

TEST REPORT

FCC MPE Test for DA350GGN
Certification

APPLICANT
HYUNDAI MOBIS CO., LTD.

REPORT NO.
HCT-RF-2012-FC040

DATE OF ISSUE
December 22, 2020

Tested by
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**TEST
REPORT**

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DA350GGGN

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Additional Model

DA350GGGG, DA350GGGL, DA350GGGB, DA350GGGP,
DA351GGGG, DA350GGMG

Applicant

HYUNDAI MOBIS CO., LTD.

203, Teheran-ro, Gangnam-gu, Seoul, 135-977, South Korea

**Eut Type
Model Name**

Car Audio System
DA350GGGN

FCC ID

TQA-DA350GGGN

Frequency range

2 402 MHz ~ 2 480 MHz (Bluetooth)
2 412 MHz ~ 2 462 MHz (WLAN)
5 180 MHz ~ 5 825 MHz (UNII)

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test results were applied only to the test methods required by the standard.

REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	December 22, 2020	Initial Release

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance

* The report shall not be reproduced except in full(only partly) without approval of the laboratory.

RF Exposure Statement

1. Limit

According to § 1.1310, § 2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

Frequency range (MHz)	Electric field Strength (V/m)	Magnetic field Strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
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. Maximum Permissible Exposure Prediction

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

S = Power density

P = Power input to antenna

G = Power gain to the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

3. RESULTS

3-1. Bluetooth

Average output Power at antenna input terminal	2.00	dBm
Average output Power at antenna input terminal	1.58	mW
Prediction distance	20.00	cm
Prediction frequency	2402 – 2480	MHz
Antenna Gain(typical)	-0.180	dBi
Antenna Gain(numeric)	0.959	-
Power density at prediction frequency(S)	0.0003	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

2.1091

EIRP	1.82 (dBm)
ERP	-0.33 (dBm)
ERP	0.001 (W)
ERP Limit	3.00 (W)
MARGIN	35.10 (dB)

3-1. DTS

Average output Power at antenna input terminal	6.00	dBm
Average output Power at antenna input terminal	3.98	mW
Prediction distance	20.00	cm
Prediction frequency	2412 – 2462	MHz
Antenna Gain(typical)	-0.010	dBi
Antenna Gain(numeric)	0.998	-
Power density at prediction frequency(S)	0.0008	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

2.1091

EIRP	5.99 (dBm)
ERP	3.84 (dBm)
ERP	0.002 (W)
ERP Limit	3.00 (W)
MARGIN	30.93 (dB)

3-1. UNII

Average output Power at antenna input terminal	9.00	dBm
Average output Power at antenna input terminal	7.94	mW
Prediction distance	20.00	cm
Prediction frequency	5180 – 5825	MHz
Antenna Gain(typical)	-0.180	dBi
Antenna Gain(numeric)	0.959	-
Power density at prediction frequency(S)	0.0015	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.0000	mW/cm ²

2.1091

EIRP	8.82 (dBm)
ERP	6.67 (dBm)
ERP	0.005 (W)
ERP Limit	3.00 (W)
MARGIN	128.10 (dB)

Worst Case: Simultaneous MPE 20cm is

$$5G\ WLAN\ (0.0015) + BT\ (0.0003) = 0.0018 < 1$$