

# TEST REPORT

of

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

FCC ID: TQ8-ADB10J9AN

Equipment Under Test : DISPLAY CAR SYSTEM  
Model Name : ADB10J9AN  
Applicant : Hyundai MOBIS Co., Ltd.  
Manufacturer : Hyundai MOBIS Co., Ltd.  
Date of Receipt : 2017.01.31  
Date of Test(s) : 2017.02.07 ~ 2017.02.15  
Date of Issue : 2017.02.17

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

Tested By:




Brant Jang

Date:

2017.02.17

Technical  
Manager:



Hyunchae You

Date:

2017.02.17

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SGS Korea Co., Ltd. (Gunpo Laboratory) 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807 <http://www.sgsgroup.kr>

RTT5041-20(2015.10.01)(3)

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)

-Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Phone No. : +82 31 688 0901

Fax No. : +82 31 688 0921

### 1.2. Details of applicant

Applicant : Hyundai MOBIS Co., Ltd.

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

Contact Person : Kwon, Heung-Chul

Phone No. : +82 31 260 2714

### 1.3. Description of EUT

|                      |                            |
|----------------------|----------------------------|
| Kind of Product      | DISPLAY CAR SYSTEM         |
| Model Name           | ADB10J9AN                  |
| Power Supply         | DC 14.4 V                  |
| Frequency Range      | 2 402 MHz ~ 2 480 MHz      |
| Modulation Technique | GFSK, $\pi/4$ DQPSK, 8DPSK |
| Number of Channels   | 79 channels                |
| Antenna Type         | Dielectric Chip Antenna    |
| Antenna Gain         | -0.10 dBi                  |

### 1.4. Test report revision

| Revision | Report number        | Date of Issue | Description |
|----------|----------------------|---------------|-------------|
| 0        | F690501/RF-RTL010845 | 2017.02.17    | Initial     |

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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<br>(MHz)                                | Electric Field<br>Strength(V/m) | Magnetic Field<br>Strength<br>(A/m) | Power Density<br>(mW/cm <sup>2</sup> ) | 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 <sup>2</sup>                    | 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 <sup>2</sup>                    | 30               |
| 30 – 300  | 27.5                            | 0.073                               | 0.2                                    | 30               |
| 300 – 1 500   | -                               | -                                   | f/1500                                 | 30               |
| <b><u>1 500 – 100 000</u></b>                           | -                               | -                                   | <b><u>1.0</u></b>                      | <b><u>30</u></b> |

#### 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/cm<sup>2</sup>

$P_{out}$  = 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

$P_d$  the limit of MPE, 1 mW/cm<sup>2</sup>. 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

BT

- Maximum tune up tolerance

| Frequency<br>(MHz) | Maximum Output<br>Power to Antenna<br>(dB m) | Antenna<br>Gain<br>(dB i) | Power<br>Density<br>at 20 cm (mW/cm <sup>2</sup> ) | Limits<br>(mW/cm <sup>2</sup> ) |
|--------------------|--|---------------------------|--|---------------------------------|
| 2 402 – 2 480      | 4  | -0.10                     | 0.000 488  | 1                               |

Note :

1. 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/cm<sup>2</sup>.

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