



Test Report

Prepared for Harman Becker Automotive Systems

This report presents Maximum Permissible Exposure for

CY20 DA LOWER

Prepared by

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Engineer II

Approved by

Jason Kanakry

General Manager

Issue date: 06/03/2022

Report No: AH22021401-HAR-004_FCC_MPE v2

This test result relates only to the described test object.

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The test is traceable to national standard or related international standard

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- **Test Request Information**

Test Request #: 7700119407

Test Requested By: Mark Bowman
Harman International Industries, Inc.
30001 Cabot Drive, Novi, MI 48377

Test item Description: CY20 DA LOWER

Part Number: T246

DUT Sample Number: AH22021401-HAR-004#2

Hardware Version of DUT: PV1

Software Version of DUT: 1.22.010

Component Category of DUT: N/A

FCC ID: 2AHPN-BE2865

Type of Test: FCC/ISED Certification

Test Method: CFR Title 47 FCC Part 15.247, 1.1307, 1.1310, 2.1091
KDB 447498 D01 General RF Exposure Guidance v06

Deviations from standard: None

Approved Test Plan Number: N/A

Test Plan Revision: N/A

Date test sample received: 02-14-2022

Date test started: 02-22-2022

Date test finished: 06-03-2022

- **Test Laboratory Information**

Location of Test Lab:	The radiated and conducted emissions test sites are located at Bureau Veritas 815 N. Opdyke Rd #100, Auburn Hills, MI 48326, Phone: +1-248-836-4700
Key Contact:	Jason Kanakry (General Manager) Jason.Kanakry@BureauVeritas.com Phone: +1-248-836-4747
Laboratory Accreditations:	BUREAU VERITAS CONSUMER PRODUCTS SERVICES, INC is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.
ISO/IEC 17025:2017:	5678.01
FCC Test Site Number:	US1278 (242530)
IC Test Site Number:	US0229 (26240)

- **RF Exposure**

1.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average 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
300-1500	f/1500	30
1500-100,000	1.0	30

f = Frequency in MHz; *Plane-wave equivalent power density

1.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and centre of the radiator in cm

1.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as Mobile Device.

1.4 Antenna information

Band	Antenna Type	Antenna Gain (dBi)
BT Classic	Integrated PCB antenna	1.79
WLAN_2.4G	Integrated PCB antenna	2.80
WLAN_5G	Integrated PCB antenna	4.89

1.5 Calculation Result of Maximum Conducted Power

Band	Frequency (MHz)	Max Power (dBm)	Max Power (mW)	Turn-Up Tolerance	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
BT_Classic	2441	4.766	2.996	±1dB	1.79	20	0.00113	1
WLAN_2.4G	2437	12.363	17.230	±1dB	2.80	20	0.00822	1
WLAN_5G	5230	6.051	4.028	±1dB	4.89	20	0.00311	1

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. Calculate SAR test exclusion thresholds from condition "1" formulas.

1.6 Conclusion

The formula of calculated the MPE is:

$CPD1 / LPD1 \dots\dots < 1$

CPD = Calculation power density

LPD = Limit of power density

$BT + WLAN2.4G + WLAN 5G \text{ Co-location} = 0.00113 + 0.00822 + 0.00311 = \mathbf{0.01246} < 1$

Therefore the maximum calculations of above situations are less than the "1" limit.

Document Revisions

Version	Date	Modifier	Changes
1.0	04/11/2022	Aravind Buddana	<ul style="list-style-type: none">• Initial release
2.0	06/03/2022	Aravind Buddana	<ul style="list-style-type: none">• Updated FCC ID• Updated Antenna Type

End of Report