

RF Exposure Report

Report No.: MFBGDY-WTW-P22120176

FCC ID: T8GSAN9000

Test Model: SA-N9000 OEM D1

Received Date: Dec. 06, 2022

Test Date: Jan. 04 ~ Feb. 20, 2023

Issued Date: Mar. 28, 2023

Applicant: Harman Connected Car Division

Address: Parking 3, 85748 Garching Germany

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City
33383, Taiwan

FCC Registration / 788550 / TW0003

Designation Number:



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Release Control Record

Issue No.	Description	Date Issued
MFBGDY-WTW-P22120176	Original release.	Mar. 28, 2023

1 Certificate of Conformity

Product: Module

Brand: Harman

Test Model: SA-N9000 OEM D1

Sample Status: Standard Sample

Applicant: Harman Connected Car Division

Test Date: Jan. 04 ~ Feb. 20, 2023

FCC Rule Part: FCC Part 2 (Section 2.1091)

Standards: KDB 447498 D01 General RF Exposure Guidance v06

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan 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 RF characteristics under the conditions specified in this report.

Prepared by : Celine Chou , **Date:** Mar. 28, 2023
Celine Chou / Senior Specialist

Approved by : Jeremy Lin , **Date:** Mar. 28, 2023
Jeremy Lin / Project Engineer

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				
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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**.

3 Calculation Result of Maximum Conducted Power

SA Mode

Band	ERP Power (dBm)	EIRP Power (dBm)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
NR Band 2 (SCS 15kHz)	-	26.71	20	0.093	1
NR Band 5 (SCS 15kHz)	23.36	25.51	20	0.071	0.550
NR Band 7 (SCS 15kHz)	-	26.30	20	0.085	1
NR Band 25 (SCS 15kHz)	-	27.07	20	0.101	1
NR Band 38 (SCS 30kHz)	-	25.78	20	0.075	1
NR Band 41 (SCS 30kHz)	-	26.00	20	0.079	1
NR Band 66 (SCS 15kHz)	-	27.54	20	0.113	1
NR Band 71 (SCS 15kHz)	23.85	26.00	20	0.079	0.444
NR Band 77 (Part 27O) (SCS 30kHz)	-	26.30	20	0.085	1
NR Band 77 (Part 27Q) (SCS 30kHz)	-	25.60	20	0.072	1

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- EIRP = ERP + 2.15dB

2G and 3G

Band	ERP Power (dBm)	EIRP Power (dBm)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
GSM 850	31.49	33.64	20	0.460	0.549
GSM 1900	-	32.94	20	0.391	1
WCDMA Band 2	-	26.97	20	0.099	1
WCDMA Band 4	-	27.36	20	0.108	1
WCDMA Band 5	23.47	25.62	20	0.073	0.550

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- EIRP = ERP + 2.15dB

NSA Mode

Function	Band	ERP (dBm)	EIRP (dBm)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Co-located Ratio<1
ENDC n5	NR Band 5 (SCS 15kHz)	21.99	24.14	20	0.052	0.550	-
	LTE Band 2	-	26.01	20	0.079	1	0.174
	LTE Band 66	-	26.67	20	0.092	1	0.187
ENDC n41	NR Band 41 (SCS 30kHz)	-	26.00	20	0.079	1	-
	LTE Band 26 (Part 22)	22.55	24.70	20	0.059	0.550	0.186
	LTE Band 26 (Part 90)	22.52	24.67	20	0.058	0.543	0.186
ENDC n66	NR Band 66 (SCS 15kHz)	-	26.49	20	0.089	1	-
	LTE Band 5	22.45	24.60	20	0.057	0.550	0.193
	LTE Band 12	20.78	22.93	20	0.039	0.466	0.173
ENDC n71	NR Band 71 (SCS 15kHz)	23.76	25.91	20	0.078	0.444	-
	LTE Band 2	-	26.02	20	0.080	1	0.256
	LTE Band 66	-	26.63	20	0.092	1	0.268
ENDC n77 (Part 27O)	NR Band 77 (SCS 30kHz)	-	25.81	20	0.076	1	-
	LTE Band 2	-	25.60	20	0.072	1	0.148
	LTE Band 5	21.96	24.11	20	0.051	0.550	0.169
	LTE Band 7	-	24.89	20	0.061	1	0.137
	LTE Band 38	-	24.64	20	0.058	1	0.134
	LTE Band 41	-	24.88	20	0.061	1	0.137
	LTE Band 66	-	26.14	20	0.082	1	0.158
ENDC n77 (Part 27Q)	NR Band 77 (SCS 30kHz)	-	25.52	20	0.071	1	-
	LTE Band 2	-	25.69	20	0.074	1	0.145
	LTE Band 5	21.74	23.89	20	0.049	0.550	0.160
	LTE Band 7	-	25.10	20	0.064	1	0.135
	LTE Band 38	-	24.62	20	0.058	1	0.129
	LTE Band 41	-	24.78	20	0.060	1	0.131
	LTE Band 66	-	26.10	20	0.081	1	0.152

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. EIRP = ERP + 2.15dB

Conclusion:

The formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

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