RF Exposure Report

Report No.:	FCC_RF_SL21040601-HAR-279_MPE Rev_2.0
FCC ID:	2AHPN-BE2854
Test Model:	INFO3.7-3.8 CSM
Series Model:	N/A
Received Date:	01/14/2021
Test Date:	02/05/2021 – 03/30/2021
Issued Date:	05/12/2021
Applicant:	Harman International Industries, Inc
Address:	30001 Cabot Drive, Novi, MI 48377
Manufacturer:	Harman International Industries, Inc
Address:	30001 Cabot Drive, Novi, MI 48377
Issued By:	Bureau Veritas Consumer Products Services, Inc.
Lab Address:	775 Montague Expressway, Milpitas, CA 95035
Test Location (1):	815 N. Opdyke Rd #100, Auburn Hills, MI 48326
FCC Registration / Designation Number:	540430

ACCREDITED
TESTING CERT # 2742-01

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Release Control Record

Issue No.	Description	Date Issued
FCC_RF_SL21040601-HAR-279_MPE	Orignal Release	05/03/2021
FCC_RF_SL21040601-HAR-279_MPE Rev_1.0	Correction the Model Name	05/10/2021
FCC_RF_SL21040601-HAR-279_MPE Rev_2.0	Correction conducted power and recalculate.	05/12/2021

1 Certificate of Conformity

Product:	Automotive Infotainment Unit
Brand:	Harman
Test Model:	INFO3.7-3.8 CSM
Series Model:	N/A
Sample Status:	Engineering sample
Applicant:	Harman International Industries, Inc.
Test Date:	02/05/2021 – 03/30/2021
Standards:	FCC Part 2 (Section 2.1093) KDB 447498 D01 General RF Exposure Guidance v06 IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services, Inc., Milpitas Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Deon , **Date:** 05/12/2021

Deon Dai / Test Engineer

Approved by : Gary Chou , **Date:** 05/12/2021

Gary Chou / Engineer Reviewer

2 RF Exposure

2.1 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)
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

2.2 MPE Calculation Formula

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

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

2.3 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.

2.4 Antenna information

Band	Antenna Type	Antenna Gain (dBi)
BT_LE	Non-detachable PCB trace antenna	5
BT_Classic	Non-detachable PCB trace antenna	5
WLAN_2.4G	External detachable antenna	5.98
WLAN_5G	Non-detachable internal PCB trace antenna	4.6

2.5 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_LE	2440	-2.4	0.575	±1dB	5	20	0.00046	1
BT_Classic	2441	0.5	1.122	±1dB	5	20	0.00088	1
WLAN_2.4G	2412	12.025	15.940	±1dB	5.98	20	0.01582	1
WLAN_5G	5825	10.708	11.770	±1dB	5	20	0.00932	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.

3 Conclusion

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

BT + WLAN2.4G + WLAN5G Co-location = 0.00088+0.01582+0.00932 = 0.02602 <1

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

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