

TEST REPORT

of

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

FCC ID: TQ8-ADB14G5GG

Equipment Under Test : DISPLAY CAR SYSTEM
 Model Name : ADB14G5GG
 Variant Model Name : ADB15G5GG, ADB12G5GN, ADB12G5GL,
 ADB12G5MG, ADB12G5EG, ADB13G5EG,
 ADBC2G5UG, ADB12G5FN, ADB12G5EP,
 ADB13G5EP, ADBC2G5EP, ADB12G5DG
 ADBC2G5EP
 Applicant : Hyundai Mobis Co., Ltd.
 Manufacturer : Hyundai Mobis Co., Ltd.
 Date of Receipt : 2018.11.26
 Date of Test(s) : 2018.11.29 ~ 2018.12.03
 Date of Issue : 2018.12.26

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

Tested By:



Murphy Kim

Date:

2018.12.26

Technical
 Manager:



Jungmin Yang

Date:

2018.12.26

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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

-Designation number: KR0150

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>.

Telephone : +82 31 688 0901

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1.2. Details of Applicant

Applicant : Hyundai Mobis Co., Ltd.

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

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 | ADB14G5GG |
| Variant Model Name | ADB15G5GG, ADB12G5GN, ADB12G5GL, ADB12G5MG, ADB12G5EG, ADB13G5EG, ADBC2G5UG, ADB12G5FN, ADB12G5EP, ADB13G5EP, ADBC2G5EP, ADB12G5DG, ADBC2G5EP |
| Power Supply | DC 14.4 V |
| Frequency Range | 2 402 MHz ~ 2 480 MHz (Bluetooth) |
| Modulation Technique | GFSK, $\pi/4$ DQPSK, 8DPSK |
| Number of Channels | 79 channels (Bluetooth) |
| Antenna Type | pattern antenna |
| Antenna Gain | -0.05 dBi |

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1.5. Test Report Revision

| Revision | Report number | Date of Issue | Description |
|----------|------------------------|---------------|----------------------------------|
| 0 | F690501/RF-RTL013191 | 2018.12.03 | Initial |
| 1 | F690501/RF-RTL013191-1 | 2018.12.26 | Revised the equipment under test |

1.6. Information of Variant Models

| Model Name | | BT | RDS | GPS | AA/CP | DAB | Rear camera | AMP |
|---------------|-----------|----|-----|-----|-------|-----|-------------|-----|
| Basic model | ADB14G5GG | O | X | O | O | X | O | O |
| Variant model | ADB15G5GG | O | O | O | O | X | O | O |
| | ADB12G5GN | O | X | O | O | X | O | O |
| | ADB12G5GL | O | X | O | O | X | O | O |
| | ADB12G5MG | O | X | O | O | X | O | O |
| | ADB12G5EG | O | X | O | O | X | O | O |
| | ADB13G5EG | O | O | O | O | X | O | O |
| | ADBC2G5UG | O | O | O | O | O | O | O |
| | ADB12G5FN | O | X | O | O | X | O | O |
| | ADB12G5EP | O | X | O | O | X | O | O |
| | ADB13G5EP | O | O | O | O | X | O | O |
| | ADBC2G5EP | O | O | O | O | O | O | O |
| | ADB12G5DG | O | X | O | O | X | O | O |
| | ADBC2G5EP | O | O | O | O | O | O | O |

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

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

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

- 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 | -0.05 | 0.000 494 | 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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