 GHz	0.41	Pass
802.11b/g/n (UL MIMO) 2.4 GHz + BTLE 2.4 GHz	0.16	Pass
802.11b/g/n (UL MIMO) 2.4 GHz + BT EDR 2.4 GHz	0.17	Pass

Table 3: Simultaneous Transmission assessment

As the compliance criteria is fulfilled, simultaneous transmission condition is in compliance with the RF exposure requirements.

Appendix B: FCC RF Exposure information

RF Exposure determination of exemption

According to FCC 47 CFR §1.1307 (b)(3) Determination of exemption:

(i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2), a single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

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

d = the separation distance (cm);

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

TABLE 1 TO §1.1307(b)(3)(i)(C)—SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R ² .
1.34-30	3,450 R ² /f ² .
30-300	3.83 R ² .
300-1,500	0.0128 R ² f.
1,500-100,000	19.2R ² .

(ii) For multiple RF sources: Multiple RF sources are exempt if:

(A) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(i)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(i)(A).

(B) in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

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

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for P_{th}, including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

P_{th,i} = the exemption threshold power (P_{th}) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i.

ERP_j = the ERP of fixed, mobile, or portable RF source j.

ERP_{th,j} = exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least λ/2π according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

Evaluated_k = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

Exposure Limit_k = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from §1.1310 of this chapter.

The available maximum time-averaged power or effective radiated power (ERP), can be calculated using the following formula to assess compliance with the Exemption Limits:

$$P_{E.I.R.P.} = P_T + G_T - L_C$$

Where:

P_T = transmitter time-averaged output power (including Duty Cycle and tune-up tolerance, if applicable)

G_T = gain of the transmitting antenna

L_C = signal attenuation in the connecting cable between the transmitter and the antenna if applicable

$$P_{E.R.P.} = P_{E.I.R.P.} - 2.15 \text{ dB}$$

RF Exposure evaluation

Limits for Maximum Permissible Exposure (MPE) for RF sources are defined in FCC 47 CFR “§1.1310 Radiation Exposure limits, paragraph (e)”:

TABLE 1 TO §1.1310(E)(1)—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
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
300-1,500			f/300	<6
1,500-100,000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
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
300-1,500			f/1500	<30
1,500-100,000			1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

Each supported transmission technology will be evaluated to determine if it is in compliance with limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

In order to perform the assessment, the following equations have been used for the calculations; these equations are accurate in the far-field of an antenna and will over-predict power density in the near field, where they could be used for making a "worst-case" or conservative prediction:

$$\text{Power density: } S[\text{mW} / \text{cm}^2] = \frac{P_{E.I.R.P.}[\text{mW}]}{4\pi R[\text{cm}]^2}$$

Where:

S = power density

$P_{E.I.R.P.}$ = Equivalent isotropically radiated power

R = distance to the center of radiation of the antenna (evaluation distance)

The available maximum time-averaged power or effective radiated power (ERP), can be calculated using the following formula to assess compliance with the Exemption Limits:

$$P_{E.I.R.P.} = P_T + G_T - L_C$$

Where:

P_T = transmitter time-averaged output power (including Duty Cycle and tune-up tolerance, if applicable)

G_T = gain of the transmitting antenna

L_C = signal attenuation in the connecting cable between the transmitter and the antenna if applicable