MPE TEST REPORT

of

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

FCC ID : TQ8-AC111DFEE

Equipment Under Test	:	DIGITAL CAR AUDIO SYSTEM
Model Name	:	AC111DFEE (Alt. : AC101DFEE, AC101DFEG, AC111DFEG, AC111DFDG, AC111DFGG, AC111DFGN, AC111DFGE, AC111DFGL, AC111DFUG)
Applicant	:	Hyundai MOBIS Co., Ltd.
Manufacturer	:	Hyundai MOBIS Co., Ltd.
Date of Test(s)	:	2014.08.14 ~ 2014.08.29
Date of Issue	:	2014.09.02

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

Tested By: **Harim Lee** **Date:** **2014.09.02**

Approved By: **Hyunchae You** **Date:** **2014.09.02**

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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, 435-837
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 31 428 5700
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1.2. Details of Applicant

Applicant : Hyundai MOBIS Co., Ltd.
Address : 69-23, Hansam-ro, Deoksan-myeon, Jincheong-gun, Chungcheongbuk-do
Contact Person : Choi, Seung-Hoon
Phone No. : +82 31 260 0098

1.3. Description of EUT

Kind of Product	DIGITAL CAR AUDIO SYSTEM
Model Name	AC111DFEE (Alt. : AC101DFEE, AC101DFEG, AC111DFEG, AC111DFDG, AC111DFGG, AC111DFGN, AC111DFGE, AC111DFGL, AC111DFUG)
Power Supply	DC 14.4 V
Frequency Range	2 402 ㎒ ~ 2 480 ㎒
Modulation Technique	GFSK, π/4DQPSK, 8DPSK
Number of Channels	79
Antenna Type	Internal type
Antenna Gain	3.5 ㏈i

1.4. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL007988	2014.09.02	Initial

1.5. Alternative models

Model name		Specification
Basic model	AC111DFEE	R+CD+MP3+RDS+BT+VR
Alternative model	AC101DFEE	R+CD+MP3+RDS
	AC101DFEG	R+CD+MP3
	AC111DFEG	R+CD+MP3+BT+VR, Different region
	AC111DFDG	R+CD+MP3+BT+VR, Different region
	AC111DFGG	R+CD+MP3+BT, Different region
	AC111DFGN	R+CD+MP3+BT, Different region
	AC111DFGE	R+CD+MP3+BT, Different region
	AC111DFGL	R+CD+MP3+BT, Different region
	AC111DFUG	R+CD+MP3+BT, Different region

2. RF Exposure Evaluation

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

According to FCC 1.1310 : The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in §1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (㎒)	Electric Field Strength(V/m)	Magnetic Field Strength (A/m)	Power Density (㎽/㎠)	Average Time
(A) Limits for Occupational /Control Exposures				
300 – 1 500	--	--	F/300	6
1 500 – 100 000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300 – 1 500	--	--	F/1500	30
1 500 – 100 000	**--**	**--**	**1**	**30**

2.1.1. Friis transmission formula: Pd = (Pout*G)/(4*pi*R^2)

Where Pd = power density in ㎽/㎠

Pout = output power to antenna in ㎽

G = gain of antenna in linear scale

Pi = 3.141 6

R = distance between observation point and center of the radiator in ㎝

Pd the limit of MPE, 1 ㎽/㎠. 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.

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

Channel	Output Average Power to Antenna (dB m)	Antenna Gain (dB i)	Power Density at 20 ㎝ (㎽/㎠)	LIMITS (㎽/㎠)
Maximum tune up tolerance	4.00	3.50	0.001 119	1

Note :
1. The power density Pd (5th column) at a distance of 20 ㎝ calculated from the friis transmission formula is far below the limit of 1 ㎽/㎠.