

# TEST REPORT

of

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

FCC ID: TQ8-ACB10M4BN

Equipment Under Test : DIGITAL CAR AUDIO SYSTEM  
Model Name : ACB10M4BN  
Variant Model Names : ACB10CVGN, ACB10CVGL, ACB00CVBN,  
ACB00CVGN, ACB00CVGL  
Applicant : Hyundai MOBIS Co., Ltd.  
Manufacturer : Tianjin Mobis Automotive Parts Co., Ltd.  
Date of Receipt : 2016.02.23  
Date of Test(s) : 2016.08.02 ~ 2016.08.09  
Date of Issue : 2016.08.10

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

Tested By:



Patrick Kang

Date:

2016.08.10

Technical  
Manager:



Alvin Kim

Date:

2016.08.10

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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, Republic of Korea

Contact Person : Hyeon, Sae-Rom

Phone No. : +82 31 260 2716

### 1.3. Description of EUT

Kind of Product	DIGITAL CAR AUDIO SYSTEM
Model Name	ACB10M4BN
Variant Model Names	ACB10CVGN, ACB10CVGL, ACB00CVBN, ACB00CVGN, ACB00CVGL
Power Supply	DC 14.4 V (Vehicle battery)
Frequency Range	2 402 MHz ~ 2 480 MHz
Modulation Technique	GFSK, $\pi/4$ DQPSK, 8DPSK
Number of Channels	79 channels
Antenna Type	Chip antenna
Antenna Gain	-0.10 dB i

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#### 1.4. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL010216	2016.08.10	Initial

#### 1.5. Information of Variant Model

Model name	H/W	S/W
	Bluetooth	FM/AM BAND
ACB10M4BN (Basic model)	O	Normal
ACB10CVGN	O	Normal(Dominican Republic)
ACB10CVGL	O	Normal(Colombia)
ACB00CVBN	X	Normal
ACB00CVGN	X	Normal(Dominican Republic)
ACB00CVGL	X	Normal(Colombia)

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

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

### Bluetooth

#### - Maximum tune up tolerance

Channel	Channel 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> )
0	2 402	4	-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/cm<sup>2</sup>.

**- End of the Test Report -**

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