

# TEST REPORT

of

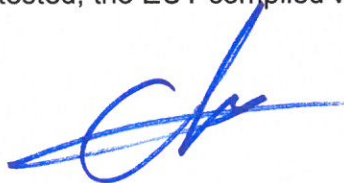
FCC CFR 47 part 1, 1.1307(b), 1.1310

FCC ID: TQ8-ADB21G5AN

Equipment Under Test : DISPLAY CAR SYSTEM  
Model Name : ADB21G5AN  
Variant Model Names : ADB16G5GG, ADB17G5GG, ADB13G5GN,  
ADB13G5GL, ADB13G5MG, ADB18G5EG,  
ADB19G5EG, ADBC0G5EG, ADB17G5FN,  
ADB18G5EP, ADB19G5EP, ADBC7G5EP,  
ADB13G5AN  
Applicant : Hyundai Mobis Co., Ltd.  
Manufacturer : Hyundai Mobis Co., Ltd.  
Date of Receipt : 2019.05.23  
Date of Test(s) : 2019.05.30 ~ 2019.06.12  
Date of Issue : 2019.06.13

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

Tested By:



Jinhyoung Cho

Date:

2019.06.13

Technical  
Manager:

Jungmin Yang

Date:

2019.06.13

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## 1. General Information

### 1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)

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

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Telephone : +82 31 688 0901

FAX : +82 31 688 0921

### 1.2. Details of Applicant

Applicant : Hyundai Mobis Co., Ltd.

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

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

<b>Kind of Product</b>	DISPLAY CAR SYSTEM
<b>Model Name</b>	ADB21G5AN
<b>Variant Model Names</b>	ADB16G5GG, ADB17G5GG, ADB13G5GN, ADB13G5GL, ADB13G5MG, ADB18G5EG, ADB19G5EG, ADBC0G5EG, ADB17G5FN, ADB18G5EP, ADB19G5EP, ADBC7G5EP, ADB13G5AN
<b>Power Supply</b>	DC 14.4 V
<b>Frequency Range</b>	2 402 MHz ~ 2 480 MHz (Bluetooth)
<b>Modulation Technique</b>	GFSK, $\pi/4$ DQPSK, 8DPSK
<b>Number of Channels</b>	79 channel (Bluetooth)
<b>Antenna Type</b>	PCB pattern antenna
<b>Antenna Gain</b>	0.07 dBi

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### 1.5. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501/RF-RTL013944	2019.06.13	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 (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (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>1 500-100 000</b>	-	-	<b>1.0</b>	<b>30</b>

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

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**

**Bluetooth**

**- Maximum tune up tolerance**

Frequency (MHz)	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 cm (mW/cm <sup>2</sup> )	Limits (mW/cm <sup>2</sup> )
2 402 ~ 2 480	4	0.07	0.000 508	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/cm<sup>2</sup>.
- 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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