

TEST REPORT

of

FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: TQ8-ADB10VEGN

Equipment Under Test : DISPLAY CAR SYSTEM
 Model Name : ADB10VEGN
 Variant Model Name : ADB10VEMG, ADB10VEUG
 Applicant : Hyundai Mobis Co., Ltd.
 Manufacturer : Hyundai Mobis Co., Ltd.
 Date of Receipt : 2019.04.03
 Date of Test(s) : 2019.04.09 ~ 2019.05.07
 Date of Issue : 2019.05.14

In the configuration tested, the EUT complied with the standards specified above.

Tested By:



 Murphy Kim

Date:

2019.05.14

Technical
 Manager:



 Jungmin Yang

Date:

2019.05.14

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RTT5041-19(2019.04.24)(1)

Tel. +82 31 428 5700 / Fax. +82 31 427 2370

A4(210 mm x 297 mm)

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1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

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1.2. Details of Applicant

Applicant : Hyundai Mobis Co., Ltd.

Address : 203, Teheran-ro, Gangnam-gu, Seoul, 06141, South Korea

Contact Person : Choe, Seung-Hoon

Phone No. : +82 31 260 0098

1.3. Details of Manufacturer

Company : Same as applicant

Address : Same as applicant

1.4. Description of EUT

Kind of Product	DISPLAY CAR SYSTEM
Model Name	ADB10VEGN
Variant Model Names	ADB10VEMG, ADB10VEUG
Power Supply	DC 24 V
Frequency Range	2 402 MHz ~ 2 480 MHz (Bluetooth)
Modulation Technique	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels	79 channel (Bluetooth)
Antenna Type	Dielectric Chip Antenna
Antenna Gain	-0.10 dBi

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1.5. Test Report Revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL013838	2019.05.07	Initial
1	F690501/RF-RTL013838-1	2019.05.14	Revised the FCC ID

1.6. Information of Variant Models

Model	Model Name	HMC PART NO.	MOBIS PART NO.	ADM	RDS	Front type
Basic Model	ADB10VEGN	96150-6D020	6D9615020	X	X	LHD
Variant Models	ADB10VEMG	96150-6D010	6D9615010	X	O	LHD
	ADB10VEUG	96150-6D030	6D9615030	O	O	RHD

Model	Model Name	Frequency	FM		AM	
			Frequency Range	Channel Space	Frequency Range	Channel Space
Basic Model	ADB10VEGN	A2	87.5 MHz ~ 107.9 MHz	200 kHz	530 MHz ~ 1 710 MHz	10 kHz
Variant Models	ADB10VEMG	A1	87.5 MHz ~ 108.0 MHz	100 kHz	531 MHz ~ 1 602 MHz	9 kHz
	ADB10VEUG	Australia	87.5 MHz ~ 108.0 MHz	100 kHz	530 MHz ~ 1 702 MHz	9 kHz

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2. RF Exposure Evaluation

2.1. Environmental evaluation and exposure limit according to FCC CFR 47 part 1, 1.1307(b), 1.1310

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
(A) 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
(B) 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

2.1.1. Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

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

P_d the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

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2.1.2. Test Result of RF Exposure Evaluation

Test Item : RF Exposure Evaluation Data

Test Mode : Normal Operation

2.1.3. Output Power into Antenna & RF Exposure Evaluation Distance**Bluetooth****- Maximum tune up tolerance**

Frequency Range (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm ²)	Limits (mW/cm ²)
2 402 ~ 2 480	4.0	-0.10	0.000 488	1

Note;

- The power density Pd (5th column) at a distance of 20 cm calculated from the friis transmission formula is far below the limit of 1 mW/cm².
- This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.
- This equipment should be installed and operated with minimum 20 cm between the radiator and your body.
- The antenna gain of this transmitter is less than 6 dB i and must not be collocated or operating in conjunction with any other antenna or transmitter unless authorized to do so by the FCC.

- End of the Test Report -

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