ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR LOW-POWER, NON-LICENSED TRANSMITTER

Test Report No.	**: OT-19D-RWD-039**
AGR No.	**: A19NA-393**
Applicant	**: HYUNDAI MOBIS CO., LTD.**
Address	**: 203, Teheran-ro, Gangnam-gu, Seoul, Korea**
Manufacturer	**: Jiangsu Mobis Automotive Parts Co., Ltd.**
Address	**: No.70 Hope Road South, Economic Developing Zone, Yancheng City, Jiangsu Province, China**
Type of Equipment	**: DIGITAL CAR AUDIO SYSTEM**
FCC ID.	**: TQ8-ACB10H7GN**
Model Name	**: ACB10H7GN**
Multiple Model Name	**: N/A**
Serial number	**: N/A**
Total page of Report	**: 8 pages (including this page)**
Date of Incoming	**: November 26, 2019**
Date of issue	**: December 11, 2019**

SUMMARY

The equipment complies with the regulation; ***FCC PART 15 SUBPART C Section 15.247***

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

Reviewed by: Ha-Ram Lee / Assistant Manager, ONETECH Corp.

Approved by: Jae-Ho Lee / Chief Engineer, ONETECH Corp.

ONETECH Corp.: 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea (TEL: 82-31-799-9500, FAX: 82-31-799-9599)

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Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-19D-RWD-039	December 11, 2019	Initial Issue	All

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1. VERIFICATION OF COMPLIANCE

Applicant : HYUNDAI MOBIS CO., LTD.
Address : 203, Teheran-ro, Gangnam-gu, Seoul, Korea
Contact Person : Seung hoon Choe / Senior Engineer
Telephone No. : +82-31-260-0098
FCC ID : TQ8-ACB10H7GN
Model Name : ACB10H7GN
Brand Name : HYUNDAI MOBIS
Serial Number : N/A
Date : December 11, 2019

EQUIPMENT CLASS	***DSS – PART 15 SPREAD SPECTRUM TRANSMITTER***
E.U.T. DESCRIPTION	DIGITAL CAR AUDIO SYSTEM
KIND OD EQUIPMENT	Modular Transmitter
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2013
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.247
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	3 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

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2. GENERAL INFORMATION

2.1 Product Description

The HYUNDAI MOBIS CO., LTD., Model ACB10H7GN (referred to as the EUT in this report) is a DIGITAL CAR AUDIO SYSTEM. The product specification described herein was obtained from product data sheet or user's manual.

Device Type	DIGITAL CAR AUDIO SYSTEM	
Operating Frequency	2 402 MHz ~ 2 480 MHz	
RF Output Power	1 Mbps	-4.68 dBm
	2 Mbps	-4.37 dBm
	3 Mbps	-4.03 dBm
Number of Channel	79 Channels	
Modulation Type	GFSK for 1 Mbps, π/4-DQPSK for 2 Mbps, 8-DPSK for 3 Mbps	
Antenna Type	PCB Antenna	
Antenna Gain	-0.16 dBi	
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	12 MHz, 26 MHz, 62.4 MHz	
Rated Supply Voltage	DC 14.4 V	

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2.2 Alternative type(s)/model(s); also covered by this test report.

-. None

3. EUT MODIFICATIONS

-. None

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4. MAXIMUM PERMISSIBLE EXPOSURE

4.1 RF Exposure Calculation

According to the FCC rule §1.1310, the limit for General Population/Uncontrolled exposure is 1 mW/cm² for the device operating 1 500 ~ 100 000 MHz.

4.2 EUT Description

Kind of EUT	DIGITAL CAR AUDIO SYSTEM	
Operating Frequency Band	☐ Wireless Microphone: 494.000 MHz ~ 501.000 MHz and 498.200 MHz ~ 505.200 MHz ☐ WLAN: 2 412 MHz ~ 2 462 MHz ☐ WLAN: 5 180 MHz ~ 5 240 MHz ☐ WLAN: 5 745 MHz ~ 5 825 MHz ■ Bluetooth: 2 402 MHz ~ 2 480 MHz ☐ Bluetooth BLE: 2 402 MHz ~ 2 480 MHz ☐ NFC：13.56 MHz	
MAX. RF OUTPUT POWER	1 Mbps	-4.68 dBm
	2 Mbps	-4.37 dBm
	3 Mbps	-4.03 dBm
Antenna Gain	-0.16 dBi	
Exposure Evaluation Applied	■ MPE ☐ SAR ☐ SAR Test Exclusion Evaluation	

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4.3 Calculated MPE Safe Distance

According to above equation, the following result was obtained.

Operating Freq. Band (MHz)	Operating Mode	Target Power W/tolerance	Max tune up power		Antenna Gain		Safe Distance (cm)	Power Density (mW/cm²) @ 20 cm Separation	Limit (mW/cm²)
		(dBm)	(dBm)	(mW)	Log	Linear			
2 402 ~ 2 480	1 Mbps	-5.18 ± 0.5	-4.68	0.34	-0.16	0.964	0.16	0.000 065	1.00
	2 Mbps	-4.87 ± 0.5	-4.37	0.37			0.17	0.000 070	1.00
	3 Mbps	-4.53 ± 0.5	-4.03	0.40			0.17	0.000 076	1.00

According to above table, for 2 400 ~ 2 483.5 MHz Band, safe distance,

$D = 0.282 * \sqrt{(0.40 * 0.964)/1.00} = 0.17$ cm

For getting power density at 20 cm separation in above table, following formula was used.

$S = P * G / (4\pi * R^2) = 0.40 * 0.964 / (4 * 3.14 * 20^2) = 0.000\ 076$

Where:

S = Power Density,

P = Power input to the external antenna (Output power from the EUT antenna port (dBm) – cable loss (dB)),

G = Gain of Transmit Antenna (linear gain), R = Distance from Transmitting Antenna

Tested by: Sieon Lee / Assistant Manager

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